University of California
San Francisco

UCSF Real Estate

UCSF Box 0287
654 Minnesota Street, 2nd Floor
San Francisco, CA 94143

www.ucsf.edu

December 16, 2021

Project:	UCSF New Hospital at Parnassus Heights
Location:	401 and 505 Parnassus Avenue, San Francisco, California 94143 (Parnassus Avenue at Medical Center Way)
Block/Lot:	2634A/011 & 005
Sponsor:	University of California, San Francisco (UCSF)
Lead Agency:	University of California
Staff Contact:	Diane Wong, UCSF (415) 502-5952

This is the Draft Environmental Impact Report (Draft EIR – State Clearinghouse Number 2021070547) for the above-named project, prepared pursuant to the requirements of the California Environmental Quality Act (CEQA). The document is available at http://tiny.ucsf.edu/HospitalDraftEIR for a 60-day public review and comment period beginning **December 16, 2021 through February 14, 2022.**

Project Description

UCSF is proposing to construct a new hospital and related improvements at the east end of UCSF's Parnassus Heights campus core, collectively known as the New Hospital at Parnassus Heights project (NHPH). The NHPH would increase inpatient beds at Parnassus Heights; accommodate modern technologies; address seismic safety requirements and meet other regulatory requirements and industry standards for contemporary hospitals; and enhance functionality and efficiency at the campus site. Construction of the NHPH would begin in 2023 with the proposed New Hospital and majority of related improvements completed and operational by the end of 2030, and completion of the remaining related improvements by 2034.

As proposed, the New Hospital would be approximately 900,000 gross square feet, and consist of 15 stories plus rooftop mechanical equipment and a full basement. The New Hospital would require certain supporting circulation, loading, utility and landscaping improvements. The NHPH would also include renovation of Moffitt and Long Hospitals, widening Medical Center Way adjacent to the New Hospital for fire safety purposes; replacement of diesel fuel tanks and medical gas tanks; vegetation management and slope stabilization improvements; and a pedestrian bridge and tunnel across Parnassus Avenue. Under the proposed NHPH, the New Hospital would provide 336 inpatient beds, Long Hospital would provide 297 inpatient beds, and Moffitt Hospital would provide 49 inpatient beds. The total inpatient bed count at the campus site under the NHPH would be up to 682 beds.

A minor amendment to the 2014 LRDP would be required to adjust the Reserve boundary and maintain the Reserve at a minimum of 61 acres.

For purposes of the California Environmental Quality Act (CEQA), the University of California is lead agency for the proposed NHPH.

Anticipated Environmental Effects

The proposed NHPH is anticipated to result in potentially significant environmental effects relating to Aesthetics; Wind; Air Quality, Biological Resources, Cultural Resources and Tribal Cultural Resources; Geology and Soils; Greenhouse Gas Emissions; Hazards and Hazardous Materials; Noise and Vibration; Transportation; and

Cumulative Impacts. The project site is not located on any of the lists of sites enumerated under Section 65962.5 of the Government Code.

Public Review and Comment

As indicated above, the Draft EIR is available at http://tiny.ucsf.edu/HospitalDraftEIR for a 60-day public review and comment period beginning **December 16, 2021 through February 14, 2022.**

If you would like a paper copy of the Draft EIR, please call (415) 502-5952 and leave a message clearly stating your full name, mailing address, and contact information (email or phone number).

During the public comment period, the public may submit comments on the content and adequacy of the Draft EIR analysis. Comments may be submitted in writing and/or orally at the Draft EIR public hearing (see information below).

Submission of Written Comments

- Submission of written comments via email is encouraged. Please email comments to EIR@ucsf.edu.
- Should you wish to send written comments via regular mail, please mail your comment letter to Diane Wong, UCSF Real Estate - Campus Planning, 654 Minnesota Street, San Francisco, CA 94143-0287.

Please include your full name and address in written correspondence. All comments must be received no later than 5:00 PM on **February 14, 2022**.

Draft EIR Public Hearing

UCSF will hold a Draft EIR Public Hearing on **January 19, 2022** beginning at 6:00 p.m. to receive oral comments on the adequacy of the information presented in the Draft EIR. Due to the COVID-19 pandemic, the Draft EIR Public Hearing will be conducted via Zoom. If you are interested in attending this meeting, please register at: http://tiny.ucsf.edu/NHPHDraftEIRHearing. After registering, you will receive a confirmation email containing information about joining the meeting.

Please note that all public comments made in writing or in oral testimony at the Draft EIR Public Hearing will be part of the public record. Comments received at the Public Hearing or in writing will be responded to in a Comments and Responses document to be prepared subsequent to the close of the comment period. The Comments and Responses document, together with the Draft EIR, will comprise the Final EIR which will be prepared for the University of California Board of Regents to consider for certification.

Thank you for your interest in this project.

Sincerely,

Diane Wong, Environmental Coordinator
UCSF Real Estate - Campus Planning
654 Minnesota Street
San Francisco, CA 94143-0287
EIR@ucsf.edu
(415) 502-5952

DRAFT

DECEMBER 2021

UCSF NEW HOSPITAL AT PARNASSUS HEIGHTS

Environmental Impact Report

State Clearinghouse Number 2021070547

UCSF

University of California
San Francisco

Artist's Rendering

DRAFT

DECEMBER 2021

UCSF NEW HOSPITAL AT PARNASSUS HEIGHTS

Environmental Impact Report

State Clearinghouse Number 2021070547

Prepared for
University of California, San Francisco
Real Estate - Campus Planning
654 Minnesota Street
San Francisco, California 94143-0287

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LIST OF ABBREVIATIONS AND ACRONYMS

2014 LRDP	2014 Long Range Development Plan
ABAG	Association of Bay Area Governments
AB 32	California Global Warming Solutions Act
AB 52	California Assembly Bill 52
AB 341	California Assembly Bill 341
AB 939	California Integrated Waste Management Act of 1989
AB 1007	California Assembly Bill 1007
AB 1493	California Assembly Bill 1493
AB 1497	California Assembly Bill 1497
AB 1807	California Assembly Bill 1807
AB 1826	California Assembly Bill 1826
AB 1881	California Assembly Bill 1881
AB 2588	California Assembly Bill 2588
AC Transit	Alameda-Contra Costa Transit District
ACUPCC	American College and University Presidents' Climate Commitment
ADA	federal Americans with Disabilities Act of 1990
AERMOD	American Meteorological Society/Environmental Protection Agency Regulatory Model
AFY	acre-feet per year
APEZ	Air Pollutant Exposure Zone
AQI	Air Quality Index
asl	above sea level
AST	Aboveground Storage Tank
ATCM	Airborne Toxic Control Measure
AWSS	Auxiliary Water Supply System
BAAQMD	Bay Area Air Quality Management District
BACT	best available control technology
BART	San Francisco Bay Area Rapid Transit District

BMPs	best management practices
Btu	British thermal units
°C	degrees Celsius
CAA	federal Clean Air Act
CACS	Chancellor's Advisory Committee on Sustainability
CAFE	Corporate Average Fuel Economy
CalARP	California Accidental Release Prevention Program
CalEPA	California Environmental Protection Agency
CAL FIRE	California Department of Forestry and Fire Protection
CALGreen	California Green Building Standards Code
Cal OES	Governor's Office of Emergency Services
CalTrain	Peninsula Corridor Joint Powers Board
Caltrans	California Department of Transportation
CalRecycle	California Department of Resources Recycling and Recovery
CAP	Clean Air Plan
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CARE	Community Air Risk Evaluation
CAS	Climate Action Strategy
CBC	California Building Code
CCAR	California Climate Action Registry
CCR	California Code of Regulations
CCSF	City and County of San Francisco
CDE	California Department of Education
CDFW	California Department of Fish and Wildlife
CDHS	California Department of Health Services
CDPH-RHB	California Department of Public Health, Radiological Health Branch
CDMG	California Division of Mines and Geology
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CERCLA	federal Comprehensive Environmental Response, Compensation and Liability Act of 1980
CESA	California Endangered Species Act
CFR	Code of Federal Regulations

CGP	Construction General Permit
CGS	California Geological Survey
CHP	California Highway Patrol
CH_4	methane
CNDDB	California Natural Diversity Database inventory of rare plants and animals
CNEL	Community Noise Equivalent Level
CNI	Carbon Neutrality Initiative
CNPS	California Native Plant Society
CNRA	California Natural Resources Agency
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
COPPS	Community Orientated Policing and Problem Solving
COVID-19	Coronavirus Disease 2019
CPHP	Comprehensive Parnassus Heights Plan
CPUC	California Public Utilities Commission
CRHR	California Register of Historical Resources
CSB	Clinical Sciences Building
CSC	California Species of Concern
CSS	combined sewer system
CTC	California Transportation Commission
CUP	Central Utility Plant
CUPAs	certified unified program agencies for hazardous materials programs
CWA	federal Clean Water Act
cy	cubic yards
dB	decibel
dBA	A-weighted decibel
DNL	day-night noise level
DOE	U.S. Department of Energy
DOT	U.S. Department of Transportation
DPM	diesel particulate matter
DTSC	California Department of Toxic Substances Control
DWR	California Department of Water Resources

EC	UCSF Environmental Coordinator
EDD	California Employment Development Department
EDGs	emergency diesel generators
EH&S	UCSF Office of Environment, Health and Safety
EIA	U.S. Energy Information Administration
EIR	Environmental Impact Report
EO	Executive Order issued by California Governor or U.S. President
EV	electric vehicle
°F	degrees Fahrenheit
FAA	Federal Aviation Administration
FCAA	federal Clean Air Act
FEIR	Final Environmental Impact Report
FEMA	Federal Emergency Management Agency
FESA	Federal Endangered Species Act
FHWA	Federal Highway Administration
FIRM	Flood Insurance Rate Maps
FTA	Federal Transit Administration
FY	Fiscal Year
GGE	greenhouse gas equivalents
GGT	Golden Gate Transit
GI	green infrastructure
GHGRS	Greenhouse Gas Reduction Strategy
GHG	Greenhouse gas
gpm	gallons per minute
gsf	gross square feet
GSA	U.S. General Services Administration
GWh	gigawatt hours
GWP	global warming potential
HABS	Historic American Buildings Survey
HAER	Historic American Engineering Record
HAP	hazardous air pollutant
HCD	California Department of Housing and Community Development
HI	hazard index for hazardous or toxic air pollutant exposure
HIA	Health Impact Assessment

HMBP	hazardous materials business plan
HMTA	Hazardous Materials Transportation Act
HP	horsepower
HRA	health risk assessment for hazardous or toxic air pollutants
HRSGs	heat recovery steam generators
HSIR	Health Sciences Instruction and Research
HVAC	heating, ventilation and air conditioning
I-80	Interstate 80
I-280	Interstate 280
ICDC	Integrated Center for Design & Construction
ICU	intensive care unit
IEPR	Integrated Energy Policy Report
JFK Drive	John F Kennedy Drive
kV	kilovolt
kW	kilowatt
kWh	kilowatt-hours
L_{90}	noise level exceeded 90 percent of the time
L_{dn}	day-night noise level
L_{eq}	equivalent continuous sound level
L_{max}	maximum noise level
lb	pounds
LBP	lead-based paint
LCFS	Low Carbon Fuel Standard
LEED®	Leadership in Energy and Environmental Design
LID	Low Impact Development
LORS	Laws, Ordinances, Regulations, and Standards
LOS	level of service
LPPI	Langley Porter Psychiatric Institute
LRA	Local Responsibility Area
LRDP	Long Range Development Plan
LVW	loaded vehicle weight
MBTA	Federal Migratory Bird Treaty Act
MEI	maximally exposed individual
mgd	million gallons per day

MLD	most likely descendant
MMBTUs	million British Thermal Units
MMRP	Mitigation Monitoring and Reporting Program required by CEQA
MOU	Memorandum of Understanding
mph	miles per hour
MPO	Metropolitan Planning Organization
MRI	magnetic resonance imagery
MRZ	Mineral Resource Zone designated by the State Geologist
MS4	Municipal Separate Storm Sewer System
MSB	Medical Science Building
msl	mean sea level
MTC	Metropolitan Transportation Commission
MT CO_2e	metric tons of carbon dioxide equivalent
Muni	San Francisco Municipal Railway
MV	megavolt amperes
Mw	Maximum Moment Magnitude Earthquake
MW	megawatt
MWh	megawatt-hours
MWh/year	megawatt-hours per year
NAAQS	national ambient air quality standards
NAHC	California Native American Heritage Commission
NECPA	National Energy Conservation Policy Act
NESHAPs	National Emissions Standards for Hazardous Air Pollutants
NFIP	National Flood Insurance Program
ng/m^3	nanograms per cubic meter
NHPA	National Historic Preservation Act
NHPH	New Hospital at Parnassus Heights
NHTSA	National Highway Traffic Safety Administration
NO	nitric oxide
NO_2	nitrogen dioxide
NOA	CEQA Notice of Availability
NOP	CEQA Notice of Preparation
NOx	nitrogen oxide
N_2O	nitrous oxide

NPDES	National Pollutant Discharge Elimination System
NPC	Nonstructural Performance Category
NPF	North Point Wet Weather Facility
NPS	National Park Service
NRHP	National Register of Historic Places
NSR	New Source Review
NWIC	Northwest Information Center of the California Historical Resources Information System
OPR	Governor's Office of Planning and Research
OSFM	Office of the State Fire Marshal
OSHA	Occupation Safety and Health Administration
OSHPD	Office of Statewide Health Planning and Development
OSP	Oceanside Treatment Plant
PAs	participating agencies
PCBs	polychlorinated biphenyls
PDA	Priority Development Area identified by ABAG
PG&E	Pacific Gas and Electric Company
PHEVs	plug-in hybrid electric vehicles
PIs	Principal Investigators
PM	particulate matter
$PM_{2.5}$	particulate matter of 2.5 microns in diameter or less
PM_{10}	particulate matter of 10 microns in diameter or less
ppb	parts per billion
ppm	parts per million
PPV	peak particle velocity
PRC	California Public Resources Code
PSB	Parnassus Services Building
PV	photovoltaic
RAB	Research and Academic Building
RCRA	Resource Conservation and Recovery Act of 1976
RCNM	Roadway Construction Noise Model
REAP	Rain Event Action Plan
REL	reference exposure level
RHNA	Regional Housing Need Allocation developed by ABAG
ROG	reactive organic gases

RPS	Renewable Portfolio Standard established by the CEC
RSWG	Research Space Working Group
RWQCB	Regional Water Quality Control Board
RWS	SFPUC Regional Water System
RWSAP	Retail Water Storage Allocation Plan
SAAQS	State ambient air quality standards
SamTrans	San Mateo County Transit District
SARA	Superfund Act and Reauthorization Act of 1986
SB X-1-2	California Senate Bill X 1-2
SB 32	California Senate Bill 32
SB 100	California Senate Bill 100
SB 107	California Senate Bill 107
SB 197	California Senate Bill 197
SB 350	California Senate Bill 350
SB 375	California Senate Bill 375
SB 610	California Senate Bill 610
SB 743	California Senate Bill 743
SB 1078	California Senate Bill 1078
SB 1383	California Senate Bill 1383
SB 1953	California Senate Bill 1953
SCS	Sustainable Communities Strategy required by SB 375
SEL	Sound Exposure Level
SEP	Southeast Treatment Plant
SEP	UC Strategic Energy Plan
SF6	sulfur hexafluoride
SFBAAB	San Francisco Bay Area Air Basin
SF-CHAMP	San Francisco Chained Activity Modeling Process
SFCTA	San Francisco Transportation Authority
SF DOE	San Francisco Department of Environment
SFDPH	San Francisco Department of Public Health
SFFD	San Francisco Fire Department
SFIA	San Francisco International Airport
SFPUC	San Francisco Public Utilities Commission
SFPW	San Francisco Public Works

SFRPD	San Francisco Recreation and Park Department
SFUSD	San Francisco Unified School District
SGMA	Sustainable Groundwater Management Act of 2014
SIP	State Implementation Plan for federal Clean Air Act compliance
SLCPs	short-lived climate pollutants
SoMa	South of Market
SO_2	sulfur dioxide
SOV	single-occupant vehicle
SPC	Structural Performance Category
SPP	UC Sustainable Practices Policy
STC	sound transmission class
STG	steam turbine generator
STIP	State Transportation Improvement Program
SVP	Society of Vertebrate Paleontology
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TACs	toxic air contaminants
TAZs	Transportation Analysis Zones
T-BACT	Best Available Control Technology for Toxics
TCR	The Climate Registry
TDM	Transportation Demand Management
TMDL	total maximum daily load for water quality standards
TMP	Transportation Management Plan
TOG	total organic gases
TPAs	Transit Priority Areas
TPY	tons per year
TRU	Transportation Refrigeration Units
TSCA	Toxic Substances Control Act
UC	University of California
UCMP	University of California Museum of Paleontology
UCOP	University of California Office of the President
UCPD	University of California, San Francisco Police Department
UCSF	University of California San Francisco
U.S. 101	U.S. Highway 101

USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
USPS	U.S. Postal Service
USTs	Underground storage tanks
UWMP	Urban Water Management Plan
$\mu g/m^3$	micrograms per cubic meter
VdBs	vibration decibels
VMT	vehicle miles traveled
VOCs	volatile organic compounds
W/ft^2	watt per square foot
WBERP	Whole Building Retrofit Program
WDRs	Waste Discharge Requirements
WGCEP	Working Group on California Earthquake Probabilities
WHO	World Health Organization
WPA	Works Progress Administration
WRCC	Western Regional Climate Center
WSA	Water Supply Assessment
WSE	Water Supply Evaluation
ZEV	zero emission vehicles

CHAPTER 1
Introduction

1.1 Purpose of the NHPH EIR

This Draft EIR (EIR) assesses the potentially significant environmental effects of implementation of the proposed University of California, San Francisco (UC San Francisco or UCSF) New Hospital at Parnassus Heights (NHPH) project.

The University has prepared this EIR on the NHPH for the following purposes:

- To inform the general public, the local community, and responsible, trustee and federal public agencies of the nature of the NHPH, its potentially significant environmental effects, feasible measures to mitigate those effects, as well as reasonable and feasible alternatives;
- To enable the University to consider the environmental consequences of implementing the NHPH, adopting the LRDP amendment, and approving the proposed New Hospital and related improvements;
- To enable responsible agencies to consider the environmental consequences of those NHPH proposals for which they have a role in approving or issuing permits; and
- To satisfy CEQA requirements.

The NHPH consists of the proposed New Hospital, and a number of related improvements, including a renovation of Moffitt and Long Hospitals; widening of Medical Center Way in the vicinity of the New Hospital; replacement of diesel fuel tanks and medical gas tanks; vegetation management and slope stabilization improvements; and a proposed pedestrian bridge and tunnel across Parnassus Avenue.

For purposes of providing distinction between the various components of this project, references made in this EIR to "New Hospital" relate only to the New Hospital portion of the overall project, whereas references made to "NHPH" relate to the overall project, including the New Hospital and its related improvements.

Under the proposed NHPH, the New Hospital would consist of a 15-story plus basement building of approximately 900,000 gross square feet (gsf) in size.[1] The functional services of the New Hospital would include inpatient services, diagnostic and treatment services, clinical support

[1] Please note that since the Notice of Preparation, including an Initial Study, for the NHPH was released (see Section 1.3, below), the proposed size of the New Hospital increased from 870,000 gsf to 900,000 gsf. However, as discussed further in Section 4.0, *Introduction to Environmental Analysis*, this incremental increase in hospital size would not change any conclusions of significance previously reached in the Initial Study.

services; logistical support, public areas, and supporting infrastructure. The New Hospital would have an inpatient bed count of 336 beds. In addition, under the NHPH, Long Hospital would provide 297 inpatient beds, and Moffitt Hospital would provide 49 inpatient beds. As a result, the total inpatient bed count at the campus site under the NHPH would be up to 682 beds; these beds would be available by December 2030. A number of supporting pedestrian and vehicular circulation, and loading improvements; utility improvements; and landscaping improvements would also be implemented for the New Hospital.

As one of the related improvements, interior renovations of Moffitt and Long Hospitals would be implemented to facilitate the inpatient clinical and support program needs for the increased patient capacity at Parnassus Heights. Also, under California Senate Bill 1953, Moffitt Hospital is required to undergo a seismic retrofit to remain an acute care facility past 2030. Accordingly, under the NHPH, Moffitt Hospital would undergo a number of structural upgrades and access improvements to bring the hospital up to code compliance.

In the New Hospital site vicinity, Medical Center Way would be widened to meet the San Francisco Fire Department's requirements for fire truck access, along with installation of sidewalks on each side of the road. In addition, the existing underground diesel fuel storage tanks with a storage capacity of 150,000 gallons located within Medical Center Way would be replaced with new code-compliant tanks with a maximum allowable storage capacity of 210,000 gallons. The existing medical gas (oxygen and nitrogen) tanks located in the existing hospital loading dock would also be replaced with new medical gas tanks at the campus site.

Improvements proposed on the hillside east of Medical Center Way would include implementation of vegetation management activities to reduce the potential for fire hazards, and potential slope stabilization improvements.

Lastly, to facilitate the ease and safety of pedestrians crossing Parnassus Avenue, and patient transport, a pedestrian bridge over Parnassus Avenue is proposed to connect the New Hospital to the planned Irving Street Arrival. Additionally, a tunnel beneath Parnassus Avenue is proposed to accommodate UCSF employees, utility lines, patient transport between Medical Building 1 and the New Hospital, and the movement of goods and materials.

A minor amendment to the 2014 LRDP would be required to adjust the Reserve boundary to accommodate the replacement site for the medical gas tanks, and maintain the Reserve at a minimum of 61 acres.

As required by the California Environmental Quality Act (CEQA), this EIR: (1) assesses the potentially significant direct and indirect environmental impacts, as well as the potentially significant cumulative impacts, associated with implementation of the NHPH; (2) identifies feasible means of avoiding or substantially lessening significant adverse impacts; and (3) evaluates a range of reasonable alternatives to the proposed NHPH, including the required No Project Alternative.

As described in CEQA and the CEQA Guidelines, public agencies cannot approve projects that may cause a significant environmental impact without adopting mitigation measures or

alternatives to avoid or substantially lessen those significant environmental effects, where feasible. In discharging this duty, a public agency shall balance the project's significant effects on the environment with its benefits, including economic, legal, social, technological, or other benefits. This EIR is an informational document, the purpose of which is to identify the potentially significant environmental effects of implementing the NHPH, and to indicate the manner in which those significant effects can be avoided or significantly lessened. The EIR also identifies any significant and unavoidable adverse impacts that cannot be mitigated to a less-than-significant level. Reasonable and feasible alternatives to the NHPH are identified that would avoid or substantially lessen any significant adverse environmental effects of the NHPH.

The University of California (University or UC) is the "lead agency" for the environmental review of the NHPH and a related minor amendment to the 2014 LRDP to incorporate a minor change to the boundary of the Reserve. UC is governed by the Board of Regents of UC (UC Regents), which under Article IX, Section 9, of the California Constitution, has "full powers of organization and government" subject only to very specific areas of legislative control. The UC Regents has the responsibility for certifying this EIR, and approving the minor 2014 LRDP amendment. Although the EIR does not determine the ultimate decision that will be made regarding implementing the NHPH, CEQA requires the Regents to consider the information in the EIR and make findings regarding each significant effect identified in the EIR.

1.2 Relationship of NHPH to the CPHP and 2014 LRDP

On November 20, 2014, the Regents adopted the 2014 LRDP. The 2014 LRDP serves as a comprehensive physical land use plan and policy document to guide the physical development of the San Francisco campus at all of its campus sites, accommodating future increases in enrollment and clinical, academic and research activities at UCSF and meeting its projected clinical, educational and research demand. The 2014 LRDP provides planning guidance for development anticipated to occur by horizon year 2035[2] and contains objectives to guide decisions for future facilities.

On January 21, 2021, the Regents approved Amendment #7 to the 2014 LRDP, which incorporated the Comprehensive Parnassus Heights Plan (CPHP) planning concepts and proposals into the 2014 LRDP. The 2014 LRDP, as amended, is the primary planning document for the Parnassus Heights campus site and will be used by UCSF to guide the development of the campus site through the next 30 years, or to an approximate horizon year of 2050. The CPHP updated the projected space needs for critical programs in research, patient care, and education at the campus site, included design principles for improving the functional and aesthetic design of the campus environment, and planned for needed on-campus housing. The CPHP included a larger development program at the Parnassus Heights campus site, including a larger New Hospital, compared to that included in the 2014 LRDP. LRDP Amendment #7 incorporated these changes into the LRDP, as well as revisions to functional zones; revisions to the space program; update to the projected campus site population; revisions to existing planning agreements, including

[2] With exception, as described below, for the Parnassus Heights campus site, which has an approximate horizon year of 2050.

revisions to the Regents' Resolution; modification of the Reserve boundary; and an update to the UCSF Greenhouse Gas Reduction Strategy.

The proposed New Hospital and related improvements are the subject of this project-specific EIR. With minor exceptions as described below, the proposed New Hospital would be within the conceptual design (including height, bulk and size) and operational parameters assumed for the New Hospital in the CPHP and analyzed at a program level in the CPHP EIR. In contrast to the New Hospital analyzed in the CPHP EIR, the New Hospital building as now proposed would not extend into the Reserve. However, the related improvement for the proposed medical gas storage tanks would result in a minor encroachment into the Reserve (though to a lesser extent than the New Hospital encroachment into the Reserve that was approved under 2014 LRDP Amendment #7). As a result of these changes, as indicated above, a minor amendment to the 2014 LRDP would be required to adjust the Reserve boundary accordingly to maintain the Reserve at a minimum of 61 acres.

The NHPH EIR is a stand-alone project EIR, and does not "tier" from the CPHP Final EIR under the tiering provisions of CEQA (CEQA Guidelines Section 15152). As such, while the NHPH EIR draws from CPHP Final EIR for relevant background information and information about future development on the Parnassus Heights campus site under the CPHP where appropriate, it assesses all environmental topics required under CEQA without focusing out any issues or incorporating analyses in the CPHP by reference, discloses all project and cumulative impacts, and identifies project-specific mitigation measures to reduce or avoid significant impacts.

1.3 Environmental Review Process

1.3.1 Notice of Preparation and Public Scoping

On July 28, 2021, a Notice of Preparation (NOP), including an Initial Study, was published for the NHPH EIR. A 30-day public comment period was provided which ended on August 27, 2021. A copy of the NOP/Initial Study is included in **Appendix A**. A scoping meeting was held on August 17, 2021, at Millberry Union on the Parnassus Heights campus site, to accept public input on environmental topics to be analyzed in the EIR and approaches to the impact analyses. Written comments received on the NOP, and a transcript of the scoping meeting, are included in **Appendix B**.

Pursuant to Section 15063 of the CEQA Guidelines, an Initial Study is a preliminary environmental analysis that may be used by the lead agency to focus an EIR on the environmental effects resulting from a proposed project that may be significant. The Initial Study prepared for the NHPH identified elements proposed under the NHPH that would clearly result in no impact or result in a less-than-significant impact (and in certain instances, with implementation of mitigation measures) under the CEQA significance criteria. No further analysis beyond that provided in the Initial Study is necessary for those elements and environmental topics.

The Initial Study also identified potential environmental effects that require detailed study in the EIR. As discussed in the Initial Study, these effects consist of less-than-significant impacts that

were included in this EIR in order to provide a more comprehensive analysis; impacts for which further analysis is necessary or desirable before determinations about impact significance could be made; impacts that were potentially significant but may be reduced to less-than-significant levels with the adoption of mitigation measures; and impacts that may be significant and unavoidable.

1.3.2 Draft EIR

This Draft EIR is being circulated to governmental agencies and to interested organizations and individuals that may wish to review and comment on the document. CEQA Guidelines Sections 15086(c) and 15096(d) require Responsible Agencies or other public agencies to provide comment on those project activities within the agency's area of expertise or project activities that are required to be carried out or approved by the agency, and the agency should support those comments with either oral or written documentation. Publication of this Draft EIR initiates a 60-day public review period, during which time UCSF will accept comments on the Draft EIR. The public review period for the Draft EIR for the proposed NHPH is from December 16, 2021 through February 14, 2022.

This Draft EIR, including supporting technical appendices and reference materials, can be found at: **http://tiny.ucsf.edu/HospitalDraftEIR**. The University encourages agencies and interested parties to submit written comments on the Draft EIR electronically to the following email address: **EIR@ucsf.edu**. Written comments may also be submitted via regular mail to Diane Wong, UCSF Real Estate - Campus Planning, 654 Minnesota Street, San Francisco, CA 94143-0287.

1.3.3 Comments and Responses and Final EIR

Following the close of the public and agency comment period on this Draft EIR on February 14, 2022, the University will prepare responses to all written comments and to oral comments received at the public hearing that raise CEQA-related environmental issues regarding the NHPH and the analysis in this EIR. The responses will be published in the Final EIR. The Final EIR will be considered by the Regents in a public meeting and certified if it is determined to be in compliance with CEQA. Upon certification of the Final EIR, the Regents will consider whether to adopt the proposed minor LRDP amendment, as well as approve the proposed NHPH.

1.3.4 Mitigation Monitoring and Reporting Program

Throughout this EIR, mitigation measures have been described in language that will facilitate establishment of a Mitigation Monitoring and Reporting Program (MMRP). As required under CEQA (see CEQA Guidelines, Section 15097), an MMRP will be prepared and presented to the Regents at the time of certification of the Final EIR for the proposed NHPH and will identify the specific timing and roles and responsibilities for implementation of adopted mitigation measures.

1.4 NHPH Campus, Public and Agency Outreach

The NHPH planning process included extensive outreach to individuals, agencies and the general public to provide information about the proposal and to receive feedback. Over the course of the past year, UCSF hosted a series of community meetings to discuss various NHPH topics, including building design, landscaping, open space, public realm, sustainability, and mobility (i.e., pedestrian, bicycle and vehicular circulation). Community meetings often included presentations by the architecture firm of Herzog & de Meuron and their design partners, and provided opportunities for neighbors to have discussions directly with the designers to provide input. Community meetings are ongoing and feedback from the community continues to shape and refine the proposal.

UCSF staff continue to meet with City agencies that have regulatory authority over aspects of the proposal that are in the public right-of-way, such as the proposed bridge and tunnel, curb cuts, traffic signal, and bus stop relocation; and temporary construction-period activities that may affect bus stops, crosswalks and parking lanes.

1.5 Uses of the NHPH EIR

This NHPH EIR will be used by the UC Regents to evaluate the environmental implications of implementing the proposed NHPH.

1.6 Approvals Required

UC Regents Approvals

- Certification of the Final EIR
- Minor LRDP Amendment to adjust the boundaries of the UCSF Mount Sutro Open Space Reserve
- Design

Bay Area Air Quality Management District

- Stationary source permit for diesel generators

California Department of Healthcare Access and Information (HCAI) Approvals
[formerly the California Office of Statewide Health Planning and Development (OSHPD)]

- Building permit approval and construction oversight for clinical facilities

City Approvals

- Board of Supervisors
  - Parnassus Avenue Pedestrian bridge and tunnel within City Right-of-Way
    - Lease of air rights for pedestrian bridge above Parnassus Avenue
    - Lease of property for underground tunnel and utilities beneath Parnassus Avenue

  - Second floor horizontal projection over City Right-of-Way (for New Hospital Second Floor Projection Design Options 1 and 2)
    - Major encroachment permit

- San Francisco Public Works and San Francisco Public Utilities Commission
  - Curb modifications including street parking controls and curb cuts for driveways
  - Tree removal permit
  - Tiebacks in public right-of-way
  - Street light relocation, water meters, fire hydrants
- San Francisco Department of Building Inspection
  - Site permit to facilitate shoring permit and tower crane permit
- San Francisco Municipal Transportation Agency
  - Bus stop relocation, traffic signal, pedestrian crossing, lane striping

1.7 Potential Implications of COVID-19

The Coronavirus disease 2019 (COVID-19) pandemic has introduced a substantial amount of uncertainty in human lives. The pandemic directly affected human behavior, requiring people to temporarily reduce mobility, and make other changes to the manner in which they live. Indirectly it has affected the economy resulting in reduced consumer spending, business closures, and widespread unemployment. While some of these trends are considered short-term and to some extent, have been reversed, it is likely that there could be more permanent changes in the ways humans live and behave in the post pandemic world. It is reasonable to expect that there will be more remote learning, telework, and online shopping compared to the pre-pandemic times. As with humans, institutions such as UCSF are also expected to make changes to the manner in which they operate. As a result of the pandemic, UCSF will likely consider operational changes such as increases in telework and telehealth services, especially primary and secondary health care services. At the same time, the pandemic has highlighted the importance of biomedical research and advanced tertiary and quaternary health care, along with the need for more doctors and increased and improved inpatient facilities. Although UCSF continues to evaluate operational changes such as increased telehealth and telework, the net effect of the pandemic on the Parnassus Heights campus site development and operations cannot be predicted at this point in time without speculation.

1.8 Report Organization

Chapter 1, ***Introduction***, provides an introduction and overview of the proposed NHPH; describes the intended uses of the EIR, including the review and certification process; and discusses the organization of the Draft EIR.

Chapter 2, ***Summary of Environmental Impacts and Mitigation Measures***, summarizes the environmental impacts that would result from implementation of the proposed NHPH, lists proposed mitigation measures and indicates the level of significance of impacts after mitigation. A summary of the alternatives to the NHPH, and the environmentally superior alternative, is also provided.

Chapter 3, ***Project Description***, provides a detailed description of the proposed NHPH, including relationship of NHPH to the 2014 LRDP, as amended by the CPHP; a discussion of project need and objectives, a description of proposed physical development at the Parnassus Heights campus site under the NHPH, and a description of how development at the campus site under the NHPH varies from that described in the CPHP.

Chapter 4, ***Environmental Setting, Impacts and Mitigation Measures***, provides, with respect to each environmental impact category an introduction to environmental analysis, describes the NHPH's environmental setting, includes a regulatory framework, and discusses the methodology used for evaluating the environmental impacts of the proposed NHPH; provides a project-level analysis of the proposed NHPH and related improvements, and an analysis of cumulative impacts; and identifies mitigation measures that would reduce or avoid those impacts that are found to be significant.

Chapter 5, ***Other CEQA Considerations***, summarizes significant and unavoidable impacts, significant irreversible environmental changes, and any growth-inducing impacts.

Chapter 6, ***Alternatives***, describes the alternatives to the proposed NHPH that could avoid or substantially lessen the project's significant effects and evaluates their environmental effects in comparison to the proposed NHPH.

Chapter 7, ***Report Preparation***, identifies the persons who prepared the EIR, and individuals who were consulted during its preparation.

Appendices. The appendices include the NOP and Initial Study, written and oral comments on the NOP, and various supporting technical studies prepared for the Draft EIR.

CHAPTER 2
Summary

2.1 Introduction

This EIR assesses the potentially significant environmental effects that could result from the implementation of the proposed University of California, San Francisco (UC San Francisco or UCSF) New Hospital at Parnassus Heights (NHPH) project.

The University of California (University or UC) is the "lead agency" for the environmental review of the NHPH and a related minor amendment to the 2014 LRDP to incorporate a minor change to the boundary of the Reserve.

This summary highlights the major areas of importance in the environmental analysis for the proposed NHPH, as required by Section 15123 of the CEQA Guidelines. It provides a brief description of the NHPH, the project objectives, the significant and unavoidable environmental effects, alternatives to the NHPH, and areas of controversy known to the University. In addition, this chapter summarizes (1) all potential environmental impacts that would occur as the result of implementation of the NHPH; (2) the recommended mitigation measures that would avoid or reduce significant environmental impacts; and (3) the level of impact significance after mitigation measures are implemented.

2.2 Project Description

On November 20, 2014, the Regents adopted the 2014 LRDP. The 2014 LRDP serves as a comprehensive physical land use plan and policy document to guide the physical development of the San Francisco campus at all of its campus sites, to accommodate future increases in enrollment and clinical, academic and research activities at UCSF and meet its projected clinical, educational and research demand. The 2014 LRDP provides planning guidance for development anticipated to occur through horizon year 2035[1] and contains objectives to guide decisions for future facilities.

On January 21, 2021, the Regents approved Amendment #7 to the 2014 LRDP, which incorporated the Comprehensive Parnassus Heights Plan (CPHP) planning concepts and proposals into the 2014 LRDP. The 2014 LRDP, as amended, is the primary planning document for the Parnassus Heights campus site and will be used by UCSF to guide the development of the

[1] With exception, as described below, for the Parnassus Heights campus site, which has an approximate horizon year of 2050.

campus site through the next 30 years, or to an approximate horizon year of 2050. The CPHP updated the projected space needs for critical programs in research, patient care, and education at the campus site, included design principles for improving the functional and aesthetic design of the campus environment, and planned for needed on-campus housing. The CPHP included a larger development program at the Parnassus Heights campus site, including a larger New Hospital (955,000 gsf), compared to that included in the 2014 LRDP. LRDP Amendment #7 incorporated these changes into the LRDP, as well as revisions to functional zones; revisions to the space program; update to the projected campus site population; revisions to existing planning agreements, including revisions to the Regents' Resolution; modification of the Reserve boundary; and an update to the UCSF Greenhouse Gas Reduction Strategy.

The CPHP Final EIR programmatically analyzed the environmental impacts of the CPHP, including the impacts of the proposed New Hospital for which only broad parameters were known at the time. The proposed New Hospital is the largest of the projects planned at the Parnassus Heights campus site under the CPHP.

The proposed NHPH is the subject of this project-specific EIR. The NHPH consists of the proposed New Hospital, and a number of related improvements, including a renovation of Moffitt and Long Hospitals; widening of Medical Center Way in the vicinity of the New Hospital; replacement of diesel fuel tanks and medical gas tanks; vegetation management and slope stabilization improvements; and a proposed pedestrian bridge and tunnel across Parnassus Avenue.

Under the proposed NHPH, the New Hospital would consist of a 15-story plus basement building of approximately 900,000 gsf in size. The functional services of the New Hospital would include inpatient services, diagnostic and treatment services, clinical support services; logistical support, public areas, and supporting infrastructure. The New Hospital would have an inpatient bed count of 336 beds. In addition, under the NHPH, Long Hospital would provide 297 inpatient beds, and Moffitt Hospital would provide 49 inpatient beds. As a result, the total inpatient bed count at the campus site under the NHPH would be up to 682 beds; these beds would be available by December 2030. A number of supporting pedestrian and vehicular circulation, and loading improvements; utility improvements; and landscaping improvements would also be implemented for the New Hospital.

As one of the related improvements, interior renovations of Moffitt and Long Hospitals would be implemented to facilitate the inpatient clinical and support program needs for the increased patient capacity at the Parnassus Heights campus site. Also, under California Senate Bill 1953, Moffitt Hospital is required to undergo a seismic retrofit to remain an acute care facility past 2030. Accordingly, under the NHPH, Moffitt Hospital would undergo a number of structural upgrades and access improvements to bring the hospital up to code.

In the New Hospital site vicinity, Medical Center Way would be widened to meet the San Francisco Fire Department's requirements for fire truck access, along with installation of sidewalks on each side of the road. In addition, the existing underground diesel fuel storage tanks with a storage capacity of 150,000 gallons located within Medical Center Way would be replaced with new code-

compliant tanks with a maximum allowable storage capacity of 210,000 gallons. The existing medical gas (oxygen and nitrogen) tanks located in the existing hospital loading dock would also be replaced with new medical gas tanks at the campus site.

Improvements proposed on the hillside east of Medical Center Way would include implementation of vegetation management activities to reduce the potential for fire hazards, and potential slope stabilization improvements.

Lastly, to facilitate the ease and safety of pedestrians crossing Parnassus Avenue, and patient transport, a pedestrian bridge over Parnassus Avenue is proposed to connect the New Hospital to the planned Irving Street Arrival. Additionally, a tunnel beneath Parnassus Avenue is proposed to accommodate UCSF employees, utility lines, patient transport between Medical Building 1 and the New Hospital, and the movement of goods and materials.

A minor amendment to the 2014 LRDP would be required to adjust the Reserve boundary to accommodate the replacement site for the medical gas tanks, while maintaining the Reserve at a minimum of 61 acres.

2.3 Project Objectives

The key objectives for the proposed NHPH are as follows:

- Meet seismic requirements of California Senate Bill 1953 by developing a new, seismically-sound, state-of-the-art inpatient facility.
- Site and develop a new inpatient facility in a way that optimizes operational activities with other clinical facilities at Parnassus Heights, such as Moffitt and Long Hospitals, and Medical Building 1.
- Optimize the reuse of Moffitt Hospital by seismically retrofitting the building and judiciously reusing limited portions for inpatient use, as physical requirements allow, balanced with reuse of Moffitt Hospital for other needed clinical and support functions.
- Increase inpatient beds at Parnassus Heights to address severe constraints on capacity and access to care, and to meet the needs of a growing and aging Bay Area population.
- Increase inpatient beds at Parnassus Heights to allow for the capacity to provide inpatient health care in times of severe strain such as the current pandemic, without resorting to reducing or canceling non-essential surgeries to create bed capacity.
- Develop a new inpatient facility that has sufficient space to accommodate modern regulatory requirements and industry standards of contemporary hospitals, such as construction codes, sizes of operating rooms, ratio of operating rooms to pre-and post-recovery areas, and space for privacy and infection control issues.
- Develop a new inpatient facility that has sufficient space to accommodate modern technology, including telemedicine, robotics, and new diagnostic, imaging, testing, treatment, surgery and laboratory equipment, all requiring substantial infrastructure and space.
- Develop a new inpatient facility that has sufficient space to accommodate patient satisfaction requirements of contemporary hospitals, such as private patient rooms of sufficient size.

- Develop a new inpatient facility that is optimized in its spatial layout to enhance functionality and efficiency.
- Develop spaces for clinical and translational research and learning in or adjacent to clinical areas where patients are located.

The following are objectives from the CPHP relating to future development at the Parnassus Heights campus site that pertain to the proposed NHPH:

- Revitalize the aging Parnassus Heights campus to enhance its place as a premier educational, research, and clinical institution -- one that draws in research and clinical faculty, staff, students, and trainees.
- Fulfill the need for contemporary research, educational, clinical, and support spaces that have been lacking at Parnassus Heights for decades.

In addition, the 2014 LRDP Final EIR also identified certain objectives specific to the Parnassus Heights campus site that are relevant to the NHPH:

- Ensure that adequate space is provided to foster collaboration and to facilitate the inter-dependence and connectivity for operational efficiency and effectiveness of instruction, clinical, research and support uses in close physical proximity to each other.
- Ensure that Long Hospital and the New Hospital Addition have adequate clinical and administrative support and are aligned with education, research and specialized care programs and support that remain at the campus site.

2.4 Significant and Unavoidable Environmental Effects

Throughout this EIR, significant environmental impacts are identified, and mitigation measures are described that would eliminate the impacts or reduce them to a less-than significant level. Similarly, many impacts are identified that would be less than significant without the need for mitigation measures. There are, however, a few impacts that cannot be eliminated or cannot be reduced to a level of insignificance even with the implementation of feasible mitigation measures. The significant and unavoidable environmental impacts of the NHPH are listed in **Table 2-1**, below.

TABLE 2-1
SIGNIFICANT AND UNAVOIDABLE IMPACTS OF THE PROPOSED NHPH

Impacts
4.1 Aesthetics, Wind and Shadow
Impact AES-4: Implementation of the NHPH would potentially create wind hazards in publicly accessible areas of substantial pedestrian use.
Impact C-AES-3: Implementation of the NHPH, combined with cumulative projects, would potentially create wind hazards in publicly accessible areas of substantial pedestrian use.
4.11 Noise and Vibration
Impact NOI-1: Construction activities under the NHPH would generate a substantial temporary increase in ambient noise levels in the vicinity of the construction project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.
Impact C-NOI-1: Implementation of the NHPH, combined with cumulative construction noise in the project area, would generate a substantial temporary increase in ambient noise levels from construction activity in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.

2.5 Alternatives to the Proposed Project

The following alternatives were analyzed in detail in the EIR and compared to the proposed NHPH. The objective of the alternatives analysis is to determine whether an alternative would feasibly obtain most of the project objectives, while avoiding or substantially lessening some of the significant effects of the proposed NHPH.

Alternative 1: No Project Alternative, consisting of:

1A: No Project - No Development; and

1B: No Project - Smaller Hospital per 2014 LRDP;

Alternative 2: Reduced Project; and

Alternative 3: New Hospital - Phased Option.

2.6 Areas of Controversy

Areas of controversy known to the lead agencies, including issues raised by agencies and the public, must be identified in the Summary of an EIR (14 Cal. Code Regs. Section 15123).

On July 28, 2021, a Notice of Preparation (NOP), including an Initial Study, was published for the NHPH EIR. A 30-day public comment period ended on August 27, 2021. A copy of the NOP/Initial Study is included in **Appendix A**. A scoping meeting was held on August 17, 2021 via Zoom to accept public input on environmental topics to be analyzed in the EIR and approaches to the impact analyses. Written comments received on the NOP, and a transcript of verbal comments received during the scoping meeting, are included in **Appendix B**.

Based on the comments received during the public scoping period, issues of concern for the proposed NHPH include the following:

Project Description

- Relationship of NHPH to CPHP, including space ceiling
- COVID influence on planning for New Hospital and renovation of Moffitt and Long Hospitals
- Detail on the proposed renovation of Moffitt and Long Hospitals, including the timing of implementation of required seismic improvements, construction sequencing, and proposed uses within the hospitals
- Compliance of NHPH with sustainability goals and LEED certification

Aesthetics, Wind, and Shadow

- Concerns regarding wind effects of NHPH on Parnassus Avenue, open space and neighboring areas; and measures to reduce wind effects
- Concerns regarding shadow effects of NHPH on uses within Golden Gate Park, other neighboring parks and playgrounds, and the Reserve

Air Quality/Greenhouse Gas Emissions

- Potential construction air emissions from NHPH construction traffic and dust
- Potential operational increases in air pollutant and greenhouse gas emissions from NHPH stationary and mobile sources; and need for mitigation

Biological Resources

- Concerns about bird strikes, and bird-safe measures included in New Hospital design (including related to lighting and window treatments)
- Concerns regarding NHPH effect on removal of habitat, and effects on wildlife

Hazards and Hazardous Materials

- Concerns regarding potential to encounter naturally occurring asbestos during construction

Hydrology and Water Quality/Utilities and Service Systems

- NHPH measures to minimize operational water use; use of recycled water and rainwater collection
- Potential water demand during construction

Population and Housing

- Increase in NHPH population in 2030 and 2050
- Effects of NHPH population on housing shortfalls; requests for additional UCSF housing to serve NHPH

Transportation

- Information on NHPH travel mode, including vehicles and transit; and trip commute distances
- Potential public transportation improvements needed due to NHPH
- Concerns regarding potential traffic hazards due to NHPH
- Information on proposed traffic signal at Parnassus Avenue/Hillway Avenue
- Traffic mitigation, including Transportation Demand Management measures
- Parking availability during construction

Cumulative Impacts

- Rationale to allocate surplus square footage from reduced New Hospital size to future CPHP development; assumed programming for reallocated square footage; and potential environmental effects (e.g., wind and shadow) associated with reallocated square footage
- Account for CPHP population and transportation growth in 2030 and 2050 impact analysis
- Timing for demolition, building replacement, and new building construction planned under 2014 LRDP and CPHP
- San Francisco Public Utilities Commission Auxiliary Water Supply System improvements

Alternatives

- Include analysis of alternative New Hospital design with lower height and locating more facilities below ground level.

Please also see Section 4.0.2, *Scope of Analysis*, for a discussion of the approach for determining which issues are within the purview of CEQA and therefore included in the scope of this EIR.

2.7 Summary of Impacts and Mitigation Measures

Table 2-2 summarizes the impacts of the proposed NHPH, identifies the significance determination of each impact, and presents the full text of the identified mitigation measures.

TABLE 2-2
SUMMARY OF NHPH IMPACTS AND MITIGATION MEASURES

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
EIR Section 4.1 Aesthetics, Wind, and Shadow			
Impact AES-1: The NHPH would not have a substantial adverse effect on a scenic vista.	LTS	None required.	NA
Impact AES-2: The NHPH would be located in an urbanized area and would not conflict with applicable zoning and other regulations governing scenic quality.	LTS	None required.	NA
Impact AES-3: The NHPH would create a new source of substantial light or glare which would adversely affect daytime or nighttime views in the area.	S	**NHPH Mitigation Measure AES-3: Minimize light and glare resulting from new development.** Light and glare from new development shall be minimized through use of landscaping materials and choice of primary facade materials. Design standards and guidelines to minimize light and glare shall be adopted for the new development, including: • Reflective metal walls and mirrored glass walls shall not be used as primary building materials for facades. • Installation of illuminated building signage shall strive to be consistent with UCSF design guidelines and/or City Planning Code sign standards for illumination. • Exterior light fixtures shall be configured to emphasize close spacing and lower intensity light. Light fixtures shall use luminaries that do not direct the cone of light towards off-campus structures. • New above-ground tanks shall be painted so as to not contain reflective surfaces.	LTS
Impact AES-4: Implementation of the NHPH would potentially create wind hazards in publicly accessible areas of substantial pedestrian use.	S	**NHPH Mitigation Measure AES-4: Implement Wind Mitigation and Safety Measures.** Prior to project construction, UCSF shall engage a qualified wind consultant to identify potential further feasible design alterations to the New Hospital and to evaluate potential other wind reduction measures, such as wind screens, with the goal of reducing the number of hours by which wind speeds on Parnassus Avenue exceed the City of San Francisco's pedestrian wind hazard criterion, without increasing the total number of test point locations exceeding the wind hazard criterion. The ultimate intent is to eliminate any wind hazard exceedance on Parnassus Avenue in the vicinity of the New Hospital in the Existing plus NHPH scenario without unduly burdening the New Hospital design program in a manner that would adversely affect the building's intended function. If UCSF finds that potential design change(s) or other wind speed reduction strategies that would avoid one or more wind hazard exceedances in the Existing plus NHPH scenario to be feasible, then UCSF shall implement the change(s)) needed to achieve such avoidance. If UCSF finds that these potential design change(s) or other wind speed reduction strategies are not feasible as they would unduly restrict the proposed building's space program, result in operational inefficiencies, and/or substantially higher costs, the New Hospital may nonetheless be constructed as approved, provided that the New Hospital incorporates wind speed reduction strategies to the maximum feasible extent, as determined by UCSF in consultation with the wind consultant. Potential design changes could include, but not necessarily be limited to, such measures as horizontal or vertical fins or other projections added to the NHPH, added building setbacks, and/or further rounded/chamfered corners, and other building modifications. Other	SU

S = Significant Impact
SU = Significant and Unavoidable with Mitigation
LTS = Less than Significant impact
NA = Not applicable

TABLE 2-2 (CONTINUED)
SUMMARY OF NHPH IMPACTS AND MITIGATION MEASURES

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
EIR Section 4.1 Aesthetics, Wind, and Shadow (cont.)			
Impact AES-4 (cont.)		wind speed reduction strategies could potentially include features such as landscaping, localized installation of porous/solid screens, installation of canopies along non-NHPH building frontages, and the like.	
Impact AES-5: The NHPH would not create new shadow in a manner that would substantially and adversely affect the use and enjoyment of publicly accessible open spaces.	LTS	None required.	NA
Impact C-AES-1: The NHPH, combined with cumulative projects, would not have a substantial adverse effect on a scenic vista or conflict with applicable zoning and other regulations governing scenic quality.	LTS	None required.	NA
Impact C-AES-2: The NHPH, combined with cumulative projects, would not create a new source of substantial light or glare which would adversely affect daytime or nighttime views in the area.	LTS	None required.	NA
Impact C-AES-3: Implementation of the NHPH, combined with cumulative projects, would potentially create wind hazards in publicly accessible areas of substantial pedestrian use.	S	**NHPH Mitigation Measure C-AES-3: Design new cumulative buildings to minimize wind impacts at pedestrian level.** Prior to the approval of the design of individual cumulative buildings, which will be developed pursuant to the CPHP, for which one or more building facades would have a height of 80 feet or more, UCSF shall engage a qualified wind consultant to conduct wind tunnel testing of the proposed building(s) to determine whether the building(s) would result in new exceedance(s) of the City of San Francisco's pedestrian wind hazard criterion. The wind tunnel testing shall be conducted for the building(s) under consideration in the context of then-existing conditions as well as in the context of conditions representative of then-anticipated CPHP buildout (the buildout scenario in this EIR, as may be modified from time to time by UCSF to reflect actual building designs known at the time) so as to determine whether the individual building(s) and/or the buildout condition would result in exceedances of the wind hazard criterion. If the wind tunnel analysis determines that the building(s)' design or buildout conditions would increase the hours of wind hazard exceedance or the number of test points subject to hazardous winds, compared to then-existing conditions, UCSF shall work with the wind consultant to identify feasible mitigation strategies, including design changes (e.g., setbacks, rounded/chamfered building corners, stepped facades, etc.), to eliminate or reduce wind hazards to the maximum feasible extent. If UCSF finds that these changes or other wind speed reduction strategies are not feasible as they would unduly restrict the proposed building's space program, result in operational inefficiencies, and/or substantially higher costs, the building(s) may nonetheless be approved provided that the project incorporates wind speed reduction strategies to the maximum feasible extent, as determined by UCSF in consultation with the wind consultant. Wind speed reduction strategies could also include features such as landscaping, localized installation of porous/solid screens, installation of canopies along building frontages, and the like.	SU

S = Significant Impact
SU = Significant and Unavoidable with Mitigation
LTS = Less than Significant impact
NA = Not applicable

TABLE 2-2 (CONTINUED)
SUMMARY OF NHPH IMPACTS AND MITIGATION MEASURES

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
EIR Section 4.1 Aesthetics, Wind, and Shadow (cont.)			
Impact C-AES-4: Implementation of the NHPH, combined with cumulative projects, would not create new shadow that would substantially and adversely affect the use and enjoyment of publicly accessible open spaces.	LTS	None required.	NA
EIR Section 4.2 Air Quality			
Impact AIR-1: Construction activities associated with the NHPH would result in a cumulatively considerable net increase in emissions of a criteria pollutant for which the project region is non-attainment under an applicable federal or State ambient air quality standard.	S	**NHPH Mitigation Measure AIR-1: Best Management Practices for Controlling Particulate Emissions during Construction** The following BAAQMD Best Management Practices for particulate emissions control will be required for all construction activities related to the NHPH (BAAQMD, 2017a). These measures will reduce particulate emissions primarily during soil movement, grading and demolition activities but also during vehicle and equipment movement on unpaved project sites. • All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day. • All haul trucks transporting soil, sand, or other loose material off-site shall be covered. • All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited. • All vehicle speeds on unpaved roads shall be limited to 15 mph. • All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used. • Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, § 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points. • All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation. • The construction contractor shall post a publicly visible sign on the project site(s) with the telephone number and person to contact at UCSF regarding dust complaints. This person shall respond and take corrective action within 48 hours. BAAQMD's telephone number shall also be visible to ensure compliance with applicable regulations.	LTS

S = Significant Impact
SU = Significant and Unavoidable with Mitigation
LTS = Less than Significant impact
NA = Not applicable

TABLE 2-2 (CONTINUED)
SUMMARY OF NHPH IMPACTS AND MITIGATION MEASURES

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
EIR Section 4.2 Air Quality (cont.)			
Impact AIR-2: Operation of the NHPH would not result in a cumulatively considerable net increase in emissions of a criteria pollutant for which the project region is non-attainment under an applicable federal or State ambient air quality standard.	LTS	None required.	NA
Impact AIR-3: Construction activities for the NHPH could expose sensitive receptors to substantial pollutant concentrations and exceed the LRDP EIR standard of significance by exposing receptors to toxic air contaminant emissions that (1) result in a cancer risk greater than 10 cancer cases per 1 million people; or (2) for acute or chronic effects, result in concentrations of toxic air contaminant emissions with a Hazard Index of 1.0 or greater.	S	**NHPH Mitigation Measure AIR-3: Clean Construction Equipment for NHPH Construction** The construction contractor(s) shall develop a plan demonstrating that the off-road equipment used on-site to construct the NHPH would achieve a fleet-wide average 70 percent reduction in PM_{10} exhaust emissions, compared to uncontrolled aggregate statewide emission rates for similar equipment. One feasible plan to achieve this reduction would include the following: • All mobile diesel-powered off-road equipment larger than 25 horsepower and operating on the project site for more than two days continuously shall be equipped with engines meeting USEPA NOx and PM_{10} emissions standards for Tier 4 final engines or equivalent[2]; and • Use of electrically-powered construction equipment to the degree available and feasible.	LTS
Impact AIR-4: Operations under the NHPH would not expose sensitive receptors to substantial pollutant concentrations or exceed the LRDP EIR standard of significance by exposing receptors to toxic air contaminant emissions that (1) result in a cancer risk greater than 10 cancer cases per 1 million people; or (2) for acute or chronic effects, result in concentrations of toxic air contaminant emissions with a Hazard Index of 1.0 or greater.	LTS	None required.	NA
Impact AIR-5: The NHPH could conflict with or obstruct implementation of the *2017 Clean Air Plan*.	LTS	None required.	NA
Impact C-AIR-1: Construction and operation of the NHPH, combined with cumulative development in the project area, would result in a cumulatively considerable net increase of a criteria pollutant for which the project region is non-attainment under an applicable federal or State ambient air quality standard.	S	Implement NHPH Mitigation Measure AIR-1.	LTS

[2] An equivalent method for particulate emissions may include Level 3 Verified Diesel Emissions Control Strategies of the CARB for particulate matter (filtration).

S = Significant Impact
SU = Significant and Unavoidable with Mitigation
LTS = Less than Significant impact
NA = Not applicable

TABLE 2-2 (CONTINUED)
SUMMARY OF NHPH IMPACTS AND MITIGATION MEASURES

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
EIR Section 4.2 Air Quality (cont.)			
Impact C-AIR-2: Implementation of the NHPH could contribute considerably to cumulative emissions of TACs and $PM_{2.5}$ that could expose sensitive receptors to substantial pollutant concentrations or health risks.	S	Implement NHPH Mitigation Measures AIR-3.	LTS
EIR Section 4.3 Biological Resources			
Impact BIO-1: Implementation of the NHPH would not have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service.	S	**NHPH Mitigation Measure BIO-1a: Protection of Monarch Butterflies** • Prior to demolition activities, a qualified biologist familiar with monarch butterfly behavior and habitat shall conduct a preconstruction survey for the presence of overwintering monarch butterfly aggregations. The survey shall be conducted in December or January during the period when overwintering aggregations appear. Should an overwintering aggregation be identified in trees within 200 feet of the proposed work sites within or adjacent to the Reserve, a 200-foot buffer shall be established around the occupied trees until the aggregation has dispersed, and construction within the buffer zone shall be avoided for the duration of the overwintering period. **NHPH Mitigation Measure BIO-1b: Protection of Nesting Birds** • Tree and vegetation removal or pruning associated with project construction and commencement of outdoor project construction activities shall be avoided from February 1 through August 31, the primary local bird nesting season, to the extent feasible. If tree and vegetation removal or pruning associated with project construction is proposed during the nesting period, within seven days prior to the proposed start of construction activities a qualified biologist shall conduct a nesting bird survey of all potential habitat at the construction site and within 250 feet of the perimeter of the construction site. • If any active nests are detected during the pre-construction survey, the qualified biologist shall recommend a work-exclusion buffer zone that shall be designated around the active nest to allow for both the successful fledging of the birds and initiation of work on some portions of the project site. A qualified biologist shall monitor any occupied nest located within a protective buffer zone in order to determine if the designated buffer zone is effective and when the buffer zone is no longer needed. If the buffer zone is determined to be ineffective, its size shall be increased until it is effective, as determined by the qualified biologist, or work within one-quarter mile of the nest shall cease until the young have fledged and are independent of the nest. **NHPH Mitigation Measure BIO-1c: Protection of Roosting Bats** • Prior to project construction, a qualified bat biologist shall conduct a pre-construction survey for roosting bats in trees to be removed or pruned and structures to be demolished within the work area and within a 50-foot radius of the work area. If no roosting bats are found, no further action is required. If active bat roosts are found within 50 feet of the work area, these roosts shall be flagged and avoided with a suitable buffer, determined in coordination with CDFW.	LTS

S = Significant Impact
SU = Significant and Unavoidable with Mitigation
LTS = Less than Significant impact
NA = Not applicable

TABLE 2-2 (CONTINUED)
SUMMARY OF NHPH IMPACTS AND MITIGATION MEASURES

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
EIR Section 4.3 Biological Resources (cont.)			
Impact BIO-1 (cont.)		• If a non-maternal roost of bats is found in a tree or structure to be removed or demolished as part of project construction, the individuals shall be safely evicted, under the direction of a qualified bat biologist, by opening the roosting area to allow airflow through the cavity. Removal or demolition should occur no sooner than at least two nights after the initial minor site modification (to alter airflow). This action allows bats to leave during darkness, thus increasing their chance of finding new roosts with a minimum of disturbance. Departure of the bats from the construction area shall be confirmed with a follow-up survey by a qualified bat biologist prior to start of construction. • If active maternity roosts are found in trees or structures that will be removed or demolished as part of project construction, tree removal or demolition of that tree or structure shall commence and be completed before maternity roosting colonies form (generally before March 1), or shall not commence until after young are flying (generally after July 31). Active maternity roosts shall not be disturbed between March 1 and July 31. **NHPH Mitigation Measure BIO-1d: Worker Education** • A qualified biologist shall provide training to all construction workers prior to starting work on plan components. The training shall cover special-status species with potential to be found onsite, avoidance measures to be undertaken if a species is found, and best management practices for site housekeeping. **NHPH Mitigation Measure BIO-1e: Botanical Surveys** • Within suitable habitat for special-status plant species (open gravel areas along roadsides and hillsides for coastal triquetrella), a qualified biologist approved by CDFW shall conduct a focused survey for all species with potential to be present prior to ground disturbance. If no special-status plants are observed, no further action is required. • If special-status plant species, including coastal triquetrella are observed, the plants will be avoided with a suitable buffer, determined in coordination with CDFW. The buffer zone shall be clearly demarcated using exclusion fencing. If establishing an avoidance buffer is not feasible, individual plants shall be transplanted to an area with suitable physical and biological conditions outside of the work area and monitored and adaptively managed for five years.	
Impact BIO-2: Implementation of the NHPH would not interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.	S	**NHPH Mitigation Measure BIO-2a: Prevention of Harm to Migrating Birds During Construction** The construction contractor shall ensure that construction areas requiring lights shall include the following measures to the extent feasible: • Construction-related lighting shall be fully shielded and focused down to ensure no significant illumination passes beyond the immediate work area. Lighting shall be positioned around the perimeter of the work area positioned toward activity and not surrounding habitat of the Reserve.	LTS

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LTS = Less than Significant impact
NA = Not applicable

TABLE 2-2 (CONTINUED)
SUMMARY OF NHPH IMPACTS AND MITIGATION MEASURES

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
EIR Section 4.3 Biological Resources (cont.)			
Impact BIO-2 (cont.)		• Yellow or orange light shall be used where possible. • Construction personnel shall reduce the amount of lighting to the minimum necessary to safely accomplish the work. • Night construction near suitable habitat for nesting and migratory birds and bats (i.e. the Reserve forest and understory vegetation) shall be avoided during nesting season (February 15 – August 15). If night construction near these areas cannot be avoided, light shall not be allowed to shine directly into suitable habitat. **NHPH Mitigation Measure BIO-2b: Bird-Safe Building Treatments** UCSF staff shall confirm that building plans include the required building design measures prior to the start of construction: • Avoid installation of lighting in areas where not required for public safety. • Examine and adopt alternatives to bright, all-night, floor-wide lighting when interior lights would be visible from the exterior or when exterior lights must be left on at night, including: – Installing motion-sensitive lighting – Installing task lighting – Installing programmable timers – Installing fixtures that use lower-wattage, sodium, and yellow-red spectrum lighting (if compatible with personnel safety requirements) • Where exterior lights are to be left on at night, install fully shielded lights to contain and direct light away from the sky. • Employ glazing options such as use of either fritted glass, Dichroic glass, etched glass, translucent glass, or glass that reflects ultraviolet light in appropriate portions of the building façade. • Minimize light and glare resulting from the new building through the use of landscaping materials and choice of primary façade materials. Project design shall not include reflective metal walls and mirrored glass walls as primary building materials for facades.	
Impact C-BIO-1: Implementation of the NHPH would not result in cumulatively considerable impacts on biological resources, in combination with past, present and reasonably foreseeable future projects in the vicinity of the NHPH site.	S	Implement NHPH Mitigation Measures BIO-1a through BIO-1e, and BIO-2a and BIO-2b.	LTS

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TABLE 2-2 (CONTINUED)
SUMMARY OF NHPH IMPACTS AND MITIGATION MEASURES

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
EIR Section 4.4 Cultural Resources and Initial Study Sections V and XVII: Cultural Resources and Tribal Cultural Resources			
Impact CUL-1: Implementation of the NHPH would not result in a substantial adverse change in the significance of known historical resources.	LTS	None required.	NA
Initial Study Impact V.b: Implementation of the NHPH could cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5.	S	**NHPH Mitigation Measure CUL-V.b: Inadvertent Discovery of Archaeological Resources and Tribal Cultural Resources** Prior to commencement of construction activities, all on-site personnel shall attend a mandatory pre-project training to outline the general archaeological and tribal cultural sensitivity of the project area. The training will include a description of the types of resources that could be encountered and the procedures to follow in the event of an inadvertent discovery of resources. If prehistoric or historic-era archaeological resources are encountered by construction personnel during ground-disturbing activities, all construction activities within 100 feet shall halt and the contractor shall notify the UCSF Environmental Coordinator (EC). The UCSF EC shall retain a Secretary of the Interior-qualified archaeologist (qualified archaeologist) to inspect the find within 24 hours of discovery. If it is determined that the project could damage a historical resource or a unique archaeological resource, construction shall cease in an area determined by the qualified archaeologist until a mitigation plan has been prepared and implemented [CEQA Guidelines 15064.5(b)(4)]. If the find is a potential tribal cultural resource, the UCSF EC shall contact a Native American representative or representatives (as provided by the Native American Heritage Commission) [PRC 21074(2)(c)]. The qualified archaeologist, in consultation with the UCSF EC and the Native American representative(s), shall determine when construction can resume. If the resource is determined to be a historical resource or a unique archaeological resource, the preferred mitigation shall be preservation in place. In accordance with PRC Section 21083.2(b), preservation in place shall be accomplished through: (1) modifying the construction plan to avoid the resource; (2) incorporating the resource within open space; (3) capping and covering the resource; or (4) deeding the resource site into a permanent conservation easement. If preservation in place is not feasible, the qualified archaeologist, in consultation with the UCSF EC and the Native American representative(s) (if the resource is prehistoric), shall prepare and implement a detailed treatment plan. In all cases treatment will be carried out with dignity and respect (including protecting the cultural character, traditional use, and confidentiality of the resource). For prehistoric resources, the Native American representative(s) will be consulted on the research approach, methods, and whether burial or data recovery or alternative mitigation is appropriate for the find. Treatment for most resources could consist of (but shall not be limited to) sample excavation, site documentation, and historical research, as appropriate to the discovered prehistoric resource. The treatment plan shall include provisions for analysis of data in a regional context as appropriate to the discovered prehistoric resource, reporting of results within a timely manner, and dissemination of reports to local and state repositories, libraries, and interested professionals.	LTS

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TABLE 2-2 (CONTINUED)
SUMMARY OF NHPH IMPACTS AND MITIGATION MEASURES

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
EIR Section 4.4 Cultural Resources and Initial Study Sections V and XVII: Cultural Resources and Tribal Cultural Resources (cont.)			
Initial Study Impact V.c: Implementation of the NHPH could disturb human remains, including those interred outside of dedicated cemeteries.	S	**NHPH Mitigation Measure CUL-V.c: Inadvertent Discovery of Human Remains** In the event of discovery or recognition of any human remains during ground-disturbing activities, treatment shall comply with all applicable state and federal laws. All construction activities within 100 feet shall halt and the contractor shall notify the UCSF Environmental Coordinator (EC). In accordance with PRC 5097.98, the UCSF EC shall contact the San Francisco Office of the Medical Examiner (Medical Examiner) to determine that no investigation of the cause of death is required. The Medical Examiner shall contact the Native American Heritage Commission (NAHC) within 24 hours if it is determined that the remains are Native American. The NAHC will then identify the person or persons it believes to be the most likely descendant (MLD) from the deceased Native American. Within 48 hours, the MLD shall make recommendations to the UCSF EC of the appropriate means of treating the human remains and any grave goods. Whenever the NAHC is unable to identify an MLD, the MLD fails to make a recommendation, or the parties are unable to agree on the appropriate treatment measures, the human remains shall be reinterred with appropriate dignity on the property in a location not subject to further and future subsurface disturbance.	LTS
Initial Study Impact XVII.a and XVII.b: Implementation of the NHPH could cause a substantial adverse change in the significance of a tribal cultural resource, defined in PRC Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe.	S	Implement Mitigation Measure NHPH Mitigation Measure CUL-V.b:	LTS
Impact C-CUL-1: Implementation of the NHPH would not result in a cumulatively considerable impact to known historical resources, in combination with past, present and reasonably foreseeable future projects in the vicinity of the Parnassus Heights campus site.	LTS	None required.	NA
EIR Section 4.5 Energy			
Impact ENE-1: Implementation of the NHPH would not result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation.	LTS	None required.	NA
Impact ENE-2: Implementation of the NHPH would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency.	LTS	None required.	NA

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TABLE 2-2 (CONTINUED)
SUMMARY OF NHPH IMPACTS AND MITIGATION MEASURES

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
EIR Section 4.5 Energy (cont.)			
Impact C-ENE-1: The NHPH, combined with cumulative development in the Parnassus Heights campus site vicinity and citywide, would not result in significant cumulative energy impacts.	LTS	None required.	NA
EIR Section 4.6 Geology and Soils and Initial Study Section VII: Geology and Soils			
Impact GEO-1: Construction and operation of the NHPH would not directly or indirectly cause substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking.	LTS	None required.	NA
Impact GEO-2: Construction and operation of the NHPH would not directly or indirectly cause substantial adverse effects, including the risk of loss, injury, or death involving strong seismic related ground failure, including liquefaction.	LTS	None required.	NA
Impact GEO-3: Construction and operation of the NHPH would not directly or indirectly cause substantial adverse effects, including the risk of loss, injury, or death involving landslides.	S	**NHPH Mitigation Measure GEO-3:** UCSF shall implement the following geotechnical recommendations as adapted from those contained within the Rutherford & Chekene March 2019 report: • Remove selected trees located on or at the crest of steep rock slopes on which tree root wedging decreases stability. Determination of specific trees to be removed shall be made in association with a certified arborist and state licensed geotechnical engineer or engineering geologist. Removal will involve cutting trees and leaving stumps such that the root system can rot in situ with minimal disturbance to the surface geology. Conduct qualitative monitoring of identified slopes by a state licensed geotechnical engineer or engineering geologist or as directed by said professional. Monitoring shall occur, at a minimum, after each major storm or earthquake, as defined by the geotechnical professional. The geotechnical professional shall submit a report of findings to UCSF that includes recommendations for additional slope stability improvements, if deemed necessary, to maintain continued safety in accordance with geotechnical standards and building code requirements.	LTS
Impact GEO-4: Construction and operation of the NHPH would not have the potential to result in substantial erosion or the loss of topsoil.	LTS	None required.	NA
Impact GEO-5: The NHPH would not be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse.	LTS	None required.	NA

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TABLE 2-2 (CONTINUED)
SUMMARY OF NHPH IMPACTS AND MITIGATION MEASURES

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
EIR Section 4.6 Geology and Soils and Initial Study Section VII: Geology and Soils (cont.)			
Initial Study Impact VII.f-6: Construction associated with the NHPH could have the potential to directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.	S	**NHPH Mitigation Measure GEO-VII.f:** Prior to commencement of construction activities, all on-site personnel shall attend a mandatory pre-project training to outline the general paleontological sensitivity of the project area. The training will include a description of the types of resources that could be encountered and the procedures to follow in the event of an inadvertent discovery of resources. If paleontological resources, such as fossilized bone, teeth, shell, tracks, trails, casts, molds, or impressions are discovered during ground-disturbing activities, work shall stop in that area and within 100 feet of the find until a qualified paleontologist meeting the Society of Vertebrate Paleontology (SVP) Standards can assess the nature and importance of the find and, if necessary, develop appropriate salvage measures in conformance with SVP standards (2010). If the discovery can be avoided and no further impacts will occur, no further effort shall be required. If the resource cannot be avoided and may be subject to further impact, a qualified paleontologist shall evaluate the resource and determine whether it is "unique" under CEQA. Any discovered paleontological resources that are determined by the qualified paleontologist to be "unique" in accordance with CEQA shall be given appropriate salvage measures in conformance with SVP standards (2010).	LTS
Impact C-GEO-1: Implementation of the NHPH, in combination with past, present and reasonably foreseeable future projects, would not result in significant cumulative impacts related to geology and soils.	LTS	None required.	NA
EIR Section 4.7 Greenhouse Gas Emissions			
Impact GHG-1: Construction and operation of the NHPH would generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment.	S	**NHPH Mitigation Measure GHG-1: Monitor emissions annually and acquire carbon offset credits in conformance with CARB guidance, prioritizing local and in-State offsets to achieve and maintain carbon neutrality for the NHPH as part of campus-wide emissions.** As part of this mitigation measure, UCSF is making the following separate, though overlapping, GHG emission reduction commitments: (1) As a CARB-covered entity, UCSF will maintain compliance with CARB's cap and trade program; (2) Per existing UC Policy, UCSF's Scope 1 and Scope 2 GHG emissions shall, commencing in 2025, be entirely carbon neutral; (3) Also per existing UC Policy, commencing in 2025, UCSF's Scope 1 and Scope 2 emissions shall be voluntarily offset while Scope 3 emissions from commuters and air travel shall be voluntarily offset by 2050; and (4) UCSF's total GHG operational emissions from all Scope 1, 2, and 3 sources (as defined in this EIR) shall not exceed the Parnassus Heights campus's baseline emissions from these sources in 2019. Each of these commitments is described in more detail below. ***Continued Compliance with CARB's Cap and Trade Program*:** Any carbon offset credits purchased for the purpose of compliance with CARB's cap and trade program shall be purchased from an accredited carbon credit market. Such offset credits (or California Carbon Offsets) shall be	LTS

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TABLE 2-2 (CONTINUED)
SUMMARY OF NHPH IMPACTS AND MITIGATION MEASURES

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
EIR Section 4.7 Greenhouse Gas Emissions (cont.)			
Impact GHG-1 (cont.)		registered with, and retired[3] by an Offset Project Registry, as defined in 17 California Code of Regulations § 95802(a), approved by the California Air Resources Board such as, but not limited to, Climate Action Reserve, American Carbon Registry or Verra (formerly Verified Carbon Standard). In order to demonstrate that the carbon offset credits provided are real, permanent, additional, quantifiable, verifiable, and enforceable, as those terms are defined in 17 California Code of Regulations § 95802(a), UCSF shall document in its annual report: (i) the protocol used to develop those credits, and (ii) the third-party verification report concerning those credits. As and when the credits are retired, UCSF shall document in its annual report the unique serial numbers of those credits showing that they have been retired. ***Compliance with UC Policy - Offsets for Emissions from Commuters and Air Travel*:** Compliance with UC's policies for carbon neutrality from specific Scope 3 sources (as defined by Second Nature's Carbon Commitment) by 2050 or sooner as required by UC's Policy on Sustainable Practices. (UCES, 2020). Neutrality may be achieved through reductions in direct emissions, the purchase of renewable electricity and possibly biomethane, and the purchase of carbon offset credits. UCSF will purchase voluntary carbon offset credits as the final action to reach the GHG emission reduction targets. As part of the UC Carbon Neutrality Initiative, internal guidelines have been developed to ensure that any use of offsets for this purpose will result in additional, verified GHG emissions reductions from actions that align, as much as possible, with UC's research, teaching, and public service mission. Specifically, any voluntary carbon offset credits used by UCSF to mitigate GHG emissions will: 1. Prioritize local (within the air district) and in-state offset credits over in-nation offset credits. Offset credits shall be third-party verified by a major registry recognized by CARB such as CAR (Climate Action Reserve). If sufficient local and in-state offset credits are not available, UCSF will purchase CARB conforming national offset credits registered with an approved registry. 2. Be reported publicly and tracked through the Climate Registry (TCR) as required by UC policy. TCR is a non-profit organization governed by U.S. states and Canadian provinces and territories. UCSF's TCR reports will be third-party verified and posted publicly. ***Compliance with UC Policy – Carbon Neutrality:*** Ensure achievement of net zero greenhouse gas emissions from its buildings and vehicle fleet by 2025. For purposes of this section, campuses shall include their related health location for all goals. GHG emissions reduction goals pertain to emissions of the six Kyoto greenhouse gasses[4] originating from all Scope 1 and Scope 2 sources as specified by the Climate Registry, and from Scope 3 emissions as specified by Second Nature's Carbon Commitment, which includes air travel paid through the institution, and commuting to and from campus by students, faculty and other academic appointees, and staff.	

[3] When Climate Reserve Tonnes (CRTs) are transferred to a retirement account in the Reserve System, they are considered retired. Retirement accounts are permanent and locked to prevent a retired CRT from being transferred again. CRTs are retired when they have been used to offset an equivalent ton of emissions or have been removed from further transactions on behalf of the environment.

[4] The six greenhouse gasses identified in the Kyoto Protocol are carbon dioxide, methane, nitrous oxide, sulfur hexafluoride, hydrofluorocarbons, and perfluorocarbons.

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TABLE 2-2 (CONTINUED)
SUMMARY OF NHPH IMPACTS AND MITIGATION MEASURES

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
EIR Section 4.7 Greenhouse Gas Emissions (cont.)			
Impact GHG-1 (cont.)		***Commitment to control Parnassus Heights Annual Emissions to not exceed existing baseline*:** UCSF shall monitor GHG operational emissions from all Scope 1, 2 and 3 sources annually. Upon the completion and occupancy of the NHPH, inclusive of the related improvements, in 2033, the estimated annual emissions shall be compared to the campus site year 2019 baseline of 127,083 MT CO_2e per year to determine whether the emissions have increased above the baseline level. For the identified amount of exceedance of the performance standard, UCSF shall purchase carbon offset credits sufficient to maintain carbon neutrality. These offset credits shall be purchased for the types of Scope 1 and Scope 2 emissions that are already reported to and verified by a third party verification body annually, as well as for Scope 3 emissions from patient and visitor vehicle trips, indirect emissions from water and wastewater demand, and solid waste emissions, all of which are included in the EIR analysis above as required by CEQA. Carbon offset credits used for this purpose shall originate from a voluntary carbon credit registry that TCR recognizes such as: CAR, ACR, or Verra (other registries are also applicable). Offset credits in this case shall be registered, transferred, and retired at such registries. The protocols of each registry, and UC own internal screens, shall be used to demonstrate that the carbon offset credits provided are real, permanent, additional, and have been independently verified as adhering to its applicable project protocols. For this purpose, local (within the air district) and in-state carbon offset credits shall be prioritized over in-nation offset credits. If sufficient local and in-state offset credits are not available, UCSF will purchase CARB conforming national offset credits registered with an approved registry. As and when the credits are retired, UCSF shall document in its annual report the unique identifier of those credits showing that they have been retired and accepted by TCR.	
Impact GHG-2: Construction and operation of the NHPH would not conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.	LTS	None required.	NA
EIR Section 4.8 Hazards and Hazardous Materials			
Impact HAZ-1: Construction and operation of the NHPH could create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.	S	**NHPH Mitigation Measure HAZ-1:** An Excavation Management Plan shall be prepared by a qualified consultant to include the California Air Resource Board (CARB) Asbestos Airborne Toxic Control Measure (ATCM) for Construction, Grading, Quarrying and Surface Mining Operations to minimize naturally occurring asbestos through the application of best management practices for fugitive dust from construction, grading and excavation operations. Unless site specific testing by a certified laboratory can demonstrate the absence of naturally occurring asbestos in materials to be excavated, construction specifications shall include implementation of this CARB ATCM.	LTS
Impact HAZ-2: Construction and operation of NHPH would not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.	LTS	None required.	NA

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TABLE 2-2 (CONTINUED)
SUMMARY OF NHPH IMPACTS AND MITIGATION MEASURES

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
EIR Section 4.8 Hazards and Hazardous Materials (cont.)			
Impact HAZ-3: Construction and operation of the proposed NHPH would not emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.	LTS	None required.	NA
Impact HAZ-4: The NHPH would not be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5. However, previously unknown contamination could be encountered during construction and could have the potential to create a significant hazard to the public or the environment.	S	**NHPH Mitigation Measure HAZ-4:** Prior to development on the NHPH sites, a Soil Management Plan shall be prepared by a qualified environmental consulting firm to reflect current regulatory requirements and risk management protocols that are in accordance with Regional Water Quality Control Board oversight. The Plan shall include measures to address protocols for identifying, handling, and characterizing suspect contaminated soils. On-site personnel shall attend mandatory pre-project training regarding the Plan. Notification and sampling requirements for adequate characterization shall be in accordance with the overseeing agency (RWQCB or SFDPH) requirements and any required removal or remediation work shall be completed to the overseeing agency's standards prior to occupancy of the new structure.	LTS
Impact C-HAZ-1: Construction and operation of the proposed NHPH, in conjunction with other cumulative development within the City of San Francisco, would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials or from risk of upset and accident conditions involving hazardous materials.	LTS	None required.	NA
EIR Section 4.9 Hydrology and Water Quality			
Impact HYD-1: Implementation of the NHPH would not have the potential to violate water quality standards or waste discharge requirements, or otherwise substantially degrade surface or groundwater quality	LTS	None required.	NA
Impact HYD-2: Construction and operation of the NHPH would not substantially alter the existing drainage patterns of the site or area, in a manner that has the potential to result in substantial erosion or siltation on- or off- site; would not substantially increase the rate or amount of surface runoff in a manner that would result in flooding on or off site; and would not create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or impede or redirect flow.	LTS	None required.	NA

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TABLE 2-2 (CONTINUED)
SUMMARY OF NHPH IMPACTS AND MITIGATION MEASURES

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
EIR Section 4.9 Hydrology and Water Quality (cont.)			
Impact C-HYD-1: Construction and operation of the NHPH, in conjunction with other cumulative development within the City of San Francisco, would not cumulatively violate water quality standards or waste discharge requirements, or otherwise substantially degrade water quality.	LTS	None required.	NA
Impact C-HYD-2: Construction and operation of the NHPH, in conjunction with other cumulative development in the City of San Francisco, would not to cumulatively alter the drainage pattern of the site or area, through the addition of impervious surfaces, in a manner which would result in substantial erosion or siltation on or off site; would not substantially increase the rate or amount of surface runoff in a manner which would result in flooding on or off site; would not create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or impede or redirect flow.	LTS	None required.	NA
EIR Section 4.10 Land Use and Planning			
Impact LU-1: Implementation of the NHPH would not cause a significant environmental impact due to a conflict with land use plans, policies and regulations adopted for the purpose of avoiding or mitigating an environmental effect.	LTS	None required.	NA
Impact LU-2: Development under the proposed NHPH would not conflict with local land use regulations such that a significant incompatibility with adjacent land uses is created.	LTS	None required.	NA
Impact C-LU-1: The proposed NHPH, in combination with past, present, and reasonably foreseeable future projects, would not result in a conflict with land use plans, policies, and regulations adopted for the purpose of avoiding or mitigating an environmental effect or a conflict with local land use regulations such that a significant incompatibility with adjacent land uses is created.	LTS	None required.	NA

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TABLE 2-2 (CONTINUED)
SUMMARY OF NHPH IMPACTS AND MITIGATION MEASURES

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
EIR Section 4.11 Noise and Vibration			
Impact NOI-1: Construction activities under the NHPH would generate a substantial temporary increase in ambient noise levels in the vicinity of the construction project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.	S	**NHPH Mitigation Measure NOI-1a: Construction Noise Control Measures** UCSF contractors shall employ site-specific noise attenuation measures during construction of projects under the NHPH to reduce the generation of construction noise. These measures shall be included in a Noise Control Plan that shall be submitted for review and approval by UCSF to ensure that construction noise is consistent with the standards set forth in the City's Noise Ordinance. Measures specified in the Noise Control Plan and implemented during project construction shall include, at a minimum, the following noise control strategies: • Equipment and trucks used for construction shall use the best available noise control techniques (e.g., improved mufflers, equipment redesign, use of intake silencers, ducts, engine enclosures, and acoustically attenuating shields or shrouds). • Impact tools (e.g., jack hammers, pavement breakers, and rock drills) used for construction shall be hydraulically or electrically powered wherever possible to avoid noise associated with compressed air exhaust from pneumatically powered tools. Where use of pneumatic tools is unavoidable, an exhaust muffler on the compressed air exhaust shall be used; this muffler can lower noise levels from the exhaust by up to about 10 dBA. External jackets on the tools themselves shall be used where feasible; this could achieve a reduction of 5 dBA. Quieter procedures, such as use of drills rather than impact tools, shall be used where feasible. • Stationary noise sources shall be located as far from adjacent receptors as possible, and they shall be muffled and enclosed within temporary sheds, incorporate insulation barriers, or include other measures. • Shield staging areas where adjacent sensitive receptors have direct line-of-sight with loading and delivery activities. Shielding may consist of plywood fencing with no gaps or acoustical paneling erected in K-rails. **NHPH Mitigation Measure NOI-1b: Construction Hours** Construction hours shall be restricted to the hours listed in the table below. In rare circumstances, work may need to occur outside of these work hour limits. In such cases, UCSF Community and Government Relations will receive advance notice from the project manager, at least one week in advance as feasible, and will engage the community to identify measures to minimize potential impacts. These measures may include, but not be limited to, restricting work to smaller time windows, condensing the overall duration of nighttime work to the degree feasible, and erecting temporary barriers to shield the short-term nighttime activity.	SU

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TABLE 2-2 (CONTINUED)
SUMMARY OF NHPH IMPACTS AND MITIGATION MEASURES

<table>
<tr><th>Environmental Impact</th><th>Level of Significance Before Mitigation</th><th>Mitigation Measures</th><th>Level of Significance After Mitigation</th></tr>
<tr><td colspan="4">EIR Section 4.11 Noise and Vibration (cont.)</td></tr>
<tr><td>Impact NOI-1 (cont.)</td><td></td><td>
Construction Hours
<table>
<tr><th></th><th colspan="2">“Not Noisy” Work[1]</th><th colspan="2">Noisy Work</th></tr>
<tr><th></th><th>Regular hours</th><th>Extended hours[2]</th><th>Regular hours</th><th>Extended hours[1]</th></tr>
<tr><td>Monday - Friday</td><td>7:00 AM to 5:00 PM</td><td>5:00 PM to 8:00 PM</td><td>8:00 AM to 5:00 PM</td><td></td></tr>
<tr><td>Saturday</td><td></td><td>8:00 AM to 5:00 PM</td><td></td><td>9:00 AM to 4:00 PM</td></tr>
<tr><td>Sunday</td><td></td><td>8:00 AM to 5:00 PM</td><td></td><td></td></tr>
</table>
NOTES:
[1] “Not Noisy” work = 80 decibels or less at 100 feet; “Noisy” work = more than 80 decibels at 100 feet.
[2] Extended hours to be considered by UCSF Community and Government Relations with advance notice from the project manager.

NHPH Mitigation Measure NOI-1c: Pile-Installation Noise-Reducing Techniques

Noise-reducing pile-installation techniques shall be employed during project construction. These techniques shall include:
• Installing cast-in-place concrete piles. Noise from auger drilling is 17 dBA less than an impact pile driver.
• Vibrating piles into place, and installing shrouds around the pile-driving hammer where feasible.
• Implement “quiet” pile-installation technology (such as pre-drilling of piles and the use of more than one pile driver to shorten the total pile installation duration).

Mitigation: Implement NHPH Mitigation Measure TRANS-5: Construction Coordination and Monitoring Measures– Construction Traffic Control Plan.
</td><td></td></tr>
<tr><td>Impact NOI-2: Implementation of the NHPH would generate substantial permanent increases in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.</td><td>S</td><td>NHPH Mitigation Measure NOI-2: New Hospital Cooling Tower Noise Control

New Hospital cooling tower equipment shall be designed to meet the City’s Police Code requirements of not exceeding 8 dBA over existing ambient noise levels without the equipment operating as well as an interior noise standard at any sleeping or living room in any dwelling unit located on residential property of 45 dBA between 10:00 PM and 7:00 AM, and 50 dBA between 7:00 AM and 10:00 PM.</td><td>LTS</td></tr>
</table>

S = Significant Impact
SU = Significant and Unavoidable with Mitigation
LTS = Less than Significant impact
NA = Not applicable

TABLE 2-2 (CONTINUED)
SUMMARY OF NHPH IMPACTS AND MITIGATION MEASURES

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
EIR Section 4.11 Noise and Vibration (cont.)			
Impact NOI-2 (cont.)		Specifically, given the existing monitored nighttime noise level at the nearest property line of 53 dBA, cooling towers shall be selected, designed, or enclosed to achieve an exterior performance standard of 61 dBA or less at the nearest property line. Achievement of this exterior standard would be sufficient to also achieve an interior nighttime standard of 45 dBA. The proposed cooling tower manufacturer offers towers with "ultra quiet" fans capable of a noise level reduction of up to 12 dBA (Marley, 2021). A qualified acoustical consultant shall be retained to assess mechanical noise to determine the necessary methods by which the selected units would need further attenuation measures to achieve the identified performance standard and conform with the City's Police Code.	
Impact NOI-3: Construction activities for the NHPH and related improvements could result in generation of excessive groundborne vibration or groundborne noise levels.	S	**NHPH Mitigation Measure NOI-3: Assessment and Relocation/Retrofitting of Vibration-Sensitive Equipment** UCSF shall evaluate the presence of vibration-sensitive equipment within 150 feet of construction and demolition areas. Any sensitive equipment shall be evaluated for the existing extent of vibration isolation and relocated or vibration isolation shall be further embellished, as warranted. Based on available guidance (FTA, 2018), a performance standard of 65 VdB shall be implemented in lieu of any other available equipment-specific criterion.	LTS
Impact NOI-4: Operation of the NHPH would not exceed an LRDP EIR operational standard of significance by contributing to an increase in average daily noise levels (L_{dn}) of 3 dB(A) or more at property lines, where ambient noise levels already exceed local noise levels set forth in local general plans or ordinances for such areas based on their use.	LTS	None required.	NA
Impact C-NOI-1: Implementation of the NHPH, combined with cumulative construction noise in the project area, would generate a substantial temporary increase in ambient noise levels from construction activity in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.	S	Implement NHPH Mitigation Measures NOI-1a, NOI-1b, and NHPH Mitigation Measure TRANS-5: Construction Coordination and Monitoring Measures.	SU
Impact C-NOI-2: Implementation of the NHPH, combined with cumulative development in the project area, would generate substantial permanent increases in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.	S	Implement NHPH Mitigation Measure NOI-2.	LTS

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NA = Not applicable

TABLE 2-2 (CONTINUED)
SUMMARY OF NHPH IMPACTS AND MITIGATION MEASURES

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
EIR Section 4.11 Noise and Vibration (cont.)			
Impact C-NOI-3: Implementation of the NHPH, combined with cumulative construction in the project area, would result in generation of excessive groundborne vibration or groundborne noise levels.	S	Implement NHPH Mitigation Measure NOI-3.	LTS
Impact C-NOI-4: Implementation of the NHPH combined with cumulative development in the project area could exceed an LRDP EIR operational standard of significance by contributing to an increase in average daily noise levels (L_{dn}) of 3 dB(A)[5] or more at property lines, if ambient noise levels in areas adjacent to proposed development already exceed local noise levels set forth in local general plans or ordinances for such areas based on their use.	LTS	None required.	NA
EIR Section 4.12 Population and Housing			
Impact POP-1: Implementation of the NHPH would induce population growth in the San Francisco Bay area, but not to an extent to which it would create demand for housing outside the market area.	LTS	None required.	NA
Impact C-POP-1: The NHPH, in combination with past, present, and reasonably foreseeable future projects, would not result in a cumulatively considerable contribution to significant cumulative population and housing impacts.	LTS	None required.	NA
EIR Section 4.13 Transportation			
Impact TRANS-1: Implementation of the NHPH would not conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities.	LTS	None required.	NA
Impact TRANS-2: Implementation of the NHPH would not conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b).	LTS	None required.	NA
Impact TRANS-3: Implementation of the NHPH would not substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).	LTS	None required.	NA

[5] Caltrans acknowledges that the Ldn is approximately equal to the peak hour Leq (Caltrans, 2009)

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NA = Not applicable

TABLE 2-2 (CONTINUED)
SUMMARY OF NHPH IMPACTS AND MITIGATION MEASURES

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
EIR Section 4.13 Transportation (cont.)			
Impact TRANS-4: Implementation of the NHPH would not result in inadequate emergency access.	LTS	None required.	NA
Impact TRANS-5: Construction of the New Hospital and related improvements could temporarily impact travel conditions along sidewalks and roadways serving the campus site.	S	**NHPH Mitigation Measure TRANS-5: Construction Coordination and Monitoring Measures** ***Construction Traffic Control Plan.*** In order to reduce potential conflicts between construction activities and pedestrians, transit and autos during construction activities at the project site, UCSF shall require construction contractor(s) to prepare a traffic control plan for major phases of project construction (e.g., demolition, construction, or renovation of individual buildings). UCSF and their construction contractor(s) will meet with relevant City agencies to coordinate feasible measures to reduce traffic congestion, including temporary transit stop relocations (e.g., Parnassus Avenue) and utilities and other measures to reduce potential traffic and transit disruption and pedestrian circulation effects during major phases of construction of the NHPH. For any work within the public right-of-way, the contractor will also be required to comply with the City of San Francisco's *Regulations for Working in San Francisco Streets*, which establish rules and permit requirements so that construction activities can be done safely and with the least possible interference with pedestrians, bicyclists, transit, and vehicular traffic. ***Reduce Drive Alone Mode Share for Construction Workers.*** In order to minimize parking demand and vehicle trips associated with construction workers, UCSF shall require the construction contractor to include in the Construction Traffic Control Plan methods to encourage walking, bicycling, carpooling, and transit access to the campus site by construction workers. Strategies that may be included in this plan could be to have a construction worker shuttle or allow preferential parking for carpools. ***Project Construction Updates for Adjacent Residents and Businesses*** – In order to minimize construction impacts on access for nearby residences, institutions, and businesses, UCSF shall provide nearby residences and businesses with regularly-updated information regarding project construction, including construction activities, peak construction vehicle activities (e.g., concrete pours, excavation),and travel lane closures, via a newsletter, website, and/or quarterly construction update meetings with neighbors.	LTS
Impact C-TRANS-1: The NHPH, in combination with past, present, and reasonably foreseeable future projects, including the full CPHP (Future Phase), would not result in a cumulatively considerable contribution to significant transportation impacts.	LTS	None required.	NA

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NA = Not applicable

TABLE 2-2 (CONTINUED)
SUMMARY OF NHPH IMPACTS AND MITIGATION MEASURES

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
EIR Section 4.14 Utilities and Service Systems			
Impact UTIL-1: Implementation of the proposed NHPH would require or result in the construction of new or expanded water, wastewater treatment or storm water drainage, electric power, or telecommunications facilities, the construction or relocation of which would not cause significant environmental effects.	LTS	None required.	NA
Impact UTIL-2: Sufficient water supply would be available from the SFPUC to serve the NHPH and reasonably foreseeable future development under normal, dry and multi-dry years even if the Bay Delta Plan Amendment is implemented. If the Bay Delta Plan Amendment is implemented, the SFPUC would address the anticipated shortfalls through rationing and/or develop new or expanded water supply facilities to address shortfalls in single and multiple dry years. The NHPH would not make a considerable contribution to environmental impacts from increased rationing or from the development of new supply sources.	LTS	None required.	NA
Impact UTIL-3: The wastewater treatment provider would have adequate wastewater treatment capacity to serve the NHPH.	LTS	None required.	NA
Impact C-UTIL-1: Development under the proposed NHPH, in combination with past, present, and reasonably foreseeable future projects in the vicinity of the Parnassus Heights campus site, would not substantially contribute to cumulative impacts related to utilities and services systems.	LTS	None required.	NA

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CHAPTER 3
Project Description

The proposed project would construct a new hospital (New Hospital) and related improvements at the east end of UCSF's Parnassus Heights campus core, collectively known as the New Hospital at Parnassus Heights project (NHPH). As described further below, the NHPH would increase inpatient beds at Parnassus Heights; accommodate modern technologies; address seismic safety requirements and meet other regulatory requirements and industry standards for contemporary hospitals; and enhance functionality and efficiency at the campus site. Construction of the NHPH would begin in 2023, with the proposed New Hospital and majority of related improvements completed and operational by the end of 2030, and completion of the remaining related improvements by 2034.

For purposes of providing distinction between the various components of this project, references made in this EIR to "New Hospital" relate only to the New Hospital portion of the overall project, whereas references made to "NHPH" relate to the overall project, including the New Hospital and its related improvements.

3.1 Background

In November 2014, the Regents of the University of California (Regents) adopted the 2014 Long Range Development Plan (LRDP) for the San Francisco campus, following certification of the 2014 LRDP Final EIR. The 2014 LRDP set forth concepts, principles and plans to guide future growth at its campus, and projected development levels and patterns at its main campus sites through the year 2035, including the Parnassus Heights campus site.

The Parnassus Heights campus site (Parnassus Heights, or campus site) is the oldest and largest of the UCSF campus sites. UCSF's investment in Parnassus Heights has not kept pace with its aging facilities or changes in programmatic need, resulting in infrastructure, buildings, and interior spaces that require substantial renewal and investment. As a result, in 2018, UCSF undertook a planning process to re-envision and revitalize the Parnassus Heights campus site as a whole engaging both internal and external stakeholders. The planning process resulted in the development of the Comprehensive Parnassus Heights Plan (CPHP) which was aimed at updating the projected space needs for critical programs in research, patient care, and education at the campus site, improving the functional and aesthetic design of the campus environment, and planning for needed on-campus housing. In 2019, in compliance with CEQA, UCSF commenced a review of the environmental impacts of the CPHP and in January 2021, the Regents approved Amendment #7 to the 2014 LRDP to incorporate the CPHP planning concepts and proposals into the 2014 LRDP and other necessary conforming changes, following certification of the CPHP Final Environmental Impact Report (Final EIR).

The CPHP included an "Initial Phase" to be completed by approximately year 2030 that primarily comprised: 1) Irving Street Arrival improvements, 2) a Research and Academic Building (RAB), 3) a New Hospital, and 4) initial Aldea Housing Densification; as well as certain other Initial Phase improvements. Beyond the Initial Phase, a "Future Phase" encompassed the remaining development described in the CPHP, envisioned for completion by the horizon year of 2050.

In total, the CPHP provided for development of approximately 2.90 million gross square feet (gsf) of new building space at Parnassus Heights. When accounting for existing campus site development (approximately 3.92 million gsf); demolition that was approved under the 2014 LRDP but not yet implemented (approximately 187,000 gsf); and potential additional building demolition that would occur under the CPHP (approximately 688,000 gsf), the total amount of campus building space upon full implementation of the CPHP would be approximately 5.97 million gsf, including instruction, research, clinical, and support space; housing; and structured parking.

The CPHP Final EIR programmatically analyzed the environmental impacts of the CPHP, including the impacts of the proposed New Hospital for which only broad parameters (location, projected size and population) were known at the time. The proposed New Hospital was the largest of the projects planned at the Parnassus Heights campus site under the CPHP. The proposed 15-story New Hospital would consist of approximately 900,000 gsf[1], and in combination with the existing Moffitt and Long Hospitals would provide approximately 682 beds at the campus site. Related improvements that would be implemented under the NHPH include a renovation of Moffitt and Long Hospitals; widening of Medical Center Way in the vicinity of the New Hospital; replacement of diesel fuel tanks and medical gas tanks; vegetation management and slope stabilization improvements; and construction of a proposed pedestrian bridge and tunnel across Parnassus Avenue. Since certification of the CPHP Final EIR, the physical design, construction and operational details of the New Hospital and related improvements have progressed to a sufficient degree to allow for a project-specific environmental review in this NHPH EIR.

The University of California is the Lead Agency under CEQA for the proposed NHPH. This EIR has been prepared in accordance with CEQA to analyze and disclose potential significant environmental impacts that could result from construction and operation of the NHPH.

3.2 Campus Site Location and Characteristics

Figure 3-1 presents an aerial view of the Parnassus Heights campus site location and vicinity. The Parnassus Heights campus site is located in the Inner Sunset mixed-use neighborhood in San Francisco, bounded by Carl and Irving Streets to the north; Third Avenue and Fifth Avenue to the west; and Clarendon Avenue, Christopher Drive, and Crestmont Drive to the south. The campus site's east boundary abuts the Cole Valley neighborhood and the City's Interior Greenbelt Natural Area.

[1] Please note that since the Notice of Preparation, including an Initial Study, for the NHPH was released, the proposed size of the New Hospital increased from 870,000 gsf to 900,000 gsf. However, as discussed further in Section 4.0, *Introduction to Environmental Analysis*, this incremental increase in hospital size would not change any conclusions of significance previously reached in the Initial Study.

SOURCE: Google Earth, 2019; ESA, 2021

UCSF New Hospital Parnassus Heights EIR

Figure 3-1
Parnassus Heights Campus Site Location and Vicinity

The irregularly-shaped campus site comprises approximately 107 acres. UCSF's facilities are concentrated at the north end of the campus site, where its hospitals, five professional programs, clinics, research, housing, parking, and other support uses are located. The 61-acre Mount Sutro Open Space Reserve (Reserve) occupies the central and southern portion of the campus site, with a portion that extends north to Parnassus Avenue along the east side. The Aldea Housing complex is located in the southeast portion of the campus site adjacent to the Reserve.

The average daily population at the Parnassus Heights campus site in January 2020 was estimated at approximately 17,700 persons, including faculty and staff, students, patients, and visitors. There were currently nearly 7,700 UCSF faculty and staff employed at the campus site in January 2020. About 580 residents currently reside in UCSF housing at the Parnassus Heights campus site.

3.3 Existing Campus Site Characteristics

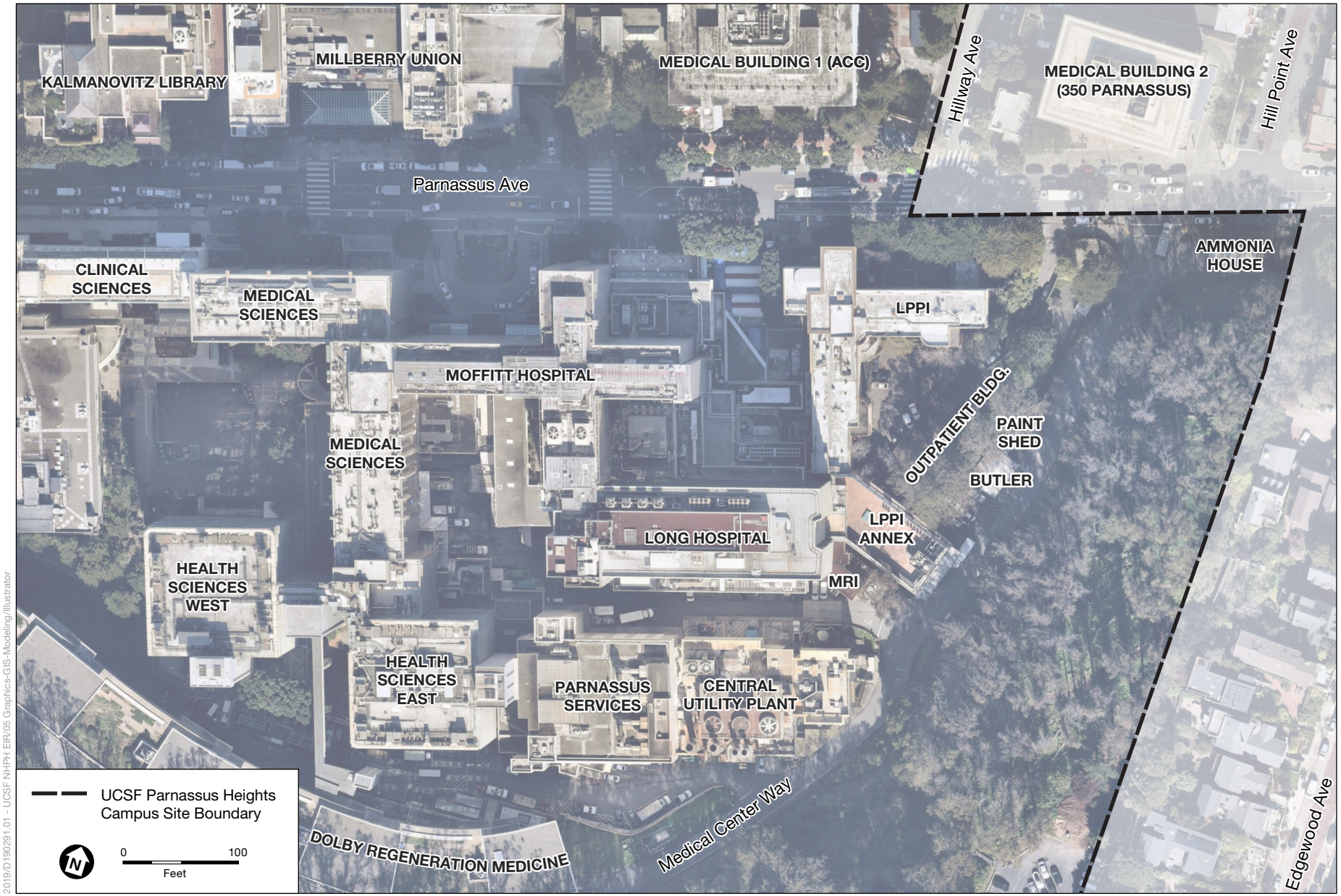
Figure 3-2 presents an aerial view of the general site of the proposed NHPH and related improvements, in the northeast corner of the campus site. The site is located within the east end of the campus core, within the designated Clinical functional zone of the campus site.

Like the rest of the core campus, the site of the New Hospital and related improvements are located on the north-facing slope of Mount Sutro. The topography of the New Hospital site is varied, with slopes generally rising from north to south through the site; elevations range from approximately 400 feet above sea level (asl) on Parnassus Avenue along the north side of the site, ascending to approximately 430 feet asl along the south side of the site in the vicinity of Long Hospital.

Existing buildings occupying the footprint of the proposed New Hospital are the Langley Porter Psychiatric Institute (LPPI) at 401 Parnassus Avenue, and three small support structures (Butler Building, paint shed, and outpatient clinic). LPPI, built in 1941, is five stories in height, and comprises approximately 105,000 gsf; the support structures account for an additional approximate 4,000 gsf. LPPI services include an adult inpatient unit, an adult partial hospitalization program, and an adult intensive outpatient program.

The demolition and removal of the LPPI and supporting structures, and several other buildings on the campus site[2] were previously planned under the 2014 LRDP. In 2020, the LPPI was determined to be eligible for listing in the National Register of Historic Places and the California Register of Historical Resources (the support structures are not eligible for these registers). The CPHP Final EIR addressed the potential effect of demolition of the LPPI on historic resources as part of the CPHP. Accordingly, the demolition and removal of these buildings are not included in the NHPH project and will be completed separately from the NHPH project.

[2] Including Koret Vision Center, Environmental Health and Safety, Surge, Woods, and Proctor buildings.



2019/D1902291.01 - UCSF NHPH EIR/05 Graphics-GIS-Modeling/Illustrator

SOURCE: Google Earth, 2019; ESA, 2021

UCSF New Hospital Parnassus Heights EIR

Figure 3-2
NHPH Site Vicinity

Existing buildings immediately west of LPPI include Long and Moffitt Hospitals. Long Hospital (505 Parnassus Avenue) adjoins the south end of the LPPI and extends west and connects to Moffitt Hospital. Long Hospital was constructed in 1983, is 15 stories tall and approximately 369,000 gsf in size. Long Hospital's tower is set back approximately 230 feet from Parnassus Avenue. Moffitt Hospital fronts on Parnassus Avenue and connects to UCSF's Medical Sciences Building to the west. This building is cross-shaped from a plan perspective, 15 stories tall, and approximately 386,000 gsf in size. Moffitt Hospital was originally built in 1955 and modernized in 1980. Together, the Long and Moffitt buildings comprise the UCSF Helen Diller Medical Center (Medical Center), which provides inpatient and outpatient services, including emergency services, as well as research and educational facilities. Long and Moffitt Hospitals currently provide 475 inpatients beds (325 and 150 beds, respectively).

The principal vehicular access points to the NHPH site are along Parnassus Avenue and Medical Center Way. Parnassus Avenue extends along the north side of the NHPH site, and in the site vicinity consists of two travel lanes plus a two-way center turn lane, with on-street parking. Parnassus Avenue serves multiple Muni bus lines, and is signed as a Class III bike route in the site vicinity. Medical Center Way is a narrow two-lane campus roadway that roughly follows along the east side of the NHPH site, and winds south through the campus site to the Aldea Housing complex. Medical Center Way serves as the access route for delivery vehicles to/from UCSF's hospital loading areas on the rear (south side) of the hospitals. Medical Center Way also serves as the route for UCSF's Bronze shuttle buses. Moffitt Hospital is served by a vehicle turnaround accessed from Parnassus Avenue that provides passenger pickup/drop off. To the east of that, a driveway on Parnassus Avenue provides ambulance access to Moffitt Hospital's garage. In addition, a driveway on Parnassus Avenue currently provides access to LPPI's surface parking lot.

A portion of UCSF's Reserve is located in the vicinity of the project site, on the hillside east of Medical Center Way. This hillside is dominated by non-native blue gum eucalyptus and Monterey cypress trees, and understory vegetation. There are two trailheads in the NHPH site vicinity: the Campus Trailhead, which provides trail access into the Reserve from Medical Center Way [near the UCSF Central Utility Plant (CUP)]; and the Farnsworth Trailhead, which connects to the Reserve via Farnworth Lane. Two public trails and a stairway extend through the Reserve in the NHPH site vicinity connecting the trailheads and the Surge parking lot.

Ornamental vegetation is present within the developed portions of the NHPH site vicinity, including street trees and landscaped vegetation along Parnassus Avenue, within surface parking and passenger drop-off areas, and at entrances to the buildings.

The nearest off-site residential uses are located along Edgewood Avenue to the east, on Parnassus Avenue and Hillpoint Avenue to the northeast, and on Hillway Avenue to the north.

3.4 Relationship of NHPH to CPHP and 2014 LRDP

On November 20, 2014, the Regents adopted the 2014 LRDP. The 2014 LRDP serves as a comprehensive physical land use plan and policy document to guide the physical development of the San Francisco campus, including all of its campus sites, accommodating future increases in enrollment and academic and research activities at UCSF and meeting its projected educational and research demand. The 2014 LRDP provides planning guidance for development anticipated to occur by horizon year 2035[3] and contains objectives to guide decisions for future facilities.

In January 20, 2021, the Regents approved Amendment #7 to the 2014 LRDP, which incorporated the CPHP planning concepts and proposals into the 2014 LRDP. The 2014 LRDP, as amended, is the primary planning document for the Parnassus Heights campus site and will be used by UCSF to guide the development of the campus site through the next 30 years, or to an approximate horizon year of 2050. The CPHP updated the projected space needs for critical programs in research, patient care, and education at the campus site, improved the functional and aesthetic design of the campus environment, and planned for needed on-campus housing. The CPHP included a larger development program at the Parnassus Heights campus site, including a larger New Hospital, and a larger net increase of in-patient beds at the campus site, compared to that included in the 2014 LRDP. In addition to the change in the space program, the CPHP made other necessary conforming changes, which included revisions to functional zones; revisions to the space program; update to the projected campus site population; revisions to existing planning agreements, including revisions to the Regents' Resolution; modification of the Reserve boundary; and an update to the UCSF Greenhouse Gas Reduction Strategy. Amendment #7 to the 2014 LRDP to incorporate the CPHP resulted in replacement of the Parnassus Heights chapter in the 2014 LRDP.

As explained further under subsection 2.7, below, subsequent to approval of 2014 LRDP Amendment #7, the University reexamined the hospital program, including the proposed size of the New Hospital, and proposed use of Moffitt and Long Hospitals. Under the NHPH, the size of the proposed New Hospital would be reduced from that envisioned under the CPHP (i.e., from 955,000 gsf to a proposed approximate 900,000 gsf), and Moffitt and Long Hospitals would increase slightly in size (Moffitt Hospital by about 4,500 gsf; and Long Hospital by up to about 5,000 gsf). For purposes of this EIR, the building space (up to about 40,500 gsf) authorized through 2014 LRDP Amendment No. 7 that would be rendered surplus due to the reduction of the hospital program is assumed to be assigned to other buildings on the campus site during the CPHP Future Phase. This would result in one to two additional building floors to be added to the planned Millberry Union New Towers project, and to research buildings planned immediately south and west of the planned Research and Academic Building (RAB). This modification would not change the overall space profile at the Parnassus Heights campus site or require a change in Parnassus Heights campus site functional zone map from that established in the CPHP. This CPHP modification will be considered in the cumulative context in the NHPH EIR.

[3] With exception, as described below, for the Parnassus Heights campus site, which has an approximate horizon year of 2050.

The proposed New Hospital and related improvements are the subject of this project-specific EIR. With minor exceptions as described below, the proposed New Hospital would be within the conceptual design (including height, bulk and size) and operational parameters assumed for the New Hospital in the CPHP and analyzed at a program level in the CPHP EIR. In contrast to the New Hospital analyzed in the CPHP EIR, the New Hospital building as now proposed would not extend into the Reserve. However, the related improvement for the proposed medical gas storage tanks replacement project would result in a minor encroachment into the Reserve as described below (though to a lesser extent than the New Hospital encroachment into the Reserve that was approved under 2014 LRDP Amendment #7). As the proposed New Hospital building now would not extend into the Reserve, the boundary of the Reserve is proposed to be modified as follows:

- The area previously removed from the Reserve under 2014 LRDP Amendment #7 to accommodate the New Hospital footprint is now proposed to be returned to the Reserve.
- The Reserve boundary would be adjusted to accommodate the medical gas storage tanks replacement project described below.

The area between the Surge and Woods parking lots that was added to the Reserve under 2014 LRDP Amendment #7 would remain as Reserve land.

The above-described changes would maintain the Reserve at a minimum of 61 acres. See Section 3.7.3, *Revisions to the 2014 LRDP*, for additional detail.

3.5 Project Need

As the second largest employer in the City, UCSF is a substantial contributor to the San Francisco and Bay Area economies, as well as a major contributor to the culture of innovation, attracting world-class talent to live, work, and study in San Francisco and the Bay Area. Over the last 20 years, UCSF has invested substantial financial resources into acquiring, developing, and supporting its Mission Bay campus site, without commensurate investment in the Parnassus Heights campus site. UCSF's investment in Parnassus Heights has not kept pace with its aging facilities or changes in programmatic need, resulting in infrastructure, buildings, and interior spaces that require substantial renewal and investment.

UCSF Health provides both outpatient and inpatient clinical services at the Parnassus Heights campus site. The Medical Center at Parnassus Heights, which includes Moffitt and Long Hospitals, provides highly specialized tertiary and quaternary[4] adult health care. According to UCSF Health, the Medical Center's inpatient census is at a record high and continues to experience unprecedented growth. The Medical Center is already at capacity and has to turn away transfer patients who need complex care.

[4] Tertiary health care is the third tier of health care which involves highly specialized medical care provided by medical specialists in state-of-the-art facilities, such as teaching hospitals. It usually is provided over an extended period of time and involves advanced and complex procedures and treatments. Quaternary health care is considered an extension of tertiary care and is even more specialized. Examples would be experimental medicine and procedures, and very rare, specialized surgeries.

In order to ensure continued excellence of the University, stay competitive and remain a leading health science institution both nationally and internationally, and build on the outstanding instructional, research, and clinical programs that are present at Parnassus Heights, improvements must be made at the Parnassus Heights campus site to address its aging and inadequate facilities and provide a teaching hospital that can adequately support the education and research missions while providing expanded and improved clinical services to the community. Constructed in 1955, the existing Moffitt Hospital is outdated, its space undersized, inflexible, and obsolete relative to modern standards of care. In addition, pursuant to California Senate Bill 1953 enacted to establish seismic safety standards for hospitals, Moffitt Hospital must be structurally retrofitted or decommissioned as an inpatient facility by 2030. Long Hospital continues to adequately meet seismic standards beyond 2030.

It is anticipated that there will be a 14 percent increase in medically necessary transfers by 2030. Further, the complex tertiary and quaternary cases treated by UCSF specialists at Parnassus Heights are forecast to increase in number over the coming years and decades, due to the Bay Area's projected population growth, which includes an increase in the Medicare population due to an aging regional population (national trends indicated there will be a 31 percent increase in the Medicare population over the next 10 years). Complex cardiac surgery and neurosurgery cases are projected to increase by 30 percent in the next 10 years. These complex cases will require longer hospital stays and more hospital beds. In addition, there is an increase in medical complexity of patients coming to the hospital as less complex cases are transitioned to outpatient clinics, and higher complexity mean longer length of stay for each admission and greater need for beds. Learning from the current COVID-19 pandemic, it is extremely critical for clinical facilities to be flexible and have the ability to increase inpatient capacity to accommodate additional clinical needs during these times, rather than reducing or canceling non-essential surgeries in order to reduce patient census. Based on observed shortages in the availability of beds, especially intensive care unit (ICU) and acute care beds; an analysis of demographic trends that indicate that the Medical Center will need to serve not only a larger population but also a population that includes more elderly patients; an analysis of the demand/need for private rooms (versus shared rooms/wards); and an analysis of trends in health care which show an increased need for tertiary and quaternary health care, UCSF Health determined that a larger hospital is needed that would provide inpatient beds, along with other necessary facilities that include additional operating rooms, additional emergency room bays and spaces, additional interventional labs, and ambulance bays. UCSF Health also determined that the New Hospital would be implemented in combination with a proposed renovation of Moffitt and Long Hospitals. The renovation of Moffitt and Long Hospitals would provide inpatient beds to augment those proposed at the New Hospital, and facilitate the inpatient clinical and support program needs for the increased patient capacity at Parnassus Heights. UCSF Health estimates a need for a net increase of up to 207 inpatient beds at Parnassus Heights campus over existing conditions.

There is also a need to co-locate UCSF's clinical space with instructional and research spaces at Parnassus Heights. The three missions of clinical care, education, and research are inter-dependent and require balanced support to ensure continued excellence. With a health science focus, much of the research at UCSF benefits from adjacency to the clinical environment just as access to the most advanced research is important to support the clinicians. Similarly, the research

and clinical environments provide critical training for students and learners at UCSF. The clinical, educational and research programs are inextricably linked.

3.6 Project Objectives

The key objectives for the proposed NHPH are as follows:

- Meet seismic requirements of California Senate Bill 1953 by developing a new, seismically-sound, state-of-the-art inpatient facility.
- Site and develop a new inpatient facility in a way that optimizes operational activities with other clinical facilities at Parnassus Heights, such as Moffitt and Long Hospitals, and Medical Building 1.
- Optimize the reuse of Moffitt Hospital by seismically retrofitting the building and judiciously reusing limited portions for inpatient use, as physical requirements allow, balanced with reuse of Moffitt Hospital for other needed clinical and support functions.
- Increase inpatient beds at Parnassus Heights to address severe constraints on capacity and access to care, and to meet the needs of a growing and aging Bay Area population.
- Increase inpatient beds at Parnassus Heights to allow for the capacity to provide inpatient health care in times of severe strain such as the current pandemic, without resorting to reducing or canceling non-essential surgeries to create bed capacity.
- Develop a new inpatient facility that has sufficient space to accommodate modern regulatory requirements and industry standards of contemporary hospitals, such as construction codes, sizes of operating rooms, ratio of operating rooms to pre-and post-recovery areas, and space for privacy and infection control issues.
- Develop a new inpatient facility that has sufficient space to accommodate modern technology, including telemedicine, robotics, and new diagnostic, imaging, testing, treatment, surgery and laboratory equipment, all requiring substantial infrastructure and space.
- Develop a new inpatient facility that has sufficient space to accommodate patient satisfaction requirements of contemporary hospitals, such as private patient rooms of sufficient size.
- Develop a new inpatient facility that is optimized in its spatial layout to enhance functionality and efficiency.
- Develop spaces for clinical and translational research and learning in or adjacent to clinical areas where patients are located.

The following are objectives from the CPHP relating to future development at the Parnassus Heights campus site that pertain to the proposed NHPH:

- Revitalize the aging Parnassus Heights campus to enhance its place as a premier educational, research, and clinical institution -- one that draws in research and clinical faculty, staff, students, and trainees.
- Fulfill the need for contemporary research, educational, clinical, and support spaces that have been lacking at Parnassus Heights for decades.

In addition, the 2014 LRDP Final EIR also identified certain objectives specific to the Parnassus Heights campus site that are relevant to the NHPH:

- Ensure that adequate space is provided to foster collaboration and to facilitate the inter-dependence and connectivity for operational efficiency and effectiveness of instruction, clinical, research and support uses in close physical proximity to each other.
- Ensure that Long Hospital and the New Hospital Addition have adequate clinical and administrative support and are aligned with education, research and specialized care programs and support that remain at the campus site.

3.7 NHPH

The NHPH consists of the proposed New Hospital, and a number of related improvements, including renovation of Moffitt and Long Hospitals; widening of Medical Center Way in the vicinity of the New Hospital; replacement of diesel fuel tanks and medical gas tanks; vegetation management and slope stabilization improvements; and a proposed pedestrian bridge and tunnel across Parnassus Avenue. **Figure 3-3** illustrates the location of the study area for the proposed New Hospital and related improvements. The following provides a description of each project component.

3.7.1 NHPH Features

New Hospital

Background

Table 3-1 presents an overview of the Parnassus Heights hospital program, including the existing (2020) hospital program, the hospital program envisioned under the CPHP, and the hospital program as modified under the proposed NHPH project. As shown in Table 3-1, there are currently 325 inpatient beds at Long Hospital and 150 inpatient beds at Moffitt Hospital, for a total of 475 inpatient beds within a combined approximate 754,400 gsf of building space.

TABLE 3-1
PARNASSUS HEIGHTS HOSPITAL PROGRAM AND BEDS

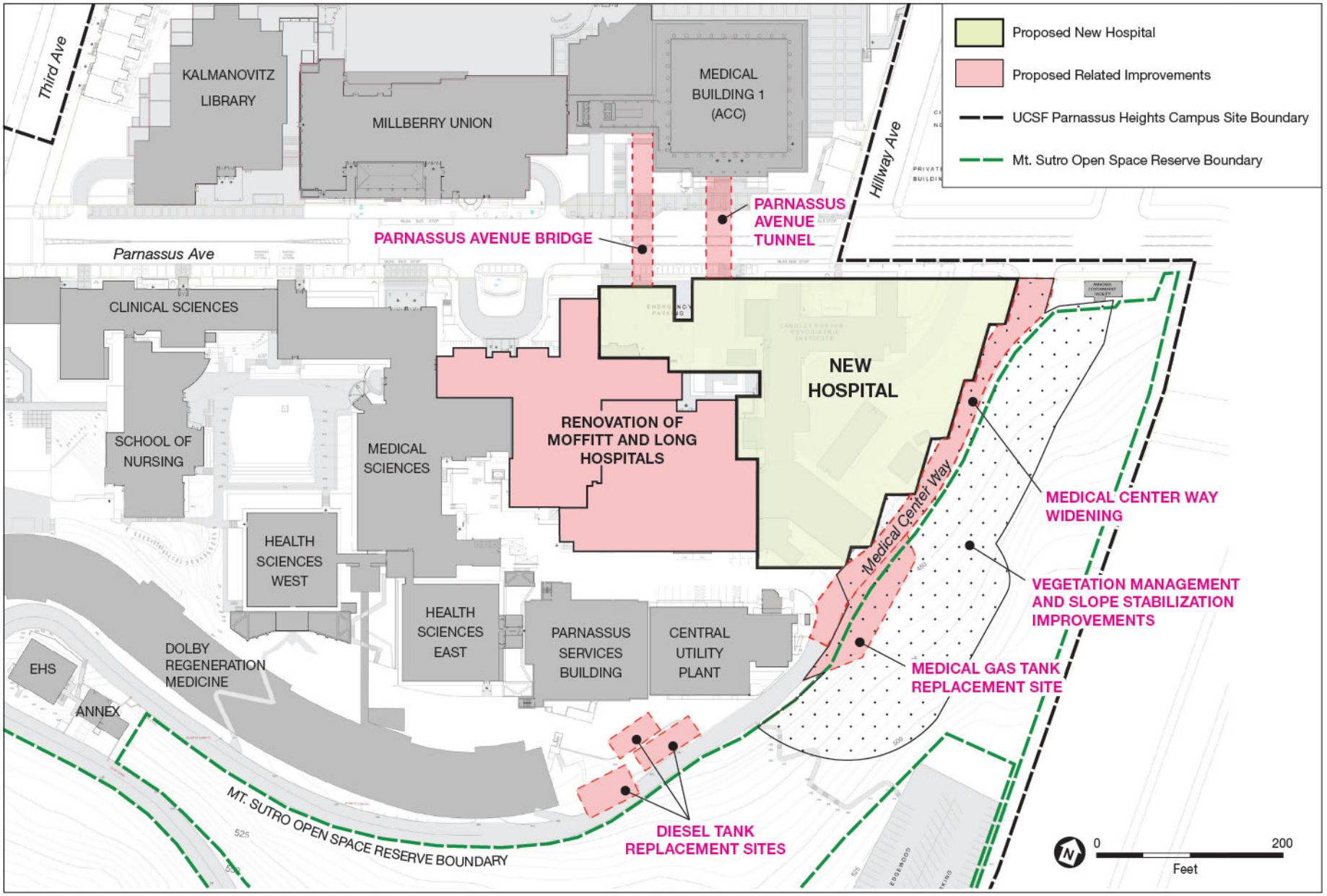
	Existing (2020)		CPHP		NHPH Project	
	Beds	**Size (GSF)**	**Beds**	**Size (GSF)**	**Beds**	**Size (GSF)**
Moffitt Hospital	150	385,800	0	385,800[a]	49	390,300
Long Hospital	325	368,600	291	368,600	297	373,600[b]
Proposed New Hospital	--	--	384	955,000	336	900,000
Total	**475**	**754,400**	**675**	**1,709,400**	**682**	**1,668,900**

NOTES:

[a] Under the CPHP, inpatient beds from Moffitt Hospital would be relocated to the New Hospital, and Moffitt Hospital would be renovated and repurposed.

[b] Two potential options for renovation of Long Hospital are proposed, one of which one option which would result in a net increase Long Hospital building space by approximately 5,000 gsf; that option is reflected here.

SOURCE: UCSF, 2021



SOURCE: UCSF, 2021

UCSF New Hospital Parnassus Heights EIR

Figure 3-3
New Hospital and Related Improvements Site Map

Under the CPHP, the New Hospital was envisioned to be 955,000 gsf in size and include 384 inpatient beds. The CPHP program assumed that the existing inpatient beds in Moffitt Hospital would be relocated to the New Hospital; and the surplus space at Moffitt Hospital would be renovated for other clinical uses that would support the New Hospital. Furthermore, under the CPHP program, 291 inpatient beds were assumed to be provided at Long Hospital. As such, the CPHP provided for total of 675 inpatient beds at the campus site.

Proposed New Hospital Use Program and Space Summary

Subsequent to the approval of Amendment #7 to the 2014 LRDP, as master planning for the Parnassus Heights campus site transitioned to the New Hospital, the University reexamined the hospital program at Parnassus Heights, including the proposed size of the New Hospital, and proposed use of Moffitt and Long Hospitals. Under the proposed NHPH, the size of the New Hospital would be reduced from 955,000 gsf (as included in the CPHP) to a proposed 900,000 gsf (an approximate 6 percent reduction), and the inpatient bed count in the New Hospital would be reduced from 384 beds to 336 beds. In addition, under the NHPH, Long Hospital would provide 297 inpatient beds, and Moffitt Hospital would provide 49 inpatient beds. As a result, the total inpatient bed count at the campus site under the NHPH would be up to 682 beds, an increase of up to seven beds over that included in the CPHP; these beds would be online by December 2030. When considering all three hospitals, the collective hospital building space at the campus site under the NHPH project would be 1,668,900 gsf, which is approximately two percent less than the 1,709,400 gsf assumed under the approved CPHP.

Other factors informing the size of the New Hospital include compliance with applicable codes and regulations for new hospitals that require, among other things, taller floor heights and additional space to accommodate mechanical equipment and hospital support functions. The New Hospital design also reflects considerations to further improve operational efficiency, including provision of operating rooms and critical supporting functions on the same level.

Table 3-2 presents a building space summary for the New Hospital. **Figure 3-4** and **Figure 3-5** present birds-eye building massing illustrations of the New Hospital.

New Hospital Design

The proposed New Hospital is in the early stages of design. As proposed, the New Hospital would be approximately 900,000 gsf, and consist of 15 stories plus rooftop mechanical equipment and a full basement. The height of the building above ground level would be approximately 269 feet to the roof level, and approximately 294 feet to top of rooftop perimeter screening. Portions of mechanical equipment and antennas located on the roof would exceed the 294 feet in height. The New Hospital building would consist of a 5-story podium, above which a 10-story tower would rise.

Figure 3-6 presents a plan view of the proposed New Hospital and its main access points. The New Hospital would be situated in the area bounded by Parnassus Avenue on the north, the proposed renovated Moffitt and Long Hospitals on the west, and proposed widened Medical Center Way on the east. On Level 3 and above, the east face of the New Hospital would partially cantilever over the adjacent Medical Center Way in a saw-toothed pattern.

TABLE 3-2
NEW HOSPITAL SPACE SUMMARY

Function	Size (GSF)
Inpatient Services	
Acute Care	167,250
Intensive Care Units	128,000
	295,250
Diagnostic and Treatment	
Emergency Department	27,200
Interventional Platform[a]	131,600
Procedural Suite	18,400
Imaging and MIT	32,500
Neurodiagnostics	2,500
Radiation Oncology	1,300
	213,500
Clinical Support	
Pharmacy	14,800
Pharmacy, Surgical Satellite	1,750
Blood Bank	4,100
	20,650
Logistic Support	
Sterile Processing Department	24,000
Dietary Kitchen	16,900
Patient Transport	1,500
	42,400
Public Areas	
Main Entry Lobby	9,000
Food Services[b]	25,000
Retail and Amenities[c]	4,100
	38,100
Building Infrastructure	
Architectural Infrastructure[d]	180,000
Engineering Infrastructure[e]	110,100
	290,100
Total	**900,000 GSF**

NOTES:

[a] Includes surgery; interventional space; and operating room staff, lobby, administration and public areas.
[b] Includes coffee cart, all day eatery, and fast casual café/bistro.
[c] Includes retail pharmacy, florist and gift shop, destination exhibit, business center, bank, wellness market/bodega, novelty destination vendor, micro mart, and wellness center/spa.
[d] Includes exterior envelope, stairs, elevators, and building and lobby circulation.
[e] Includes mechanical, electrical and telecommunications space.

SOURCE: UCSF, 2021

2019/D1902291.01 - UCSF NHPH EIR/05 Graphics-GIS-Modeling/Illustrator

SOURCE: UCSF, 2021

UCSF New Hospital Parnassus Heights EIR

Figure 3-4
Birds-eye View of New Hospital Massing from Northwest

ESA

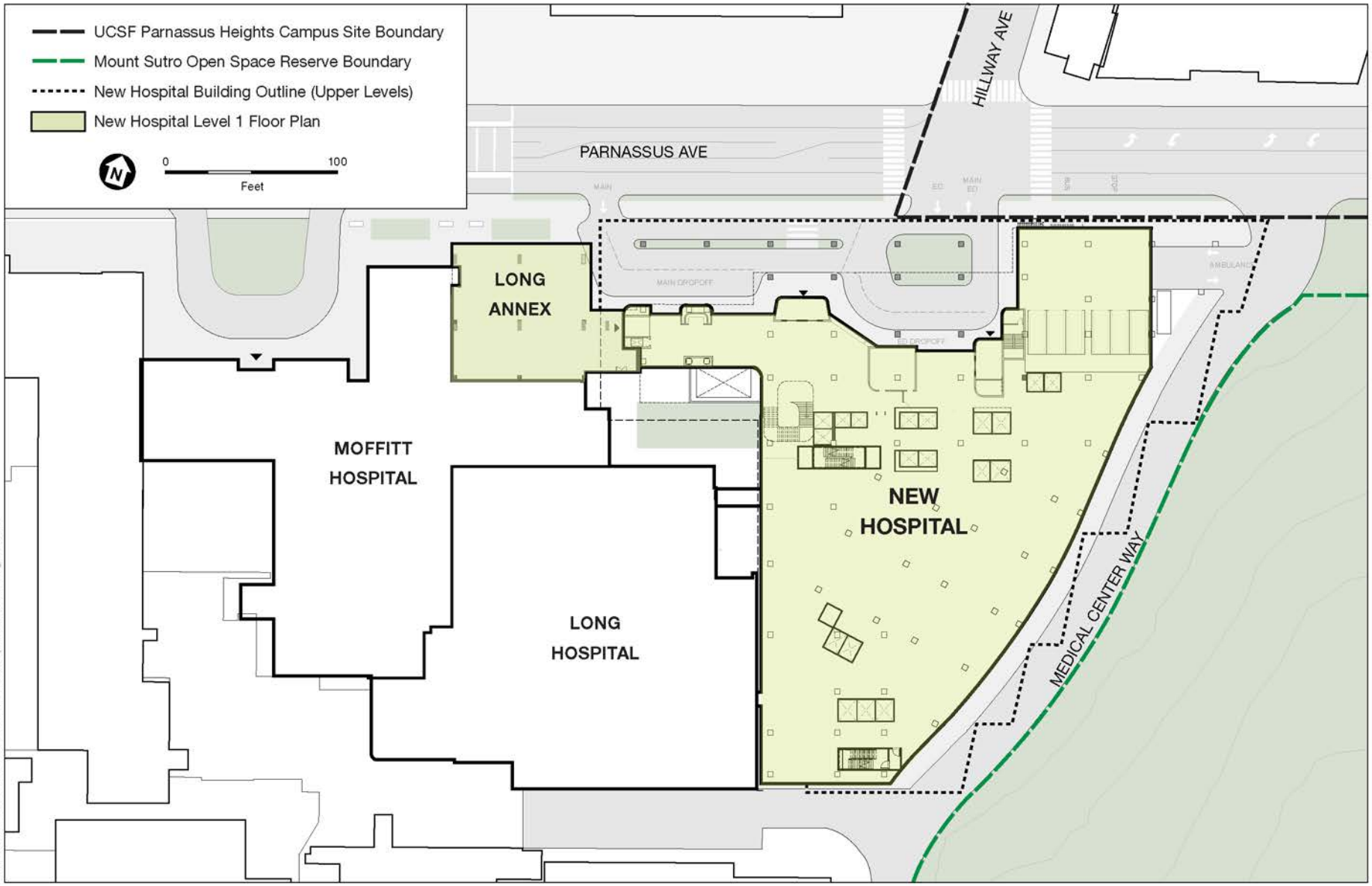
2019/D190291.01 - UCSF NHPH EIR/05 Graphics-GIS-Modeling/Illustrator

SOURCE: UCSF, 2021

UCSF New Hospital Parnassus Heights EIR

Figure 3-5
Birds-eye View of New Hospital Massing from East

ESA



SOURCE: Herzog & de Meuron

UCSF New Hospital Parnassus Heights EIR

Figure 3-6
New Hospital Site Plan

The New Hospital, and renovated Moffitt and Long Hospitals would effectively function as one hospital. The three buildings would be organized around a central courtyard that would provide the three buildings access to daylight and views, and facilitate way finding. **Figure 3-7** through **Figure 3-10** present elevation drawings of the New Hospital for the north, east, south and west elevations, respectively. **Figure 3-11** presents a stacking diagram of the New Hospital, and adjacent Moffitt and Long Hospitals. Due to the greater floor-to-floor heights of the New Hospital, only certain levels of the New Hospital would horizontally connect to the adjacent Moffitt and Long Hospitals. Final connection locations and floors would be confirmed during the design process. A transfer elevator core in the New Hospital would allow for connections to Moffitt and Long Hospitals on the remaining floors. See detail on the proposed improvements to Moffitt and Long Hospitals, under *Renovation of Moffitt and Long Hospitals,* below.

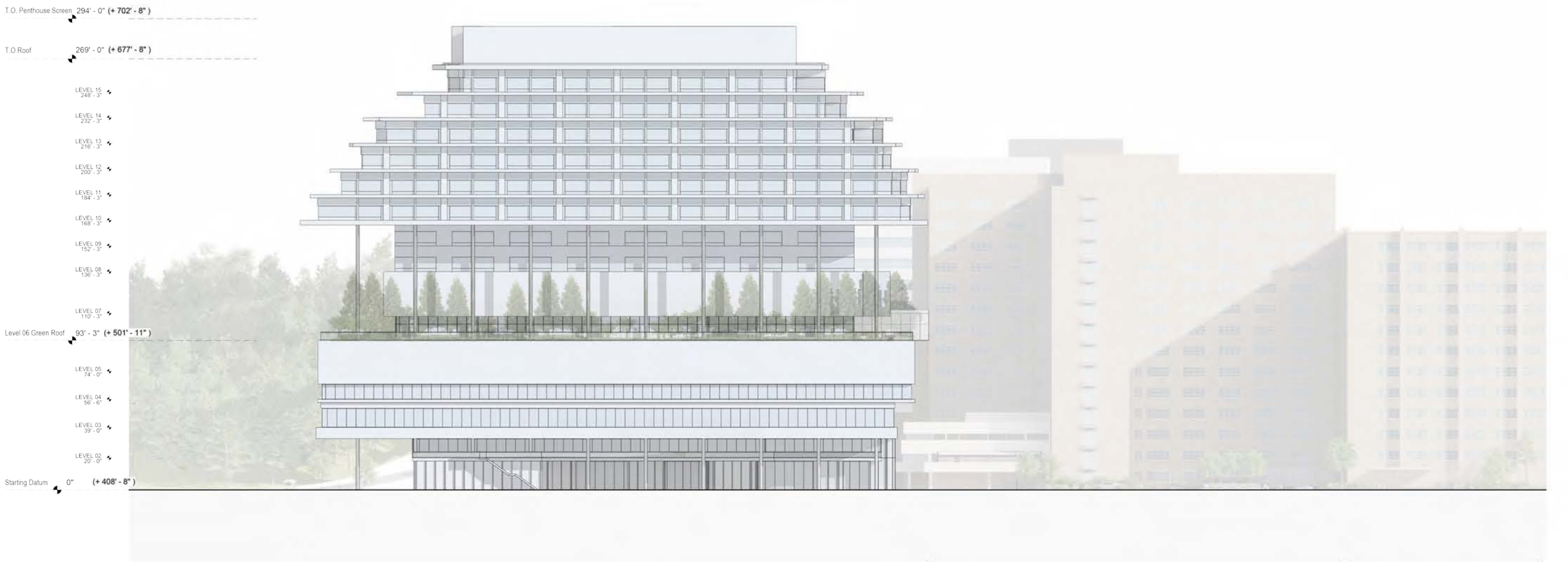
Vertically, the New Hospital would be divided into three distinct stacked horizontal layers, with each layer corresponding to different hospital programs. The New Hospital diagnostic and treatment programs, and pharmacy would be located in the building podium (Levels 1 through 5). The New Hospital's intensive care units (ICUs), along with main kitchen and eatery, would be primarily located in the center layer (Levels 6 through 10). The New Hospital's acute care units (ACUs) would be located in the upper layer (Levels 11 through 15).

Along the east face of the New Hospital's podium, each ascending floor of the podium would progressively step out (eastward) to follow the contours of the adjacent hillside in the Reserve. Along the north frontage of the New Hospital facing Parnassus Avenue, the podium face would subtly articulate in and out on ascending floors to break up the overall podium mass, provide a more pedestrian scale on the ground floor, and increase visibility of building entrance/exits. Levels 3 and above of the building podium would extend over the proposed street-level vehicular turnarounds and passenger drop-off area (see *New Hospital Pedestrian and Vehicular Circulation and Loading*, below, for additional detail).

The center layer of the New Hospital would be recessed to create an elevated outdoor publicly accessible terrace that would extend along the perimeter of Level 6. Supporting columns would line the terrace, and extend to Level 10. The terrace would include a garden containing trees and other vegetation, and public seating, including to serve patrons of the all-day eatery (see *New Hospital Landscaping* below, for additional detail).

On the New Hospital's upper layer, the east and west faces of each ascending floor would progressively step back (inward) to reduce the perceived scale of the New Hospital. The articulation of the terraces created on the upper layer would also create an opportunity for exterior balcony spaces with landscaping.

The New Hospital's main mechanical equipment would be located within the building on Level 7. Other major mechanical equipment would be located within the basement and Level 2, and the roof. A 25-foot high rooftop penthouse screen would extend along the roof perimeter to ensure rooftop equipment would not be visible from off-site. Rooftop equipment would be located within enclosures to provide both noise attenuation and weather protection. The basement level in the proposed New Hospital would also include the Sterile Processing Department (SPD),



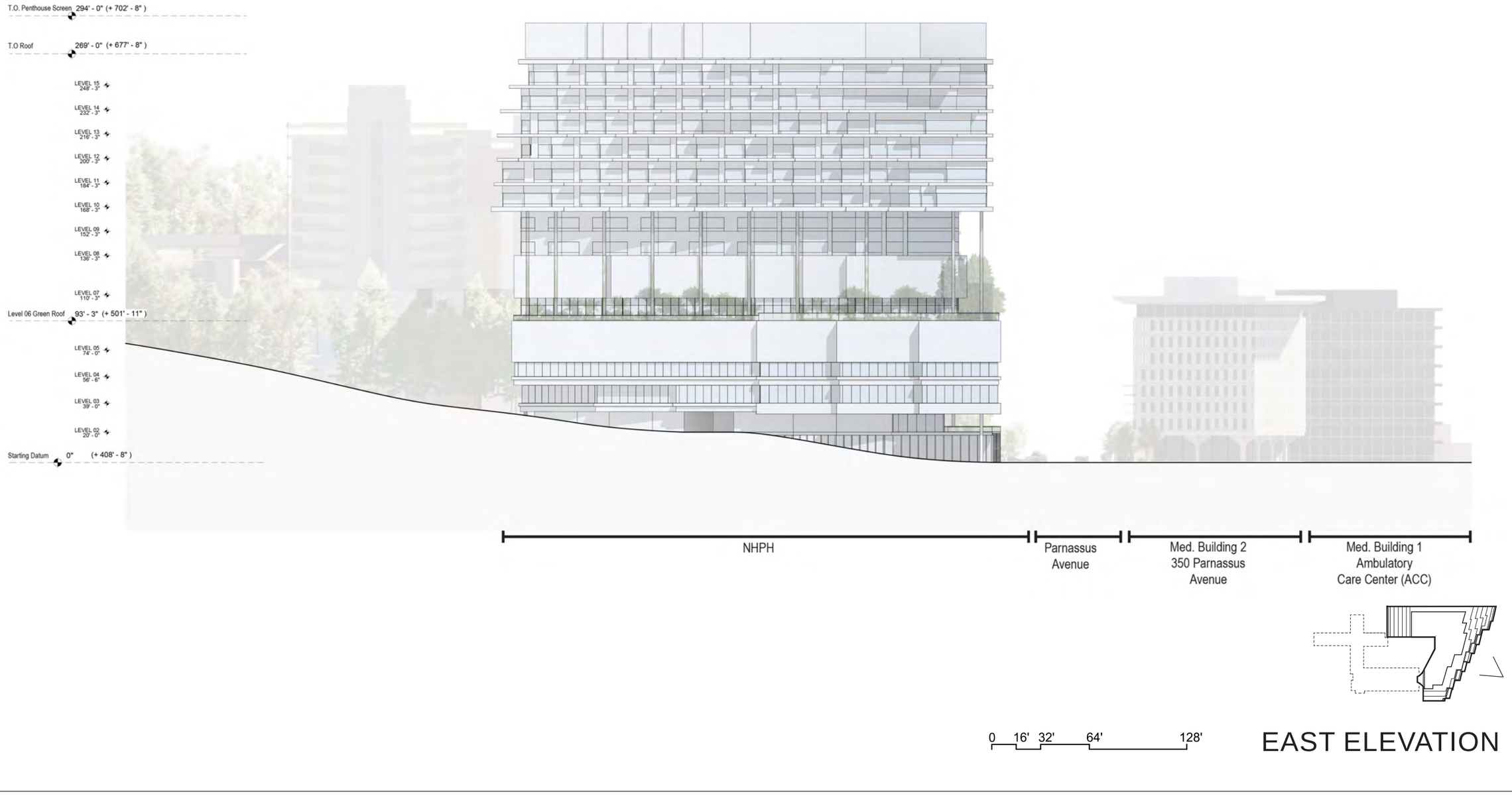
NORTH ELEVATION

2019/D190291.01 - UCSF NHPH EIR/05 Graphics-GIS-Modeling/Illustrator

SOURCE: Herzog & Demeuron, 2021

UCSF New Hospital Parnassus Heights EIR

Figure 3-7
New Hospital – North Elevation



EAST ELEVATION

2019/D190291.01 - UCSF NHPH EIR/05 Graphics-GIS-Modeling/Illustrator

SOURCE: Herzog & Demeuron, 2021

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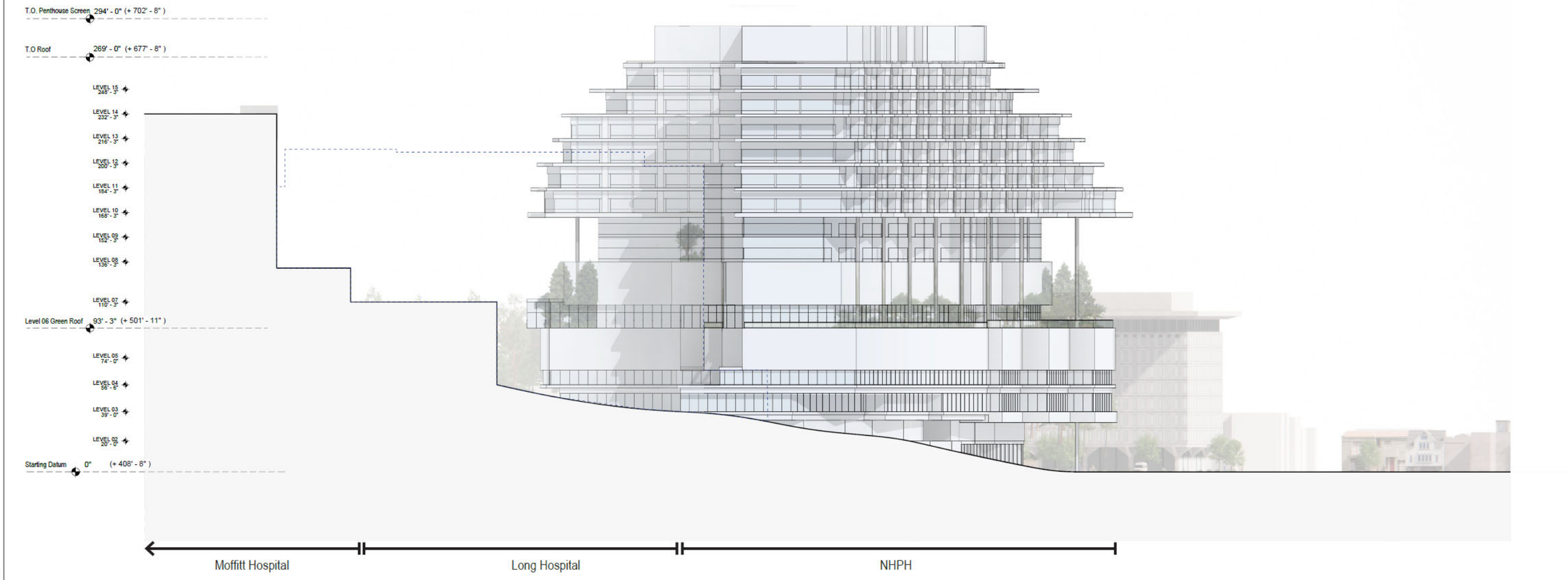
Figure 3-8
New Hospital – East Elevation



2019/D190291.01 - UCSF NHPH EIR/05 Graphics-GIS-Modeling/Illustrator

SOURCE: Herzog & Demeuron, 2021

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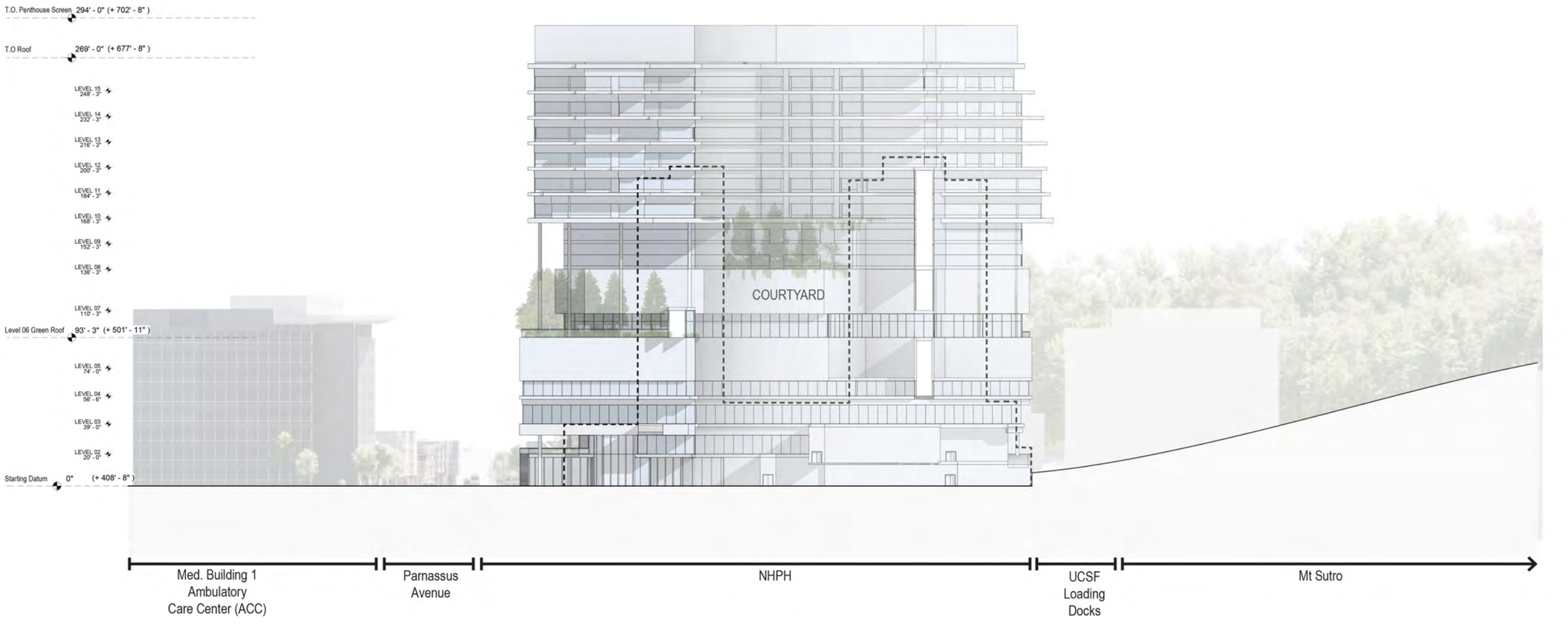
Figure 3-9
New Hospital – South Elevation

ESA



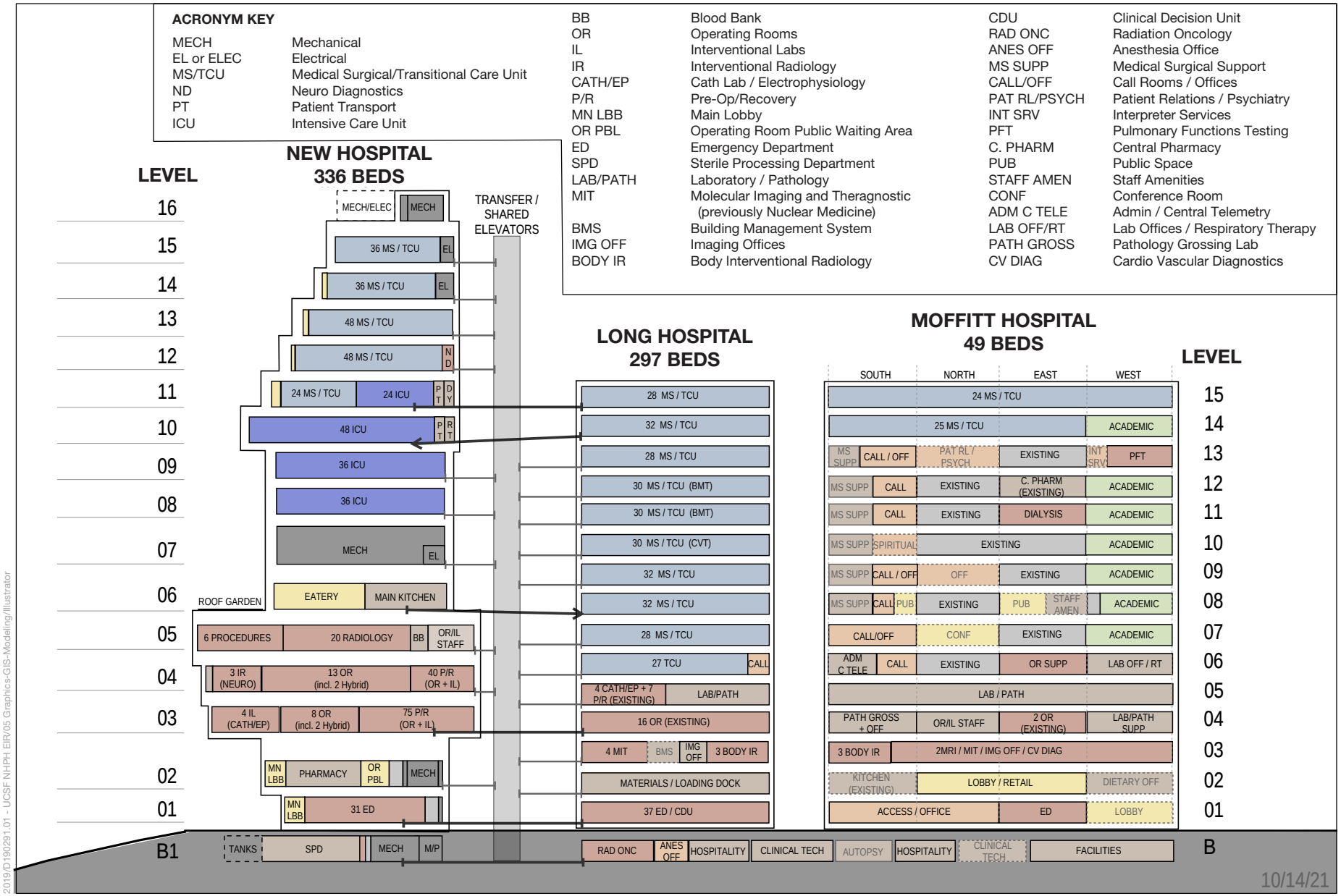
WEST ELEVATION

2019/D190291.01 - UCSF NHPH EIR/05 Graphics-GIS-Modeling/Illustrator

SOURCE: Herzog & Demeuron, 2021

UCSF New Hospital Parnassus Heights EIR

Figure 3-10
New Hospital – West Elevation



SOURCE: UCSF , 2021

NOTE: Diagrams of buildings are meant to illustrate uses within the buildings, and are not representative of actual building shapes and scale.

UCSF New Hospital Parnassus Heights EIR

Figure 3-11
Stacking Diagram for New Hospital, and Moffitt and Long Hospitals

and certain water and wastewater storage as required under California Building Code (CBC) Nonstructural Performance Category 5 (NPC-5) regulations and the Joint Commission[5] (see *New Hospital Utility Improvements*, below, for additional detail).

Figure 3-12 illustrates exterior materials for the New Hospital, as seen from the north elevation. The New Hospital would incorporate a variety of exterior materials, textures and colors in its exterior design. The New Hospital would include profiled glazed terracotta on the curtain wall, soffits and rooftop penthouse screening; and vision and spandrel glazing. The street-level entrances to the New Hospital would use glazed curtain walls with wood accents, and wood finished soffits. Street-level podium columns and the columns within the publicly accessible terrace on Level 6 would have an architectural concrete finish.

New Hospital Third Floor Projection Design Options

Under the proposed project, the north building façade of the New Hospital would align with the UCSF property boundary along the Parnassus Avenue frontage. However, UCSF is considering two different design options that would involve a horizontal projection of the third floor that would extend over the public right-of-way. The projection would serve to provide additional overhead weather protection for New Hospital patrons at that location (see also Section 4.1, *Aesthetics, Wind and Shadow*, for wind reduction differences between the different designs). The projection may include lighting beneath it and possibly signage consistent with UCSF signage guidelines. **Figure 3-13** illustrates, and below is a summary, of each of third floor projection designs. See also **Appendix PD1** which presents the full building elevation drawings for the north, east, and west elevations, for Design Option 1 and Design Option 2, respectively.

- *Proposed Project: No Projection.* Under the proposed project, the third floor of the building would not include a projection that would extend beyond the UCSF property boundary along the Parnassus Avenue frontage.
- *Design Option 1: 4-Foot Third Floor Projection*. Under this design option, a three-foot tall horizontal projection of the third floor would extend 4 feet north beyond the UCSF property boundary over the public right-of-way. The projection would extend along the 363-foot building frontage on Parnassus Avenue, at a height of 36 feet above the street-level pedestrian walkway.
- *Design Option 2: 11.5-Foot Third Floor Projection.* Under this design option, a seven-foot tall horizontal projection of the third floor would extend 11.5 feet beyond the UCSF property boundary over the public right-of-way. The projection would extend along the 364-foot[6] building frontage on Parnassus Avenue, at a height of 36 feet above the pedestrian walkway below.

The projections proposed under Design Options 1 and 2 would partially extend over the pedestrian walkway on Parnassus Avenue. As noted in Section 1.6, *Approvals Required*, Design Options 1 and 2 would require City approval for the projections over the public right-of-way.

[5] The Joint Commission is an independent non-profit organization that accredits and certifies health care organizations and programs, including hospitals.

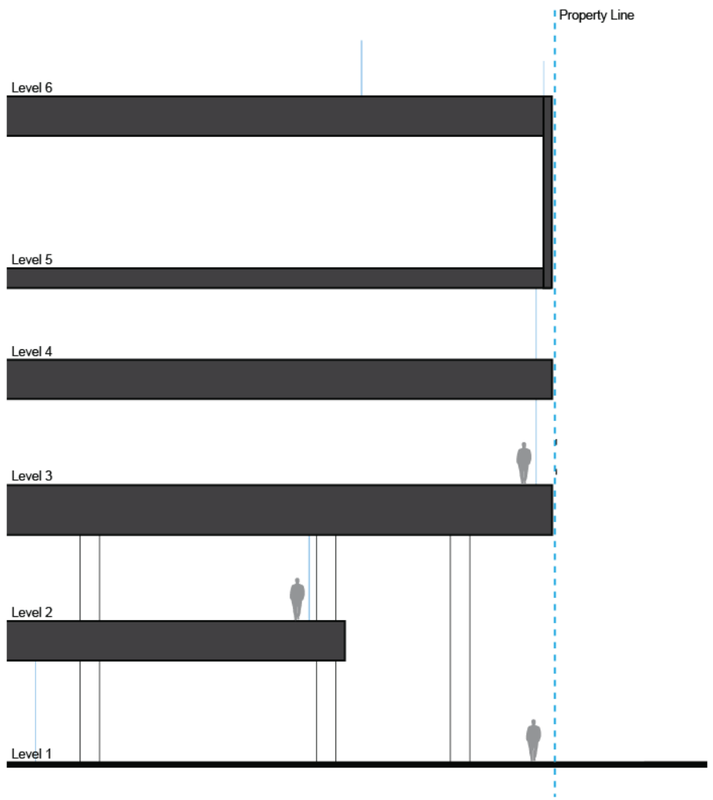
[6] The small increased length of Design Option 2 (364 feet) compared to Design Option 1 (363 feet) along the Parnassus Avenue frontage is a result of a slight further diagonal extension of the projection at the corner of Parnassus Avenue/Medical Center Way.

2019/D190291.01 - UCSF NHPH EIR/05 Graphics-GIS-Modeling/Illustrator

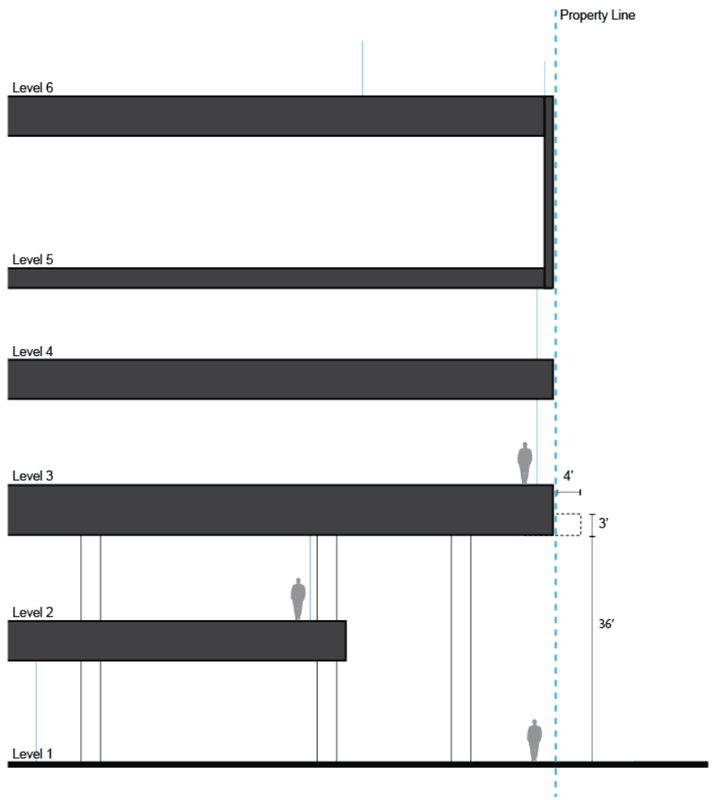
SOURCE: Herzog & Demeuron, 2021

UCSF New Hospital Parnassus Heights EIR

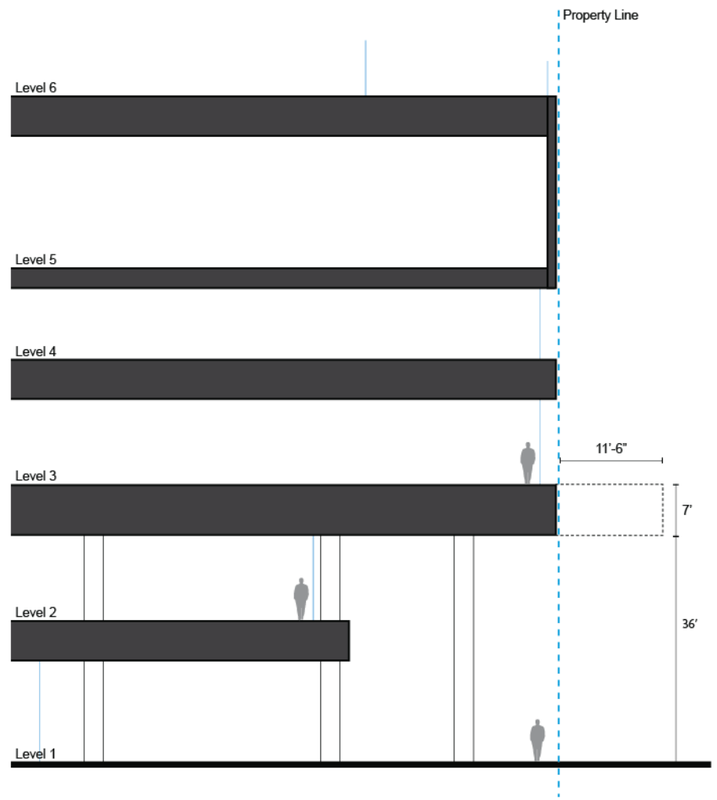
Figure 3-12
Exterior Materials



Proposed Project: No Third Floor Projection (as viewed from east)



Design Option 1: 4-Foot Third Floor Projection (as viewed from east)



Design Option 2: 11.5-Foot Third Floor Projection (as viewed from east)

2019/D190091.01 - UCSF NHPH EIR/05 Graphics-GIS-Modeling/Illustrator

SOURCE: Herzog & Demeuron, 2021

UCSF New Hospital Parnassus Heights EIR

Figure 3-13
Third Floor Projection Design Options

ESA

New Hospital Pedestrian and Vehicular Circulation, and Loading

The New Hospital building's base would be the central point of access into the New Hospital, and serve to sort the key public flows through and in-between adjacent campus facilities. Patients, visitors, and staff would utilize multiple entrances at the street level to gain access to the building. A passenger vehicle drop-off for the New Hospital would be provided on Parnassus Avenue, and an ambulance parking area would be accessed on Medical Center Way.

Figure 3-14a and **Figure 3-14b** present the circulation options for the New Hospital. In each option, proposed vehicle turnarounds accessed from Parnassus Avenue would be located beneath the New Hospital building podium at the street level.

- *Vehicular Circulation Option without Valet Area*. As shown in Figure 14a, under this option, a vehicular turnaround would provide a drop-off for patients for the main entrance and emergency department entrance, respectively. This would consist of a vehicular ingress that would provide access to the main drop-off area and continue east to the emergency department drop-off, which would have a vehicular ingress and egress on Parnassus Avenue at Hillway Avenue.
- *Vehicular Circulation Option with Valet Area*. As shown in Figure 14b, under this option, a vehicular turnaround would provide a drop-off for patients for the main entrance and emergency department entrance, respectively, as well as an area for valet operations for patients and visitors. This would consist of a vehicular ingress that would provide access to the main drop-off area and a separate valet area to the west. It would then continue east to the emergency department drop-off, which would have a vehicular ingress and egress on Parnassus Avenue at Hillway Avenue.

The New Hospital main entrance would provide pedestrian access to a central public lobby to connect visitors to the hospital's circulation cores and wayfinding stations. The New Hospital emergency department would have a dedicated pedestrian entrance to the east of the main lobby.

A dedicated ambulance parking area (providing 7 spaces) six of which would be located within the New Hospital podium on the east side of the New Hospital, and one space would be located just outside the podium; these spaces would be accessed from Medical Center Way.

Level 2 of the New Hospital would serve as a connecting floor to allow patients, visitors, and staff to orient themselves and continue through the building and to other areas on the campus site. From the Level 2 mezzanine, users would be able to also cross Parnassus Avenue via a proposed pedestrian bridge (see *Parnassus Avenue Pedestrian Bridge and Tunnel,* below, for additional detail).

Loading areas would be provided in two locations. The proposed waste loading dock for the New Hospital would be located on the east side of the New Hospital, and accessed directly from Medical Center Way. As part of the renovation of Moffitt and Long Hospitals, the existing loading dock at the south side (rear) of Long Hospital would be demolished and rebuilt, and would serve as the proposed loading dock for general hospital services.

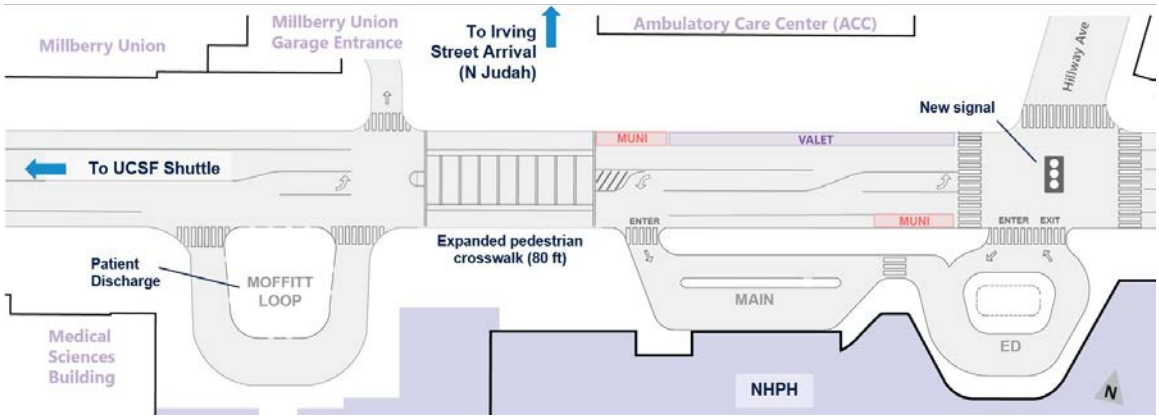


Figure 3-14a
Vehicular Circulation Option 1: Without Valet Area

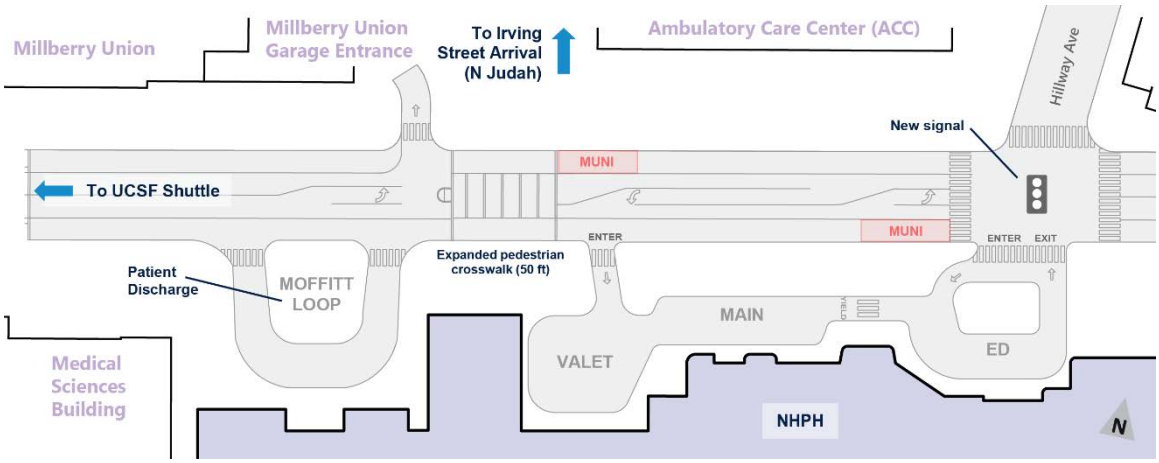


Figure 3-14b
Vehicular Circulation Option 2: With Valet Area

Proposed improvements within the public right-of-way include a new traffic signal at the intersection of Parnassus Avenue and Hillway Avenue, new curb cuts for access to and from the vehicular drop-off loops, and streetscape improvements such as new street trees where feasible. UCSF is in the early stages of discussing with the San Francisco Municipal Transportation Agency (SFMTA) the relocation of a Muni bus stop that is currently in front of the New Hospital site, which would require relocation on a temporary basis during construction, with the possibility that the new bus stop location would become permanent.

New Hospital Utility Improvements

Appendix PD2 illustrates proposed utility improvements for the New Hospital. Utility upgrades for the New Hospital would include domestic water, fire water, wastewater, stormwater, electrical, oxygen, nitrogen, emergency fuel, telecommunications, steam and condensate, chilled water, and heating hot water. The steam and condensate, chilled water, heating hot water, electrical, and telecommunications would be routed from the CUP across the existing loading dock to the New Hospital. A utilidor would run north-south within the New Hospital to

accommodate future chilled water, heating hot water, and electrical campus loops connecting further north across Parnassus Avenue. Utilities would be extended to project site development north of Parnassus Avenue via a proposed tunnel beneath Parnassus Avenue; see *Parnassus Avenue Pedestrian Bridge and Tunnel* for additional detail.

As shown in Appendix PD, certain water and wastewater storage tanks would be located in the New Hospital basement level, including for emergency fire water, domestic water and emergency sewer.

In addition to stormwater collection improvements proposed within the NHPH site, stormwater storage with a capacity of approximately 150,000 gallons would be provided on the campus site. The preferred proposal is to repurpose the existing underground diesel fuel tanks in Medical Center Way to provide storage for approximately 120,000 gallons of stormwater, and install a new underground tank at the Ammonia House site to store an additional 30,000 gallons of stormwater. The storage facilities would provide both retention and detention storage uses, with collected stormwater to be either pumped out into the combined sewer system, and/or re-used for irrigation purposes on the campus site, as appropriate. See Section 4.9, *Hydrology and Water Quality*, for additional detail.

Medical gases and emergency fuel would be served by, and routed from, the new medical gas tank and fuel tank locations on the campus site; please see *Diesel Fuel Tanks Replacement Project* and *Medical Gas Tanks Replacement Project*, below, for additional detail). Domestic water and fire water would be fed from new domestic water and fire water lines installed in Medical Center Way as a separate UCSF campus project in 2021-2022.

The planned future development of the Parnassus Heights campus site, and principally the New Hospital, would require an increase in electrical utility service to support campus growth. To accommodate the anticipated electrical demand, additional PG&E service would be required to augment the three (3) existing electrical services currently supporting the campus site (i.e., establish a fourth electrical service). The electrical service metering and distribution switchgear for the new PG&E service would be located on the campus site. The existing Ammonia House site, located at the southeast corner of Parnassus Avenue and Medical Center Way, is being considered as a possible location for the new electrical service entrance point, along with associated metering and distribution switchgear. The electrical switchgear equipment would be fenced off, screened from street view, and would only be accessible to PG&E and authorized UCSF personnel.

New Hospital Lighting

The proposed New Hospital would include exterior lighting at building entrances, drop-off areas, and pedestrian walkways for security and for wayfaring purposes. The New Hospital would comply with the allowed backlight, uplight, and glare (BUG) ratings for exterior lighting, for its specific Model Lighting Ordinance (MLO)[7] lighting zone, or the maximum vertical and

[7] The International Dark-Sky Association (IDA) and the Illuminating Engineering Society (IES) developed a Model Lighting Ordinance (MLO) to address the need for a consistent outdoor lighting regulation in North America. The MLO uses a classification of five lighting zones for different land uses, ranging from LZ0 (for pristine natural environments) to LZ4 (for limited application in areas of extensive development in cities). The MLO also limits the amount of light used for properties. In addition, the MLO uses the IES's backlight, uplight, and glare (BUG) classification of outdoor lighting fixtures to ensure that well-shielded fixtures are used, and that no uplighting is used.

horizontal lumen[8] allowances for its lighting zone. Either approach would serve to minimize lighting effects associated with the light sources.

New Hospital Landscaping

Figure 3-15 presents the proposed New Hospital landscaping plan at the street level. New landscaping is proposed on the ground level within the central courtyard, and at passenger drop off areas and entrances to the New Hospital, and Moffitt and Long Hospitals. Landscaping would include a variety of trees, shrubs and grasses. The Parnassus Avenue Streetscape Plan as planned in the 2014 LRDP and slightly modified in the CPHP, will include improvements within the Parnassus Avenue right-of-way between Fifth Avenue and Medical Center Way, including street furniture, lighting, and street trees (where feasible), as well as sidewalk and crosswalk widening in certain locations and better defined campus gateways.

Figure 3-16 illustrates the landscaping plan for the proposed outdoor publicly accessible terrace on Level 6 of the New Hospital. This terrace would include a garden containing trees and other vegetation, walkways, and public seating area.

As shown in Figure 3-16, a landscaped interior courtyard is proposed on Levels 8 and 10; this would include a variety of planting, including trees. Lastly, the terraces and ledges on upper levels within the inner courtyard would provide opportunities for additional landscaping (e.g., with low-maintenance, shade tolerant vines).

When considering the streetscape frontage on Parnassus Avenue adjacent to the New Hospital, inner courtyard, and the elevated terraces, approximately 0.5 acres of landscaping would be provided.

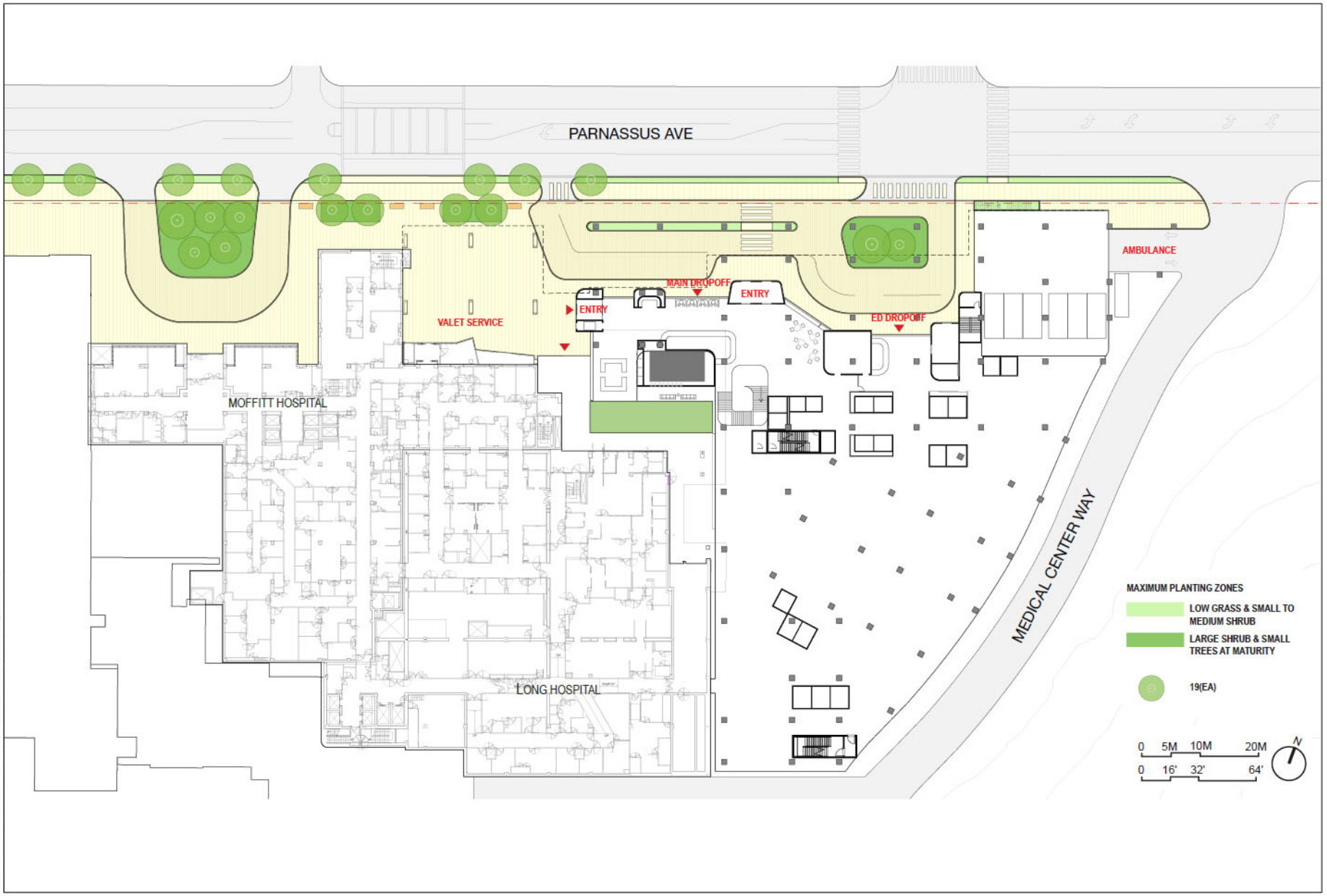
New Hospital Bird Safe Design

In consideration of the proposed New Hospital's proximity to the Reserve, UCSF would coordinate with a qualified ornithologist to incorporate design features into the New Hospital generally consistent with the City's *Standards for Bird-Safe Buildings* that would minimize the potential for bird strikes.

Building architectural features and operational strategies under consideration with respect to bird safe design and practices include, but are not limited to the following:

- Use glazing treatments, such as fritted and frosted glazing, for areas of the façade to reduce transparency. Various coatings and ceramic frits that can be applied to the glazing areas specific to bird safe design. Visible light reflectance would be targeted between 10 to 20 percent, wherever possible.
- Incorporate articulations of the building façade which are expressed both by horizontal projections (overhangs) and façade geometry to minimize the reflectivity of glazing across the façade of the building.

[8] The lumen is a measure of the total quantity of visible light emitted by a source per unit of time.



SOURCE: UCSF , 2021

UCSF New Hospital Parnassus Heights EIR

Figure 3-15
Streetscape Landscaping Plan

ESA

SOURCE: UCSF , 2021

UCSF New Hospital Parnassus Heights EIR

Figure 3-16
Landscaped Terrace (Level 6), and
Landscaped Interior Courtyard (Levels 8 and 10)

ESA

- Use building exterior columns to visually interrupt the glazed façade in areas behind the columns.
- Minimize exterior lighting along the outside of the building where possible. For the patient rooms in the New Hospital upper floors, use automated internal shading to reduce the emissions of artificial lighting at night.
- Follow LEED Pilot Credit #55, Bird Collision Deterrence[9] to the extent feasible to implement building strategies that will further minimize potential adverse impacts to birds.
- Implement a "food waste management strategy" to reinforce the appropriate handling of food waste in all proposed outdoor public areas to minimize the risk of attracting birds to the vicinity.

As part of the operational strategy for the New Hospital, a three-year post-construction monitoring plan would be established to monitor the effectiveness of the building and site design and practices in preventing bird collisions.

As discussed under *New Hospital Lighting* above, UCSF would also comply with the allowed BUG ratings for exterior lighting, which would serve to minimize the potential for bird strikes from exterior night lighting.

New Hospital Sustainability

The New Hospital is being designed and developed to minimize its environmental impact and to support the health of its occupants and the well-being of the local community. Sustainability improvements under the New Hospital are focused on air quality, carbon emissions, water use, resources, biodiversity and open space, human health, and community well-being. The New Hospital would comply with the applicable University of California Policy on Sustainable Practices, and would pursue a minimum level of LEED Gold Certification.

To improve air quality and reduce carbon emissions, the New Hospital would have no new natural gas infrastructure and all new facilities would be electrification ready. The New Hospital is required to outperform the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) 90.1-2010 baseline energy code by at least 30 percent and would target to outperform the code by at least 40 percent.

UCSF proposes to reduce water use through use of efficient plumbing fixtures, medical equipment, and native and adaptive landscaping. Additional heating ventilation and air conditioning (HVAC) water use savings are possible through the reduction of cooling towers, and additional whole project water use savings may be achieved if alternative non-potable water sources are determined to be feasible.

To minimize resource consumption, sustainable materials would be selected in accordance with LEED Materials and Resources credit standards. The project would be planned to help UCSF

[9] This LEED credit encourages site design strategies and modifications to building facades and structures to reduce bird collisions, especially with glass windows. Qualifying buildings must not exceed allowable bird threat levels, which are calculated by factors including facade materials, height, outdoor lighting and fly-through considerations.

meet and exceed its 50 percent operational solid waste diversion goals. The construction of NHPH would divert at least 75 percent of construction waste from landfill and incineration, with a target to exceed 85 percent.

As discussed under *New Hospital Design*, above, to provide open space within an urban environment, the New Hospital would be designed with a publicly accessible terrace on Level 6. To support native species and the human connection to nature, landscaping would follow the San Francisco Citywide Biodiversity Goals.

To support occupant health and community well-being, New Hospital building materials would meet stringent LEED indoor air quality requirements and minimize the use of harmful chemicals. Occupants of the New Hospital would have access to daylight and views to nature, with indoor design conditions that support human comfort.

Related Improvements

Renovation of Moffitt and Long Hospitals

The 2014 LRDP approved the renovation and repurposing of Moffitt Hospital for outpatient, hospital support and other non-acute care uses. Moffitt Hospital currently has space and design limitations, and in order to accommodate more robust clinical space and meet new CBC requirements, would require extensive infrastructure upgrades.

Under the NHPH project, the upper two floors of Moffitt Hospital would be reused to provide 49 inpatient beds. In addition, once the New Hospital is complete, interior renovations would be implemented at Moffitt and Long Hospitals to facilitate the inpatient clinical and support program needs for the increased patient capacity at Parnassus Heights under the NHPH. The proposed interior renovations would be made to approximately 74,000 gsf of building space in Long Hospital and 29,000 gsf in Moffitt Hospital to expand the lobby and certain departments, including the emergency department, surgery and surgery support, clinical labs, pathology, radiation oncology, interventional labs; and support spaces such as the loading dock, facilities management, clinical technologies, hospitality and security. The existing Long Hospital “annex” is a three-story structure fronting on Parnassus Avenue that includes a canopy over the emergency department pedestrian and ambulance entries and parking lot, a cafeteria and patio, and a cardiovascular clinic. Two options are being considered for the annex. Under the first option, during the renovation period, the annex ambulance entry would be enclosed in similar exterior materials as used for the New Hospital, resulting in a net increase to the Long Hospital building space by approximately 5,000 gsf, and all three floors would be reskinned and renovated. Under the second option, the annex ambulance entry would not be enclosed (and consequently, there would be no net increase in building space), but all three floors would be reskinned and renovated.

Both Moffitt and Long Hospitals would provide connections to the New Hospital building. New openings in the east exterior walls of Long Hospital and in the east exterior walls of the north wing of Moffitt Hospital would be created. As discussed above, final connection locations and floors would be confirmed during the design process. The work associated with creating these openings

and connecting to the New Hospital would be performed from the interior of Moffitt and Long Hospitals. This work would be phased during the construction of the New Hospital building.

Moffitt Hospital has a Seismic Performance Category rating of 2 (SPC-2). Under California Senate Bill (SB) 1953, Moffitt Hospital is required to undergo a seismic retrofit to remain an acute care facility past 2030. Additionally, the west wing of Moffitt Hospital currently exits through the Medical Sciences Building (MSB), which is a non-acute care building. The current Alternate Means of Compliance to exit Moffitt Hospital through MSB expires in 2030, which necessitates that UCSF build a new exit stair tower for Moffitt Hospital in order to remain an acute care facility past 2030.

Under the NHPH, Moffitt Hospital would be brought up to SPC-4D code compliance.[10] Steel bracing would be added to Moffitt Hospital on the 15th floor and penthouse, structural upgrades would be implemented on the 2nd and 6th floors, and an exit stair tower would be added on the north west side of the hospital that would extend from the hospital's basement to its 15th floor. To facilitate this improvement, on each floor, the western most window would be removed, the opening enlarged, and a steel stair and enclosure would be constructed. As determined during final design, the stair tower enclosure may include glass, tile, plaster and/or stone that would serve to complement both Moffitt Hospital and adjacent New Hospital. The exit stair tower would result in a net increase to the Moffitt Hospital square footage by approximately 4,500 gsf. **Figure 3-17** presents an illustration of a potential exit stair design.

Widening of Medical Center Way

The existing Medical Center Way varies in width from 20 to 38 feet (curb to curb) in the New Hospital vicinity, and contains a public walkway on the west side and a retaining wall on the east side. To meet the San Francisco Fire Department's required fire truck access, Medical Center Way from Parnassus Avenue to the existing loading dock drive aisle would be standardized to 26 feet in width (curb to curb), plus five-foot-wide sidewalks on both sides (see **Figure 3-18**). No on-street parking is proposed. The additional width required for the widening of Medical Center Way would be captured on the west side of this roadway. A four-foot wide utility zone and a three-foot wide shoring wall would be installed on the west side of the alignment.

The existing retaining wall on the east side of Medical Center Way would be replaced with a new one-foot wide retaining wall in the existing alignment. Minor elevation changes in Medical Center Way would be implemented to accommodate the proposed widened sidewalk along the east side of road, vehicular access to the New Hospital, and stormwater inlets/drains installed to ensure adequate collection of stormwater runoff along this road segment. Regrading at the drive aisle to the existing loading dock may also be required. Any work associated with this project that may occur on/adjacent to the retaining wall would include the installation of backflow preventers for domestic water, fire water, and irrigation.

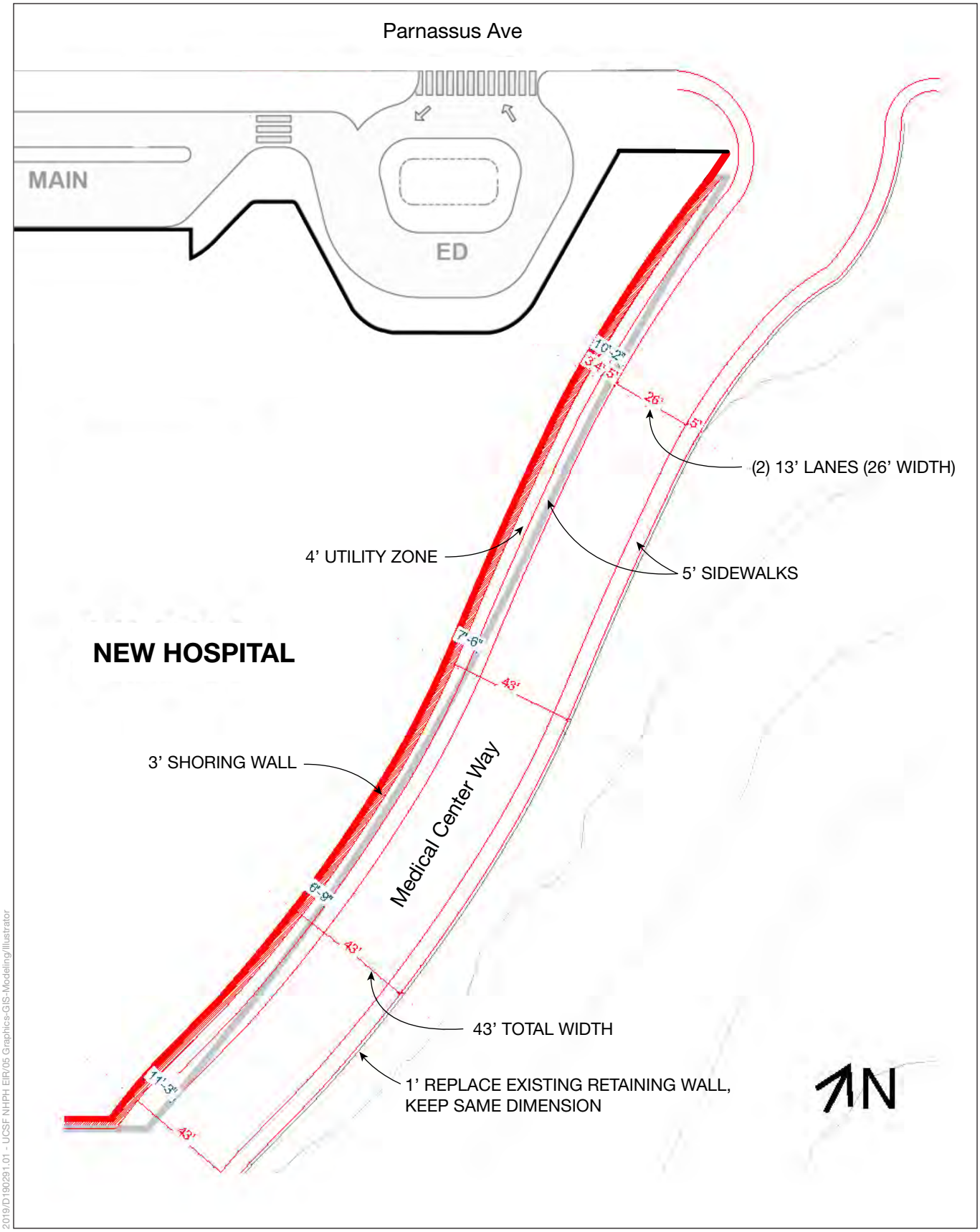
[10] SPC-4D is a Structural Performance Category that is part of the California Buildings Standards Code. SPC-4D is a voluntary program that is primarily used to retrofit SPC-2 buildings. The retrofit work needs to be completed by 2030 to allow acute care services to remain in existing noncompliant buildings beyond 2030.

2019/D190291.01 - UCSF NHPH EIR/05 Graphics-GIS-Modeling/Illustrator

SOURCE: UCSF, 2021

UCSF New Hospital Parnassus Heights EIR

Figure 3-17
Moffitt Hospital Exit Stair Design



2019/D190291.01 - UCSF NHPH EIR/05 Graphics-GIS-Modeling/Illustrator

SOURCE: UCSF, 2021

UCSF New Hospital Parnassus Heights EIR

Figure 3-18
Medical Center Way Widening Plan

Diesel Fuel Tanks Replacement

UCSF currently has five single-walled fiberglass diesel underground storage tanks (USTs) located beneath Medical Center Way (south of the Parnassus Services Building) that serve the CUP generators and boilers, and provide fuel for backup power in the event of an emergency. Each diesel fuel tank has a capacity of 30,000 gallons, for a total storage capacity of 150,000 gallons. These tanks do not meet current code requirements and must be replaced with new code-compliant tanks by 2025. UCSF proposes to install new code-compliant diesel fuel tanks with a maximum allowable capacity of approximately 210,000 gallons. Two design options are being considered, with Option B described below as the primary or preferred option:

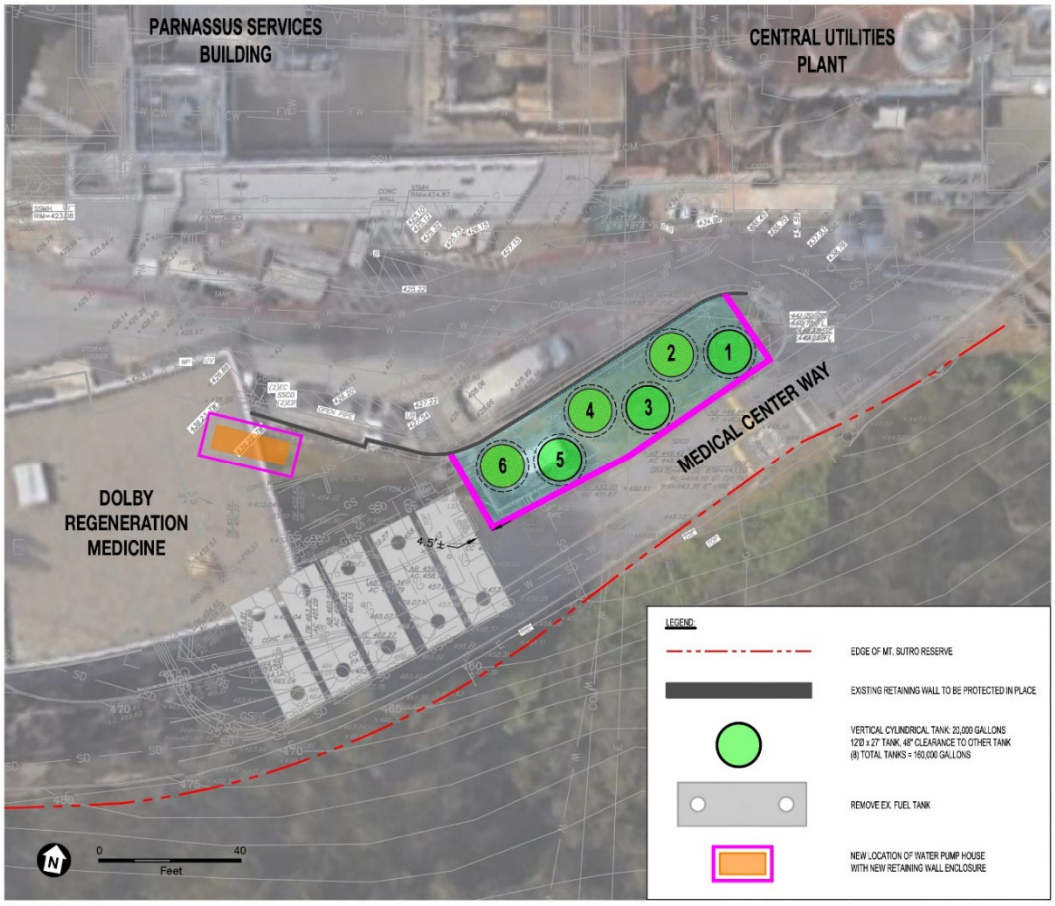
- *Diesel Fuel Tanks Replacement Option 1: Above Grade Storage Tanks*: Under this option, six new code-compliant diesel fuel aboveground storage tanks (ASTs), 35,000 gallons each, would be installed south of the Parnassus Services Building (see **Figure 3-19a**). The new ASTs would be approximately 46 feet in height and screened with a perimeter wall or fencing. The existing USTs would be decontaminated and retained in place in accordance with State UST regulations. Grading would then occur within Medical Center Way and on the adjacent hillside to the south, requiring removal of vegetation, and installation of a replacement retaining wall. Lastly, a widened Medical Center Way would then be rebuilt along this affected segment, and revegetation conducted as needed. Certain existing utilities in the site vicinity would need to be relocated to accommodate this option, including a domestic water pump and piping, 12 kilovolt (kV) electrical conduit, and fire water piping/hydrants. Applicable monitoring and safety systems and measures would be installed to ensure safe operation of the new diesel fuel tanks.

- *Diesel Fuel Tanks Replacement Option 2: Hybrid Underground + Above Grade Storage Tanks*: Under this option, three code-compliant diesel fuel aboveground storage tanks (ASTs), 20,000 gallons each, would be installed south of, and adjacent to, the Parnassus Services Building (see **Figure 3-19b**). The tanks would be placed on a mat slab on top of drilled piers, and would be approximately 26.5 feet tall and screened with a perimeter wall or fencing. These tanks would be placed into service and the existing five USTs would be removed and replaced with five code-compliant diesel fuel USTs, 30,000 gallons each. Grading would then occur within Medical Center Way and on the adjacent hillside to the south, requiring removal of vegetation, and installation of a replacement retaining wall. Lastly, a widened Medical Center Way would then be rebuilt along this affected segment, and revegetation conducted as needed. Applicable monitoring and safety systems and measures would be installed to ensure safe operation of the new diesel fuel tanks. Medical Center Way would be shut down for approximately six months during this replacement.

Medical Gas Tanks Replacement

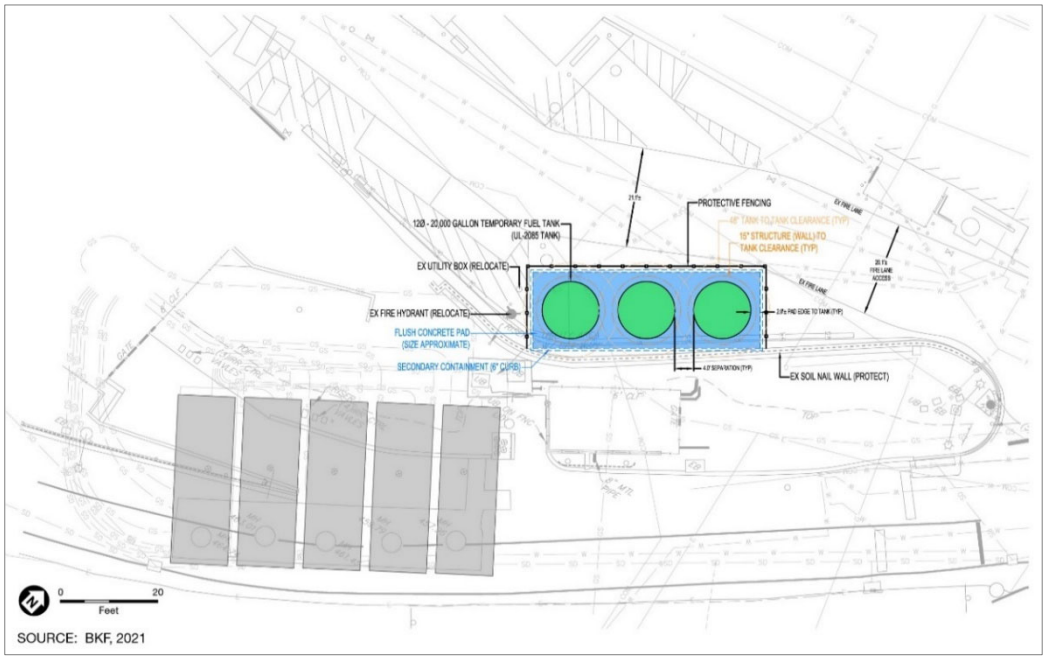
Moffitt and Long Hospitals utilize several types of bulk medical gases, including oxygen (O_2) and nitrogen (N_2). The oxygen is contained in a tank located on the north side of the CUP in the vicinity of the existing loading dock. The nitrogen is delivered in dewars[11] and stored in a medical gas storage room in Long Hospital.

[11] Dewars are vacuum flasks used for storing cryogens such as liquid oxygen and nitrogen.



SOURCE: BKF, 2021

Figure 3-19a
Diesel Fuel Tanks Replacement Option 1: Above Grade Storage Tanks



SOURCE: BKF, 2021

Figure 3-19b
Diesel Fuel Tanks Replacement Option 2: Hybrid Underground + Above Grade Storage Tanks

Due to the size and serviceability of these tanks, and to avoid potential conflicts with loading dock traffic, the O_2 and N_2 medical gas tanks would be relocated. The proposed new O_2 and N_2 tanks would meet code requirements, provide redundancy, and service the expanded acute care needs of the hospital. The space requirements to accommodate the tanks would be about 6,500 sf; tanks would include two 11,000-gallon main tanks and one 9,000-gallon reserve tank, and support equipment. The existing medical gas tank shed located along the loading dock aisle on the north side of the CUP would be demolished, and the new site for the O_2 and N_2 medical gas tanks would be in a section of the Reserve hillside adjacent to, and on the east side of, Medical Center Way and east of the CUP (see **Figure 3-20**). Following the proposed widening of Medical Center Way, a platform and secured enclosure would be built on this site for the O_2 and N_2 tanks that would allow service from Medical Center Way. As shown in Figure 3-20, there would be a temporary construction disturbance area around the permanent encroachment area; and a retaining wall secured by soil nails would be installed along the east edge of the proposed enclosure. The proposed medical gas tanks would range in height from between 13 and 44 feet. Medical gas lines would be installed under Medical Center Way to connect the proposed medical gas tank site to the hospital buildings.

The medical gas tanks replacement project would not require any modifications to existing trails within the Reserve, or affect existing trailheads. However, it would require modification of the adjacent Reserve boundary. As discussed above, as the New Hospital building as now proposed would not extend into the Reserve, the area previously removed from the Reserve to accommodate the New Hospital footprint is now proposed to be returned to the Reserve. The area between the Surge and Woods parking lots that was previously added to the Reserve would remain as Reserve land. The Reserve boundary is proposed to be modified to accommodate the medical gas tanks replacement project. These changes would maintain the Reserve at a minimum of 61 acres. See also Section 3.7.3, *Revisions to the 2014 LRDP*.

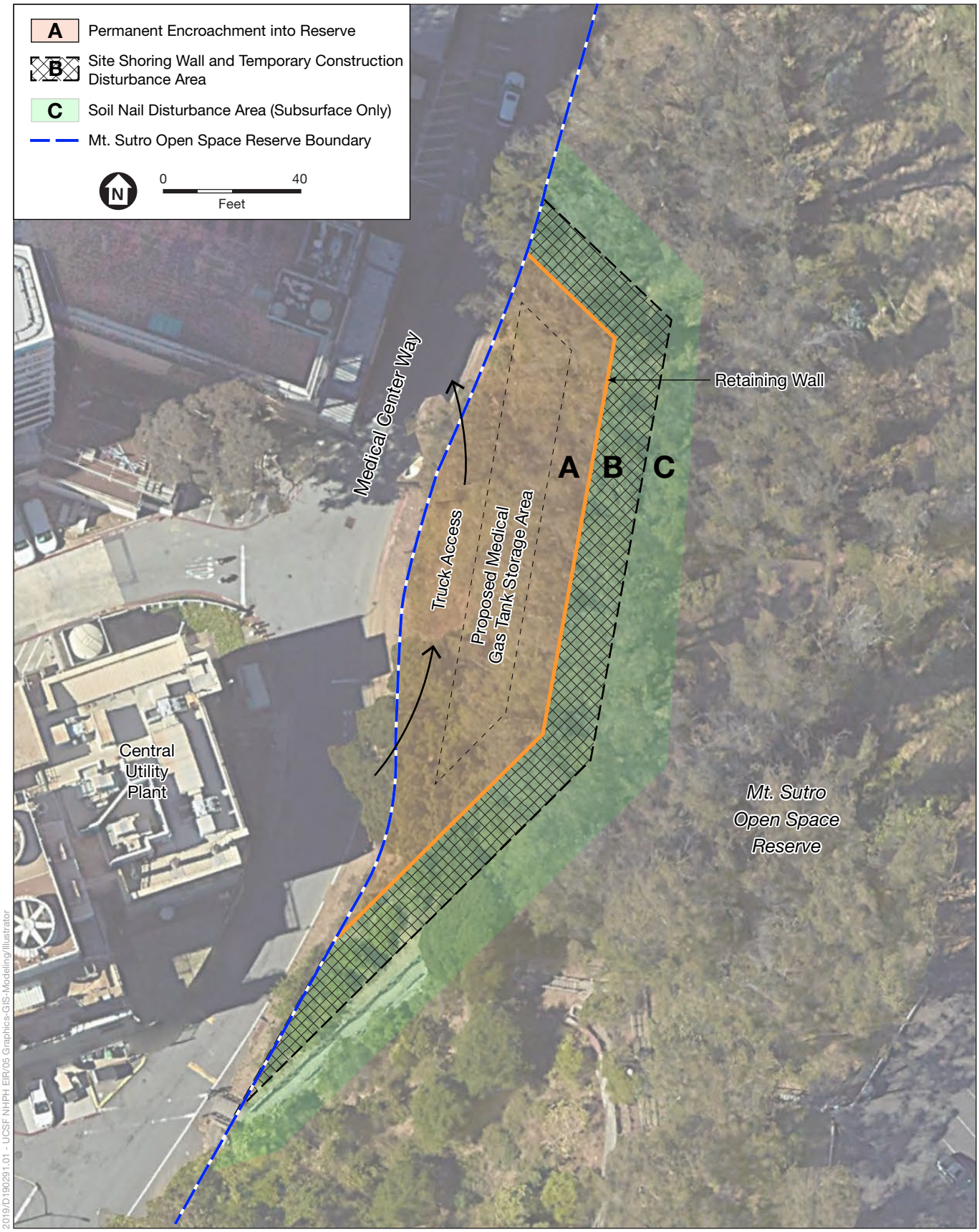
Other medical gases used at hospitals, including nitrous oxide (N_2O) and carbon dioxide (CO_2), would continue to be delivered in dewars and cylinders to the campus site and stored in Long Hospital.

Vegetation Management and Slope Stabilization Improvements

Improvements on the hillside east of Medical Center Way would include implementation of vegetation management activities to reduce the risk for fire hazards, and potential slope stabilization improvements.

In compliance with California Code of Regulations Title 14 Section 1299.03 and California Public Resources Code Section 4291, and consistent with UCSF's Mount Sutro Open Space Reserve Vegetation Management Plan, tree and vegetation management would occur on the hillside to maintain defensible space.[12] **Figure 3-21** illustrates the proposed vegetation management zones (Zones 1 and 2) in the New Hospital vicinity. Within Zone 1, which would extend 30 feet out from the New Hospital and medical gas tank replacement site, all dead or

[12] California Code of Regulations Title 14 Section 1299.03 and California Public Resources Code Section 4291 require "defensible space" be maintained at all times, whenever flammable vegetative conditions exist. One hundred feet of defensible space clearance shall be maintained in two distinct zones, Zone 1 and Zone 2. The vegetation treatment requirements for Zone 1 are more restrictive than for Zone 2.

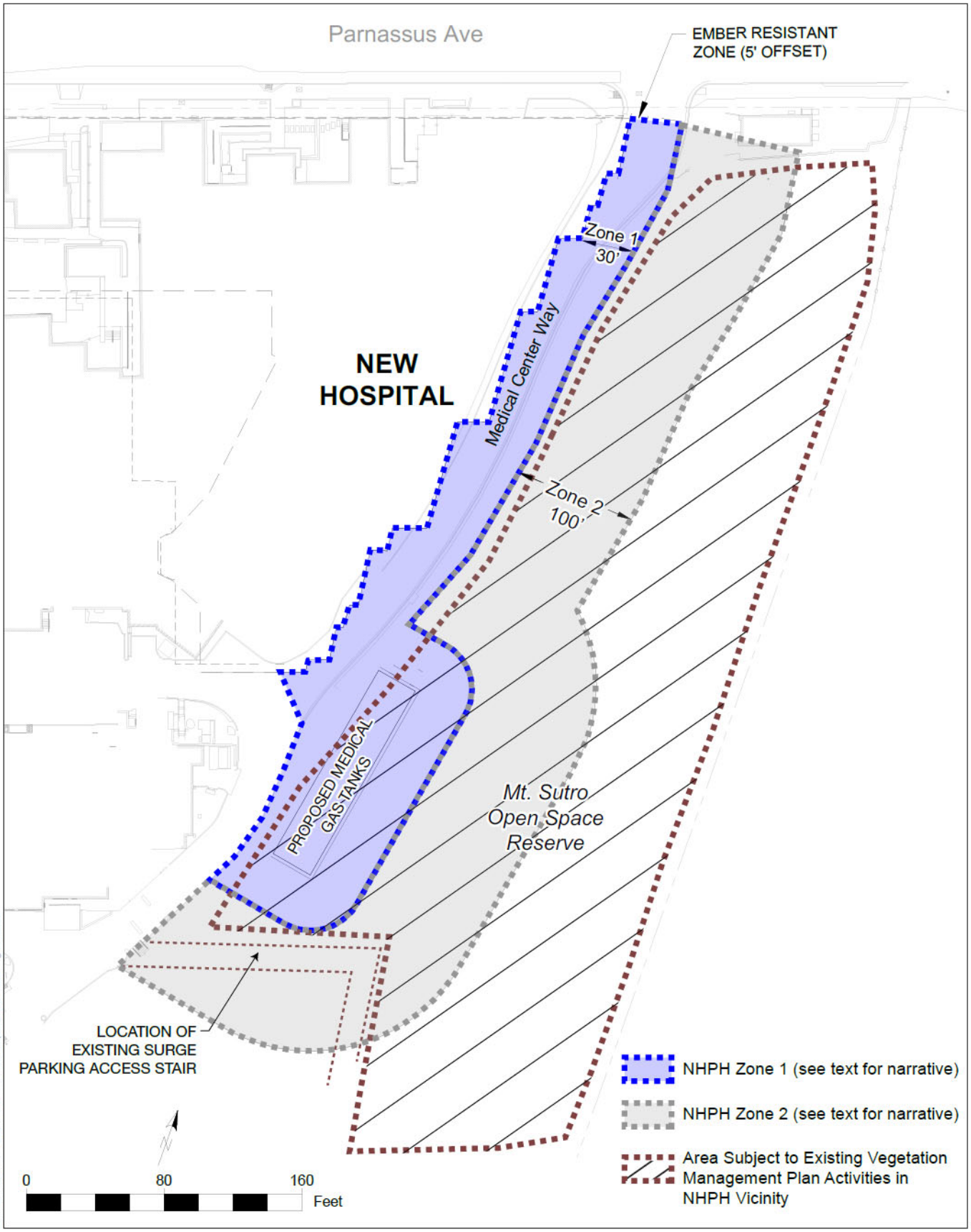


2019/D190291.01 - UCSF NHPH EIR/05 Graphics-GIS-Modeling/Illustrator

SOURCE: UCSF, 2021; Google Earth, 2021

UCSF New Hospital Parnassus Heights EIR

Figure 3-20
Medical Gas Tanks Replacement Project



SOURCE: UCSF, 2021

UCSF New Hospital Parnassus Heights EIR

Figure 3-21
Vegetation Management Zones

dying grass, plants, shrubs, trees, branches, leaves, weeds and pine needles would be removed; as would all dead tree or shrub branches that overhang roofs, below or adjacent to windows, or which are adjacent to wall surfaces; among other requirements. Within Zone 2, which would extend 30 to 100 feet out from the New Hospital and medical gas tank replacement site, horizontal and vertical spacing would be created among the shrubs and trees to achieve defensible space clearance requirements.[13] It should be noted, as illustrated in Figure 3-21, the great majority of the area that would be subject to vegetation management under the NHPH overlaps with an area that is presently subject to vegetation management activities under the Mount Sutro Open Space Reserve Vegetation Management Plan, thereby minimizing the amount of new vegetation management that would be required under the NHPH.

The need for and the extent of potential slope stabilization improvements on the hillside east of Medical Center Way would be dependent in part on the extent of the tree and vegetation clearance required to comply with State defensible space regulations (as described above). The specific stabilization technique(s) that may be implemented are being determined and could include soil nailing, surface mesh / erosion protection, catchment barrier, and/or benching.

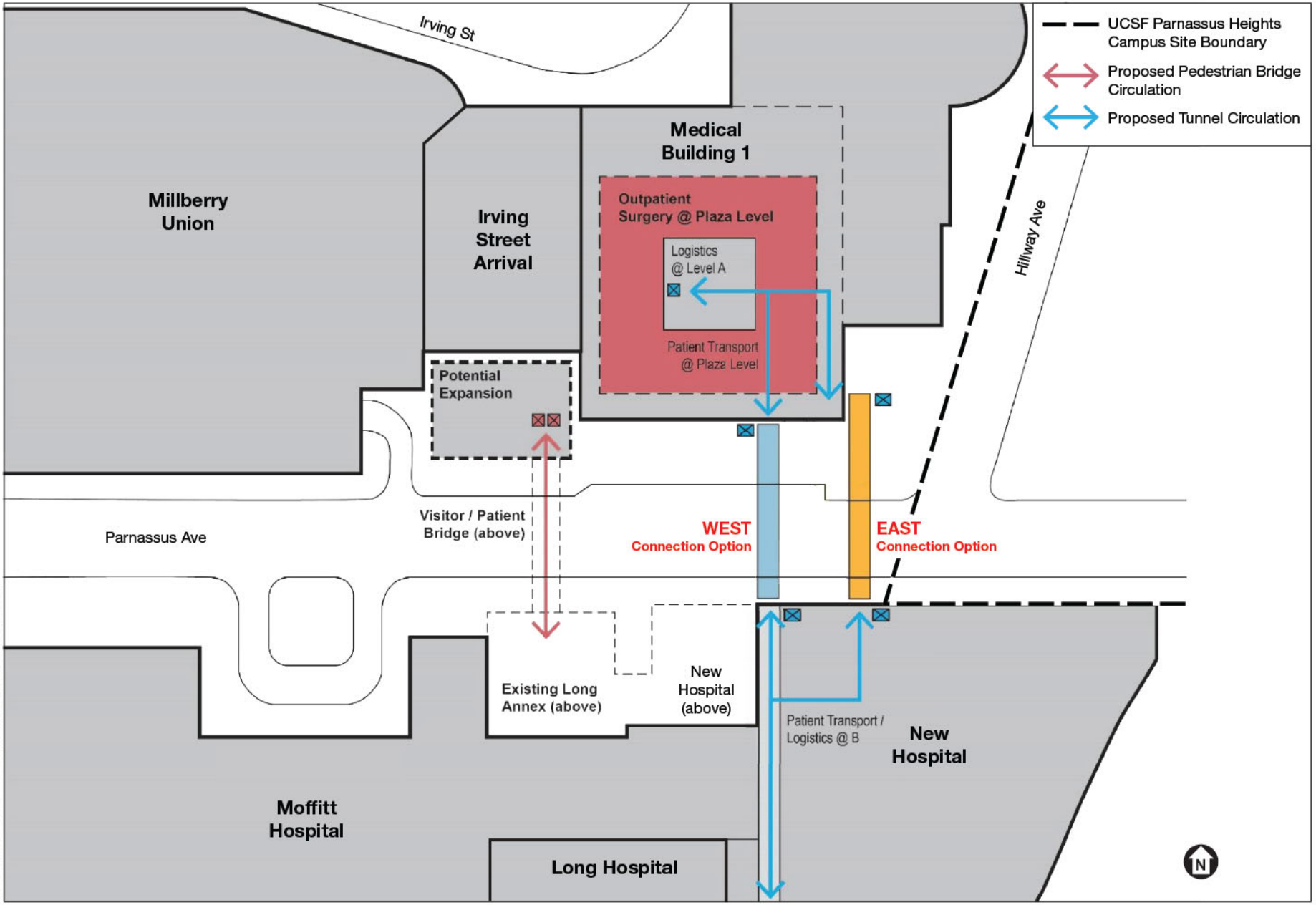
Parnassus Avenue Pedestrian Bridge and Tunnel

To facilitate pedestrian safety, ease of crossing Parnassus Avenue, and patient transport, a weather-protected pedestrian bridge over Parnassus Avenue is proposed that would connect the New Hospital to the planned Irving Street Arrival. As currently envisioned, the proposed pedestrian bridge would span north approximately 90 feet across Parnassus Avenue from the second level of the proposed modified Long Hospital annex to the second level of the planned Irving Street Arrival. The enclosed bridge structure would be about 12 feet wide and 16 feet tall and situated up to 30 feet above grade, for a total height of up to 46 feet from grade to the top of the structure.

Additionally, a tunnel beneath Parnassus Avenue connecting the south side of the campus site to the north side is proposed to provide rapid, weather-protected movement of UCSF employees, patients, goods and materials, and accommodate utility lines between Medical Building 1 and the New Hospital. Each end of the tunnel would connect to the loading and logistics services of the respective buildings; and patient transport elevators would be provided. The tunnel is intended to reduce the amount of activity and congestion that occurs on Parnassus Avenue and to provide a safer crossing experience for employees and students. It is also intended to provide a private setting for the transport of patients between the New Hospital and Medical Building 1, rather than the proposed bridge which would be open to the general public.

Two potential tunnel alignments are under consideration (i.e., west and east connection options). Under either option, the proposed tunnel would be about 20 feet wide and be located approximately 30 to 40 feet below grade. **Figure 3-22** conceptually illustrates the general location of the proposed Parnassus Avenue pedestrian bridge and tunnel options. **Figure 3-23** conceptually illustrates a profile of the proposed Parnassus Avenue tunnel.

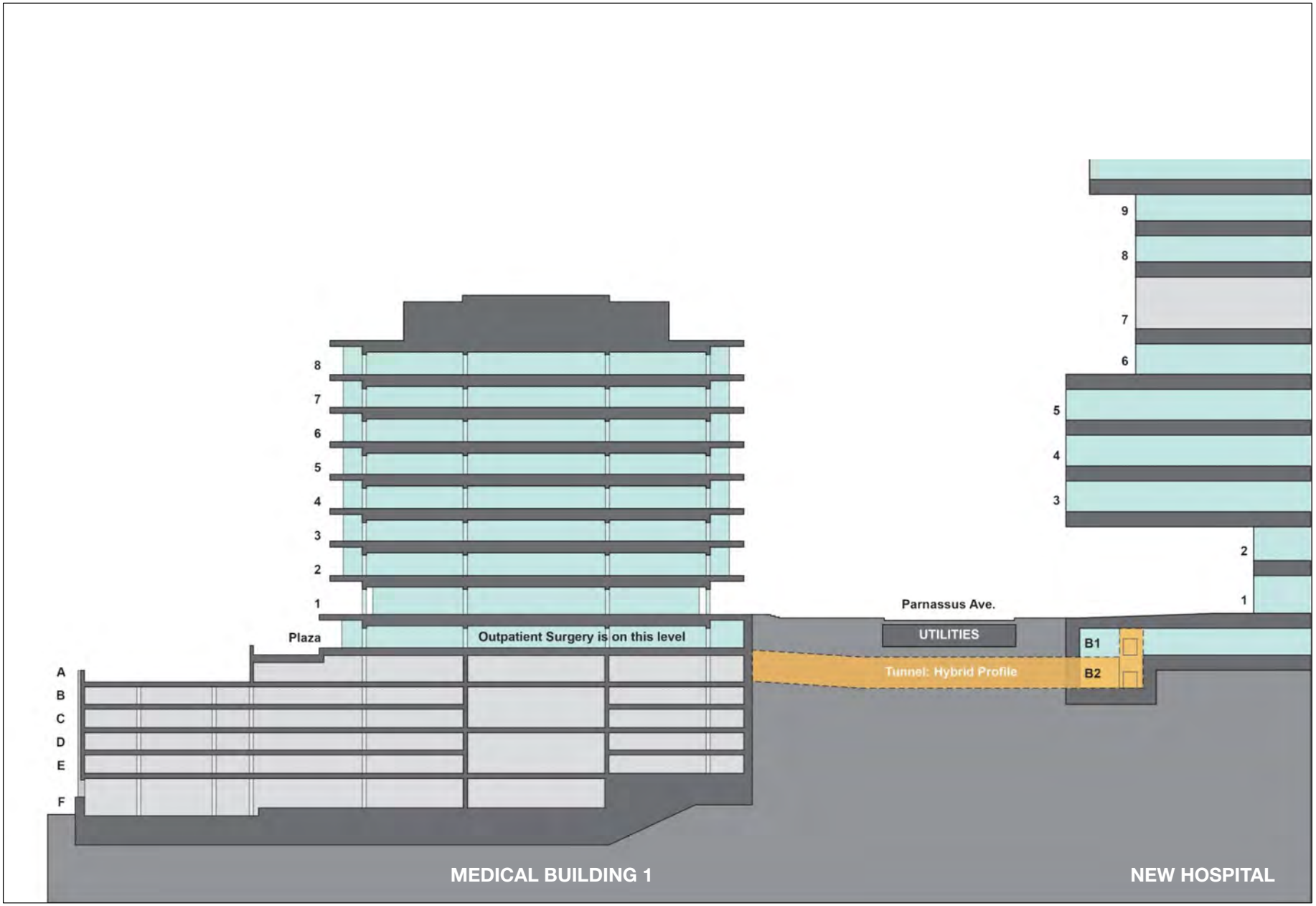
[13] The vegetation spacing would be achieved using either the "Fuel Separation" method, the "Continuous Tree Canopy" method, or a combination of both, as outlined in the State Board of Forestry and Fire Protection's "General Guidelines for Creating Defensible Space, February 8, 2006," and "Property Inspection Guide," April 2000.



SOURCE: UCSF, 2021

UCSF New Hospital Parnassus Heights EIR

Figure 3-22
Parnassus Avenue Bridge and Tunnel



2019/D190291.01 - UCSF NHPH EIR/02 Graphics-GIS-Modeling/Illustrator

SOURCE: UCSF, 2021

UCSF New Hospital Parnassus Heights EIR

Figure 3-23
Parnassus Avenue Tunnel – Profile

ESA

3.7.2 NHPH Construction

Construction Overview

As described in more detail below, the majority of NHPH construction, including for the New Hospital and related improvements, would occur between January 2023 and December 2030. Exceptions would be certain utility improvements which would begin in the third quarter of 2022; the interior renovation of Moffitt and Long Hospitals, which would extend to 2034; and the proposed Parnassus Avenue pedestrian bridge and tunnel, for which a specific date of construction is not known at this time, but is expected to occur at some point after 2030. Construction activities would include, but not be limited to, renovation and/or seismic improvements for Moffitt and Long Hospitals; site clearing, excavation, and/or grading activities at the site of the New Hospital and related improvements; New Hospital building foundation and vertical construction; street and sidewalk construction; installation of utilities; building interior finishing; and exterior hardscaping and landscaping improvements.

NHPH project construction would generate temporary construction jobs on-site that would vary in number, depending on the specific construction activities being performed and overlap between construction of individual projects. Therefore, varying numbers of construction workers would be present on the project site, depending on the phase of construction. A variety of mobile and stationary construction equipment would be used on the project site and/or immediate vicinity during construction. This is expected to include use of cranes for pier drilling for foundations, steel and/or precast erection, and building façades. Other mobile equipment such as excavators, backhoes, front-end loaders, dump trucks, rollers, sweepers, concrete boom trucks and forklifts would be used at the project site for a range of other construction tasks, including site clearing, excavation and grading, building construction, and/or hardscape and landscape materials installation. Project construction would generate off-site truck trips for deliveries of concrete and other building materials, transportation of construction equipment to and from the project site, hauling of soils and debris from the site, and street sweepers. A variety of other smaller mechanical equipment would also be used at the project site during the construction period, such as saw cutters, chopping saws, tile saws, stud impact guns, impact drills, torque wrenches, welding machines, and concrete boom pumps. The proposed tunnel under Parnassus Avenue would be constructed by means of either directional boring or open cut excavation. Depending on location within the campus site and depth of excavation, limited and temporary dewatering may be required during construction; in which case, water would be discharged to the City's sewer system, after treatment, if necessary.

Potential on-site construction materials/construction worker staging areas would include: 1) the existing parking lot area located south of UC Hall; 2) the Surge parking lot, and/or 3) the top level of the Medical Building 1 parking lot. Additionally, during the period from 2023 to 2029, construction and construction staging would occur along the NHPH site's frontage on the south side of Parnassus Avenue, immediately to the east and west of Medical Center Way. Certain roads within the campus site, most notably Medical Center Way, are likely to be partially or fully closed for limited durations during construction.

No pile driving or blasting activities are proposed during construction of projects proposed for the NHPH project. Rather, foundations would be installed using drilled piers; and excavation of soft rock would be conducted using hydraulic heavy excavators.

Construction under the NHPH project is proposed to occur consistent with Section 2908 of the City Police Code, known as the San Francisco Noise Ordinance. Although UCSF is not subject to the noise ordinance, it strives to be consistent with it to the extent feasible.[14]

Estimated NHPH Project Construction Timeline

It is anticipated that the proposed New Hospital and related improvements would be constructed along the approximate timeline presented in **Table 3-3**. Actual timelines for individual construction projects may be influenced by factors outside of UCSF's control, including, but not limited to, economic conditions (e.g., as a consequence of the present COVID-19 pandemic), weather, and other considerations.

TABLE 3-3
PRELIMINARY NHPH CONSTRUCTION SCHEDULE

NHPH Construction Component	Estimated Construction Duration
New Hospital[a]	January 2023 to December 2030
Utilities	2022 – 2024
Shoring, mass excavation and grading	2023 – 2024
Drilled piers, underground utilities, foundation	2024 – 2025
Steel erection	2025 – 2026
Slab on metal deck and fire proofing	2025 – 2026
Exterior skin enclosure	2026 – 2028
Interior build out	2026 – 2030
Landscaping and site improvements	2028 – 2030
Related Improvements	January 2022 to 2034
Vegetation Management and Slope Stabilization Improvements	2022-2024
Connections at Moffitt and Long to New Hospital	2023 – 2029
Interior renovations to Moffitt and Long Hospitals to accommodate NHPH	2023 – 2025
Moffitt Seismic and Exit Stair, including Interior Renovations	2023 – 2025
Widening of Medical Center Way	2023 – 2024
Medical Gas Tanks Replacement	2023 – 2024
Diesel Fuel Tanks Replacement	2024 – 2026
Renovation of Moffitt and Long Hospitals, including Long Annex	2031 – 2034
Parnassus Avenue Pedestrian Bridge and Tunnel	To be determined (post-2030)

NOTE:

[a] Existing buildings occupying the footprint of the proposed New Hospital include the LPPI and three small support structures. The demolition and removal of these structures would occur in 2023. The demolition and removal of the LPPI and supporting structures were previously planned under the 2014 LRDP. The CPHP Final EIR addressed the potential effect of demolition of the LPPI on historic resources as part of the CPHP. Accordingly, the demolition and removal of LPPI and supporting buildings are not included in the NHPH and will be completed separately from the NHPH.

SOURCE: UCSF, 2021

[14] Section 2908 prohibits erecting, constructing, demolishing, excavating for, altering, or repairing any building or structures between the hours of 8:00 p.m. of any day and 7:00 a.m. of the following day if the noise level created is in excess of the ambient noise level by 5 dBA at the nearest property line.

NHPH Construction, Demolition and Excavation

As discussed above, the New Hospital would result in an estimated 900,000 gsf of new building construction. Moffitt Hospital would undergo approximately 74,000 gsf of interior renovations, and a net increase in building square footage by approximately 4,500 gsf. Long Hospital would undergo approximately 29,000 gsf of interior renovations, and a net increase in building square footage by up to approximately 5,000 gsf.

The NHPH would require approximately 110,700 cubic yards (cy) of excavation of materials to be off-hauled from the site, most of which would be related to excavation at the New Hospital site, as well as for the proposed Parnassus Avenue tunnel, and the excavation on the hillside adjacent to Medical Center Way to accommodate the medical gas replacement project. Approximately 5,400 cy of materials are anticipated to be imported to the NHPH site. The renovation of Moffitt and Long Hospitals would generate an estimated 85 tons of debris that would be removed from the construction site.

The design and engineering team is exploring options for the foundation of the New Hospital; these include the following:

- A mixed foundation option consisting of deep auger pressure grouted (APG) pile foundations on the north side, and a thick concrete mat foundation on the south side.
- An all deep foundations option consisting of deep APG pile foundations on the north and drilled piers or caissons on the south.

The final foundation design is dependent on additional site borings to verify the bedrock profile of the site. Excavation on the New Hospital site would be between approximately 15 and 40 feet in depth, depending on location.

Several different shoring systems in both temporary and permanent configurations would be used along the New Hospital site boundaries, including:

- Along Medical Center Way and the south site edge: temporary soldier piles with tie-backs along northern (lower) part of Medical Center Way, and permanent soldier piles with tie-backs along southern (higher) area of Medical Center Way and south edge of site.
- Along west site edge: temporary secant piles for underpinning, where required along Moffitt and Long Hospitals' foundation interface.
- Along north site edge (Parnassus Avenue): temporary soldier piles with tiebacks (for a fixed base building option) or permanent secant piles (for a base isolated building option).

It is also expected that the proposed diesel tank and medical gas tanks replacement projects would require the installation of drilled piers to support the tank platforms.

Off-site Construction

While the great majority of construction under the NHPH is proposed within the campus site boundary, certain NHPH elements would require construction off-site. This includes, as described

above, construction along the Parnassus Avenue frontage adjacent to the New Hospital; new traffic signal at the intersection of Parnassus Avenue and Hillway Avenue; the proposed pedestrian bridge and tunnel across Parnassus Avenue; and off-site utility extensions and connections in Parnassus Avenue. Depending on activity, off-site construction may result in temporary partial public road closures, including on Parnassus Avenue.

Tree Removal

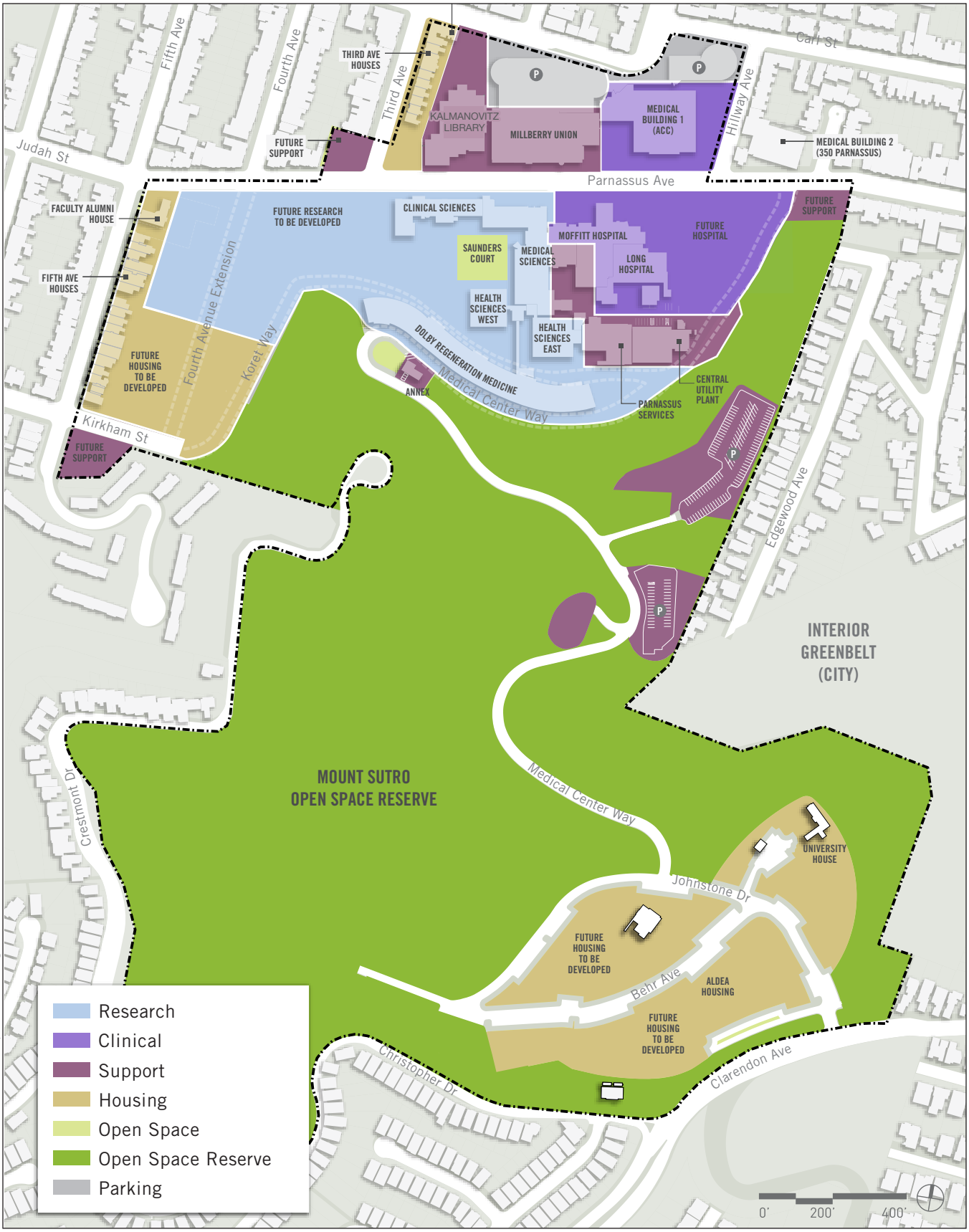
As indicated above, certain tree and vegetation removal would be required under the NHPH as a result of clearing, excavation, regrading, and/or other activities. This includes, but is not limited to, areas within the project site, areas within the public right-of-way adjacent to the project site, the Reserve (e.g., on the hillside adjacent to Medical Center Way for the medical gas tanks replacement, and the proposed vegetation management and slope stabilization improvements), and miscellaneous areas of ornamental landscaping. It is estimated that approximately 100 trees would be removed as a result of the NHPH project, comprised of about 26 trees in or within ten feet of the public right-of-way along Parnassus Avenue; about 46 trees on the New Hospital site; and about 28 trees on the medical gas tank replacement site. UCSF would seek to replace trees in the public right-of-way along Parnassus Avenue on a 1:1 basis, or potentially on a 2:1 basis, if feasible. As discussed above, the New Hospital project includes extensive landscaping on the ground level and upper levels; and, as appropriate, vegetation would be planted at/near the proposed medical gas tank replacement area in coordination with Mount Sutro Vegetation Management Plan efforts.

3.7.3 Revisions to the 2014 LRDP

Each major campus site identified in the 2014 LRDP includes a functional zone map reflecting the plans for predominant land uses. The 2014 LRDP Parnassus Heights functional zone map identifies land use zones on the campus site, including for Research, Clinical, Support, Housing, Open Space, Open Space Reserve, and Parking. As described in Section 3.4 above, a minor amendment to the 2014 LRDP would be required to adjust the Reserve boundary and maintain the Reserve at a minimum of 61 acres. **Figure 3-24** presents the updated proposed functional zones at the Parnassus Heights campus site. **Figure 3-25** illustrates areas of functional zone modifications under proposed minor amendment.

As shown in Figure 3-25, the proposed location for the medical gas tank replacement site that is currently designated as Open Space Reserve functional zone would be changed to Support functional zone. The area previously changed from the Open Space Reserve functional zone to Clinical functional zone under 2014 LRDP Amendment #7 to accommodate the New Hospital footprint is now proposed to be changed back to Open Space Reserve functional zone. These areas are the same size, such that the Reserve would be maintained at a minimum of 61 acres.

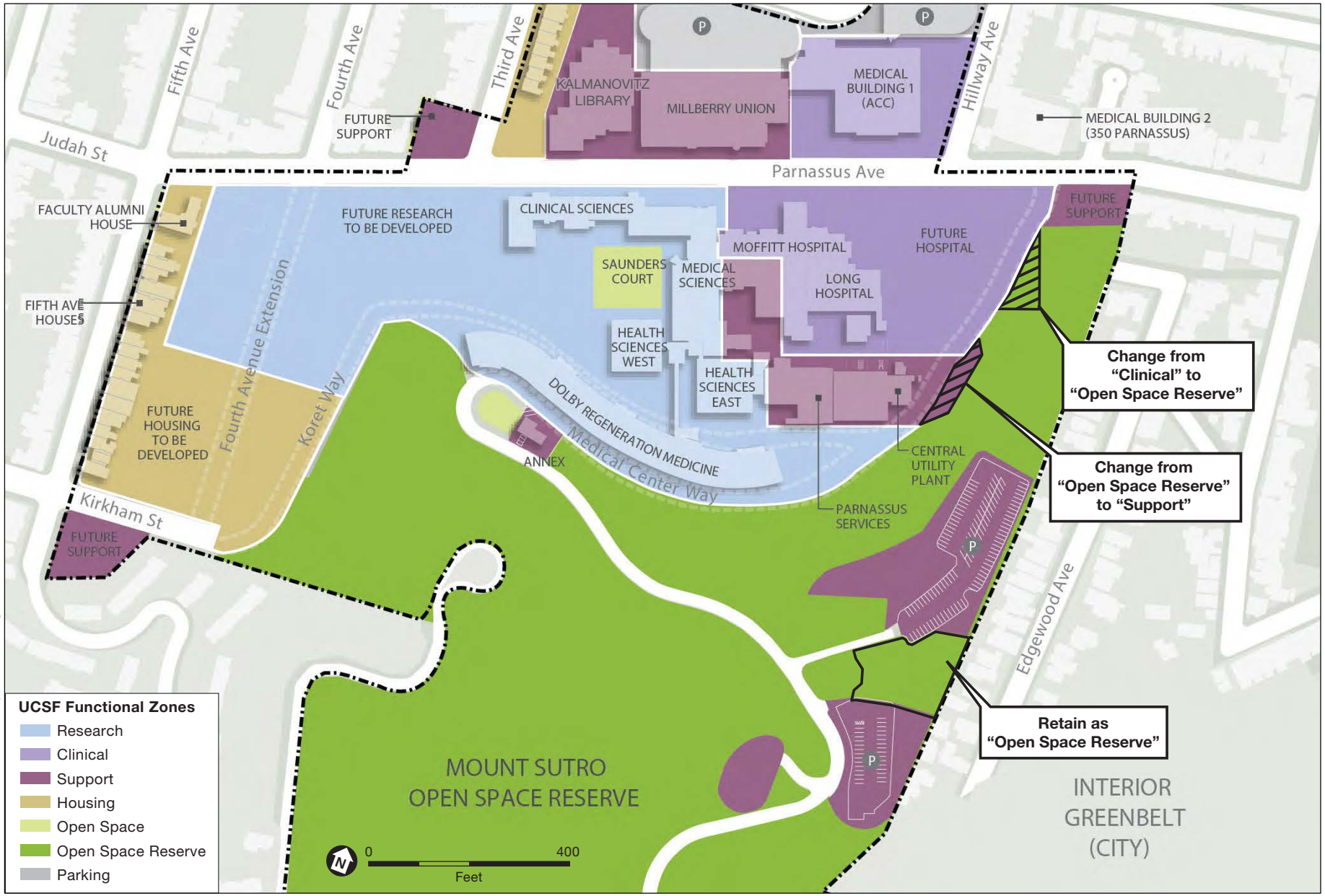
As shown in Figure 3-25, the area between the Surge and Woods parking lots that was changed to Open Space Reserve functional zone under 2014 LRDP Amendment #7 would remain as Reserve land under the NHPH.



SOURCE: UCSF, 2021

UCSF New Hospital Parnassus Heights EIR

Figure 3-24
Proposed Functional Zones at Parnassus Heights Campus Site



SOURCE: UCSF, 2021

UCSF New Hospital Parnassus Heights EIR

Figure 3-25
Areas of Functional Zone Modifications under NHPH

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CHAPTER 4
Environmental Setting, Impacts, and Mitigation Measures

4.0 Introduction to Environmental Analysis

This chapter describes the environmental setting, assesses impacts, and identifies measures that would avoid or lessen the severity of the significant impacts of the proposed NHPH. This section, Section 4.0, Introduction to the Environmental Analysis, outlines the issues analyzed in this chapter, describes the overall approach to the impact analysis, explains the significance determinations and terminology used in the impact analysis, and provides the basis for the cumulative impact analysis.

4.0.1 Definition of Terms Used in the EIR

This EIR uses a number of terms that have specific meaning under CEQA. Among the most important of the terms used in the EIR are those that refer to the significance of environmental impacts. The following terms are used to describe environmental effects of the proposed NHPH:

- **Significance Criteria:** The criteria or thresholds used by the University, as lead agency under CEQA, to determine whether the magnitude of an adverse, physical, environmental impact would be considered significant. In determining the level of significance, the analysis recognizes that the proposed NHPH must comply with relevant and applicable federal, State, regional and/or local regulations and ordinances which are regularly enforced through building codes and standards and/or other means.
- **Significant Impact:** An impact is considered significant if the proposed NHPH *could* result in a substantial adverse change in the physical conditions of the environment. Significant impacts are identified by the evaluation of a project-related or cumulative physical change from baseline conditions, compared to a specified significance criterion. A significant impact is defined as "a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the Project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance."[1]
- **Less-than-Significant Impact:** An impact is considered less than significant when the impact caused by the proposed NHPH would not exceed the applicable significance criterion.
- **Less-than-Significant Impact with Mitigation:** An impact is considered less than significant with mitigation if the proposed NHPH could result in a substantial adverse change

[1] CEQA Guidelines Section 15382.

when evaluated with respect to one or more significance criteria, but feasible mitigation is available that would effectively reduce the impact to below the significance criterion.

- **Significant and Unavoidable Impact:** Significant impacts resulting from implementation of the NHPH that cannot be feasibly avoided or mitigated to a less-than-significant level, that is, to a level below the applicable significance criterion.
- **Cumulative Impact:** Under CEQA, a cumulative impact refers to "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts."[2] A significant cumulative impact is one in which the cumulative adverse physical environmental effect would exceed the applicable significance criterion and the contribution of the proposed project would be "cumulatively considerable."[3] If the contribution of the project to a significant cumulative impact is less than considerable, the cumulative impact is considered less than significant.
- **Mitigation Measure:** A mitigation measure is a feasible action that could be taken that would avoid or reduce the magnitude of a significant impact. Section 15370 of the CEQA Guidelines defines mitigation as:

  a) Avoiding the impact altogether by not taking a certain action or parts of an action;

  b) Minimizing impacts by limiting the degree of magnitude of the action and its implementation;

  c) Rectifying the impact by repairing, rehabilitating, or restoring the affected environment;

  d) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and

  e) Compensating for the impact by replacing or providing substitute resources or environments.

- **Feasible:** Under CEQA, the term feasible means "means capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors."[4]

4.0.2 Scope of Analysis

This EIR includes project-level analysis of the environmental impacts of the proposed New Hospital and related improvements. The analysis at the project-level is intended to provide sufficient detail to permit project approval and implementation following certification of the NHPH Final EIR.

New Hospital Size

Since the Notice of Preparation, including an Initial Study, for the NHPH was released in July 2021 (see **Appendix A**), UCSF increased the proposed size of the New Hospital from 870,000 gross square feet (gsf) to 900,000 gsf, primarily to provide additional mechanical space to serve the New Hospital. UCSF determined this incremental increase in building space would

2 CEQA Guidelines Section 15355.
3 CEQA Guidelines Section 15130(a).
4 CEQA Guidelines Section 15364.

not substantially change the building footprint, shape, height of the New Hospital, or its overall proposed operational characteristics. Accordingly, this incremental increase in hospital size would not change any conclusions of significance previously reached in the Initial Study, or require modification to those mitigation measures identified in the Initial Study to mitigate NHPH impacts. Furthermore, all potential environmental issues identified in the Initial Study to be addressed in the NHPH EIR are appropriately analyzed in the EIR assuming a 900,000 gsf New Hospital.

Analytical Horizon

The New Hospital is anticipated to be largely operational by 2030.[5] As such, this EIR evaluates the foreseeable impacts of the proposed NHPH in Year 2030.

The proposed NHPH is part of the overall CPHP development program. Accordingly, this EIR also evaluates the foreseeable cumulative impacts of the NHPH through Year 2050, consistent with UCSF's planning horizon for buildout of development under the proposed CPHP. In the absence of any specific proposal by UCSF at this time for additional development at the Parnassus Heights campus site beyond this planning horizon, 2050 is considered the longest feasible timeframe for analyzing potential environmental impacts in this EIR with any level of reliability. As such, this EIR does not assess potential environmental impacts beyond 2050.

Aesthetics and Parking Analysis

CEQA Statute Section 21099(d) states that "Aesthetic and parking impacts of a residential, mixed-use residential, or employment center project on an infill site located within a transit priority area shall not be considered significant impacts on the environment."[6] Accordingly, aesthetics and parking are not considered in determining if a project has the potential to result in significant environmental effects for projects that meet all of the following three criteria:

a. The project is in a transit priority area;[7]

b. The project is on an infill site;[8] and

c. The project is residential, mixed-use residential, or an employment center.[9]

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5 Certain related improvements [e.g., interior renovation of Moffitt and Long Hospitals, Parnassus Avenue bridge and/or tunnel(s)], would not be completed until after 2030.

6 Refer to CEQA *Statute s*ection 21099(d)(1).

7 CEQA *Statute* 21099(a)(7) defines a "transit priority area" as an area within 0.5 mile of an existing or planned major transit stop. A "major transit stop" is defined in CEQA Statute 21064.3 as a site containing any of the following: an existing rail or bus rapid transit station, a ferry terminal served by either a bus or rail transit service, or the intersection of two or more major bus routes with a frequency of service interval of 15 minutes or less during the morning and afternoon peak commute periods.

8 CEQA *Statute* 21099(a)(4) defines an "infill site" as a lot located within an urban area that has been previously developed, or a vacant site where at least 75 percent of the perimeter of the site adjoins, or is *separated* only by an improved public right-of-way from, parcels that are developed with qualified urban uses.

9 CEQA *Statute* 21099(a)(1) defines an "employment center" as a project located on property zoned for commercial uses with a floor area ratio of no less than 0.75 and located within a transit priority area.

The proposed project meets each of the above three criteria because it (1) is within a transit priority area, as it is located within one-half mile of the Muni N-Judah rail line stop at Irving St and Arguello Blvd, and is within one-half mile of intersecting Muni bus routes which have service intervals of 15 minutes or less[10]; (2) is located on an infill site, as the campus site is an urban area that has been previously developed; and (3) includes a hospital that would substantially meet the definition of an employment center. Thus, this EIR does not consider aesthetics and the adequacy of parking as significant impacts of the project under CEQA.

Nevertheless, the public and decision-makers may be interested in information pertaining to the aesthetic effects of the proposed NHPH, and may desire that such information be provided as part of the environmental review process. Therefore, this EIR provides an assessment of potential aesthetic impacts, and identifies, as feasible, mitigation measures to mitigate potential lighting/glare impacts (see Section 4.1).

Effects of the Environment on the Project

In a change since the certification of the 2014 LRDP Final EIR, in 2015 the California Supreme Court held that "CEQA generally does not require an analysis of how existing environmental conditions will impact a project's future users or residents." *California Building Industry Association v. Bay Area Air Quality Management District* (2015) 62 Cal.4th 369, 386. The Supreme Court explained that, where existing hazards exist, an agency is only required to analyze the potential impact of such hazards on future residents if the project would exacerbate those existing environmental hazards or conditions. Thus, with respect to such issues as geologic and seismic hazards, exposure to existing levels of air pollution and noise, and the like, CEQA does not require consideration of the effects of bringing a new population into an area where such hazards exist, as long as the project itself would not increase or otherwise affect the conditions that create those hazards.

Economic and Social Effects

Under CEQA, economic and social effects by themselves are not considered to be significant impacts, and are relevant only insofar as they may serve as a link in a chain of cause and effect that may connect the proposed project with a physical environmental effect, or they may be part of the factors considered in determining the significance of a physical environmental effect.[11] In addition, economic and social factors may be considered in the determination of feasibility of a mitigation measure or an alternative to the proposed project.[12] As such, the potential effect of the NHPH on economic and social issues, in and of themselves, such as tax revenues, crime, the cost of public services, or property values are not part of this EIR. That being said, UCSF and the Regents may evaluate a wide range of factors, including social or economic effects, in its consideration of the merits of the proposed NHPH.

[10] This includes the intersection of two or more of the following Muni bus routes: 6 (Parnassus), 7 (Haight/Noriega), 33 (Ashbury/18th Street), 37 (Corbett) and 43 (Masonic) and 44 (O'Shaughnessy).

[11] CEQA Guidelines Section 15131.

[12] CEQA Guidelines Section 15364.

4.0.3 Organization of the Impact Analysis

Chapter 4 is organized as follows and focuses on the environmental resource topics listed below:

4.1 Aesthetics, Wind, and Shadow
4.2 Air Quality
4.3 Biological Resources
4.4 Cultural Resources
4.5 Energy
4.6 Geology and Soils
4.7 Greenhouse Gas Emissions
4.8 Hazards and Hazardous Materials
4.9 Hydrology and Water Quality
4.10 Land Use and Planning
4.11 Noise and Vibration
4.12 Population and Housing
4.13 Transportation
4.14 Utilities and Service Systems

Each environmental topic discussion includes these main subsections:

- *Environmental Setting*, which includes a description of the existing environmental setting;
- *Regulatory Framework*, including relevant University plans and policies, and federal, State, and local laws, regulations, and policies; and
- *Impacts and Mitigation Measures*, which describes the (1) significance criteria; (2) analysis methodology, (3) potential project-specific and cumulative impacts; and (4) proposed feasible measures that would eliminate or reduce the severity of significant project-specific and/or cumulative impacts.

This EIR identifies all environmental impacts with an alpha-numeric designation that corresponds to the environmental resource topic (e.g., Aesthetics impacts are labeled AES, Air Quality impacts are labeled AIR, etc.). The resource identifier is followed by a number that indicates the sequence in which the impact statement occurs within the section. For example, "Impact AES-1" is the first (i.e., "1") aesthetic impact identified in the EIR. All impact statements are presented in bold text. The significance of the impacts prior to implementation of mitigation measures is stated in parentheses immediately following the impact statement (further discussed below).

Each mitigation measure is labeled and numbered to correspond with the impact that it addresses. Where multiple mitigation measures address a single impact, each mitigation measure is numbered sequentially. For example, "NHPH Mitigation Measure AIR-1a and NHPH Mitigation Measure AIR-1b" are identified to address the first air quality impact (i.e., "Impact AIR-1"). All mitigation measure statements are presented in bold text.

Within each environmental resource section, a project-level analysis of the impacts of the New Hospital is presented first, followed by project-specific impact analysis of the following proposed related improvements: renovation of Moffitt and Long Hospitals; widening of Medical Center Way in the vicinity of the New Hospital; replacement of diesel fuel tanks and medical gas tanks; vegetation management and slope stabilization improvements; and construction of a proposed pedestrian bridge and/or tunnel(s) across Parnassus Avenue.

4.0.4 Section Structure

Each environmental resource section follows a set structure, as described below.

Introduction

This subsection summarizes the applicable topic analysis and its relevance to the proposed NHPH.

Existing Environmental Setting

According to Section 15125 of the CEQA Guidelines, an EIR must include a description of the existing physical environmental conditions in the vicinity of the project to provide the "baseline condition" against which project-related impacts are compared. Normally, the baseline condition is the physical condition that exists when the Notice of Preparation ("NOP") is published. However, the CEQA Guidelines and applicable case law recognize that the date for establishing an environmental baseline cannot always be rigid. Physical environmental conditions may vary over a range of time periods; thus the use of environmental baselines that differ from the date of the NOP may be reasonable and appropriate when conducting the environmental analyses. Some sections rely on a variety of data to establish an applicable baseline, as described in those sections.

The proposed NHPH is part of the overall CPHP development program. Accordingly, while the NOP for the NHPH was published on July 29, 2021, the appropriate baseline condition for this EIR would be the same as that used in the CPHP Final EIR, which was January 2020. This baseline is also appropriate in consideration of the uncertainties that have resulted from the COVID-19 pandemic on background conditions.

Regulatory Framework

The regulatory setting presents relevant information about University plans and policies, and federal, State, regional, and/or local laws, regulations, ordinances, plans, policies and standards that pertain to the environmental resources addressed in each section.

Applicable University documents presented in the Regulatory Framework sections of this EIR include, but are not limited to, the 2014 LRDP, University of California (UC) Policy on Seismic Safety, UC Sustainable Practices Policy, 1976 Regents' Resolution, UCSF Physical Design Framework, and UC Strategic Energy Plan. With respect to the 2014 LRDP, applicable land use objectives are presented, and for informational purposes, relevant Community Planning Principles are also discussed.

Significance Criteria

According to CEQA Guidelines Section 15382, a significant effect on the environment means "a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project." Significance criteria are identified for each environmental issue area

in each resource section. The environmental criteria and considerations applied to determine the significance of NHPH-related changes in the environment are based on the CEQA Guidelines Appendix G and additional criteria used in the 2014 LRDP Final EIR, as applicable. The significance criteria serve as benchmarks for determining if proposed activities or conditions would result in a significant adverse environmental impact when evaluated against the baseline conditions.

Approach to Analysis

Each section describes the analytical methods and key assumptions used to evaluate effects of the proposed NHPH.

Impacts and Mitigation Measures

The EIR evaluates the environmental consequences and potentially significant impacts that would result from implementation of the proposed NHPH. The impacts identified are compared with predetermined significance criteria (discussed above), and classified according to significance categories discussed above.

To the extent the residual impact may still be significant even after implementation of the conditions, laws and regulations, potentially feasible mitigation measures are identified which would eliminate or substantially reduce the severity of the impact. The effectiveness of a mitigation measure is determined by evaluating the residual impact remaining after its application. Those impacts meeting or exceeding the impact significance criteria after potentially feasible mitigation measures are incorporated are identified as residual impacts that remain significant and unavoidable. Implementation of more than one mitigation measure may be needed to reduce an impact below a level of significance.

Cumulative Impact Analysis

An analysis of cumulative impacts follows the project-specific impacts and mitigation measures evaluation in each section. A cumulative impact consists of an impact that is created as a result of the combination of the impact of the project evaluated in the EIR together with the impacts from other past, present and reasonably foreseeable projects causing related impacts.[13]

As noted above, where a cumulative impact is significant when compared to baseline conditions, the analysis must address whether the project's contribution to the significant cumulative impact is "considerable." If the contribution of the project is considerable, then the EIR must identify potentially feasible measures that could avoid or reduce the magnitude of the project's contribution to a less-than-considerable level. If the project's contribution is not considerable, it is considered less than significant and no mitigation for the project's contribution is required.[14]

[13] CEQA Guidelines Section 15355.
[14] CEQA Guidelines Section 15130(a)(3).

The geographic scope of the cumulative impact analysis varies depending upon the specific environmental issue area being analyzed. The geographic scope defines the geographic area within which a project may contribute to a specific cumulative impact. Therefore, past, present, and future reasonably foreseeable projects within the defined geographic area for a given cumulative issue must be considered. The cumulative impact analysis in each technical section includes a description of the cumulative analysis methodology and the geographic or temporal context in which the cumulative impact is analyzed (e.g., the Bay Area Air Basin, other activity concurrent with NHPH construction, etc.).

Consistent with CEQA Guidelines Section 15130(b), the cumulative impact analysis considers the NHPH's effects in combination with the projections contained within previously approved planning documents and forecasting models, including but not limited to the San Francisco General Plan, the San Francisco Transportation Authority (SFCTA) Forecast Model, 2015 Urban Water Management Plan for the City and County of San Francisco, and regional planning documents from the Association of Bay Area Governments (ABAG), Bay Area Air Quality Management District (BAAQMD), as well as applicable associated environmental review documents.

In addition, consistent with CEQA Guidelines Section 15130(b), the cumulative impact analysis also considers other known or reasonably foreseeable projects that could combine with potential impacts from implementation of the NHPH within the local geographic area. These include:

- Cumulative Projects within the Parnassus Heights Campus Site Boundary: This includes the following:
  - Implementation of the development program planned in the CPHP, including Initial Phase projects anticipated by Year 2030 [Irving Street Arrival, Research and Academic Building (RAB), initial phase of Aldea Housing densification, and Initial Phase Improvements] and Future Phase development by Year 2050 [Millberry Union New Towers and Terrace, Hotel, New Program adjacent to RAB, West Side Housing, Child Care on Proctor site, Future Phase of Aldea Housing Densification; and open space, utilities/infrastructure and circulation, transportation and parking improvements].

    Also, as noted in Chapter 3, Project Description, under the NHPH, the size of the proposed New Hospital would be reduced from that envisioned under the CPHP, and Moffitt and Long Hospitals would increase slightly in size. For purposes of this EIR, the building space [up to about 40,500 gross square feet (gsf)] authorized through 2014 LRDP Amendment No. 7 that would be rendered surplus due to the net reduction of the hospital program is assumed to be assigned to other buildings on the campus site during the CPHP Future Phase. This would result in one to two additional building floors potentially to be added to the planned Millberry Union New Towers, and to research buildings planned immediately south and west of the planned RAB. Please note that none of the CPHP Future Phase buildings have been designed yet. The cumulative impact analysis in this Draft EIR accounts for this change in the Future Phase development under the CPHP.

  - Implementation of projects at the Parnassus Heights campus site that were previously approved under the 2014 LRDP, but not yet implemented. These include, but are not limited to, demolition of the Langley Porter Psychiatric Institute (LPPI), Surge and Proctor buildings; and miscellaneous utility improvements.

  - On-going activities associated with implementation of the UCSF Mount Sutro Open Space Reserve Vegetation Management Plan.

- Off-site Cumulative Projects within the Parnassus Heights Campus Site Vicinity:

  - 350 Parnassus Avenue, located just outside the campus site boundary, is an office building for which UCSF currently leases approximately 80 percent of space. This building is planned to be seismically retrofitted in 2022.

  - Based on a review of the City of San Francisco's *SF Development Pipeline 2020 Q4*, there were seven proposed development projects (larger than two units of construction) located within 0.5-mile of the campus site boundary, including at: 478 Warren Drive (13 accessory dwelling units), 271 Upper Terrace (demolition of two homes, and addition of four new two-units buildings and one single-family building), 1801 Haight Street (new building with 7 dwelling units and ground-floor commercial), 1285 8th Avenue (three new accessory dwelling units), 1492 9th Avenue (five new accessory dwelling units), 858 Stanyan Street (three new dwelling units), and 11 Burnett North Avenue (nine new dwelling units)

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4.1 Aesthetics, Wind, and Shadow

This section assesses the potential for construction and operation of the proposed NHPH to result in significant aesthetic, wind, and shadow impacts. This section includes a description of the existing environmental setting as it relates to aesthetics, shadow, and wind; and also provides a regulatory framework that discusses applicable University, State, and local plans and policies. The section presents the significance criteria used to evaluate on the NHPH's aesthetics, shadow and wind impacts, and the results of the impact assessment, including any significant impacts and associated mitigation measures.

The analysis included in this section was developed based on the NHPH project description, reconnaissance visits to the campus site and vicinity, computer-generated visual simulations prepared by UCSF's NHPH design team and peer-reviewed by Prevision Design, a shade and shadow study prepared by Prevision Design, and a wind study prepared by Cermak Peterka Peterson (CPP). Photographs are also included in this section to supplement the description of publicly-accessible views and analysis of visual character of the project area.

For purposes of providing distinction between the various components of this project, references made in this EIR to "New Hospital" relate only to the New Hospital portion of the overall project, whereas references made to "NHPH" relate to the overall project, including the New Hospital and its related improvements.

4.1.1 Environmental Setting

The Parnassus Heights campus site occupies about 107 acres of land on and at the base of Mount Sutro in the Inner Sunset mixed-use neighborhood. As illustrated in Figure 3-1 in Chapter 3, *Project Description*, the campus site is bounded by Carl and Irving Streets to the north, Third Avenue and Fifth Avenue to the west, the Cole Valley/Ashbury Heights neighborhoods and the City's Interior Greenbelt Natural Area to the east, and Clarendon Avenue, Christopher Drive and Crestmont Drive in the City's Forest Knolls neighborhood to the south. The majority of the campus site's development is concentrated in the campus core, in the northern portion of the campus site. The NHPH site is located within the east end of the campus core.

Scenic Views

Scenic views may be generally described as panoramic vistas of a large geographic area for which the field of view can be wide and extend into the distance. Under CEQA, scenic vistas are those that are experienced from publicly accessible locations and include urban skylines, valleys, mountain ranges, or large bodies of water.

One scenic view from Grandview Park (located approximately 2/3-mile west of the campus site boundary and 1 mile from the NHPH site) affords long-range views of the campus site looking east, beyond which the downtown San Francisco skyline, San Francisco Bay, and East Bay hills are visible in the background (see **Figure 4.1-1**). Other scenic views in the vicinity of the campus site include views from the top of Tank Hill (approximately 1/4-mile east of the campus site

boundary and 1/2-mile southeast of the NHPH site), and Buena Vista Park and Corona Heights Park (both approximately 2/3-mile northeast of the campus site boundary and NHPH site).

SOURCE: Prevision Design, 2021 UCSF New Hospital at Parnassus Heights

Figure 4.1-1
View from Grandview Park, Looking East

Views from within the Campus Site

Due to the campus site's elevated location (between 300 and 900 feet above sea level), long-range scenic views of the Golden Gate Bridge, Marin Headlands, Golden Gate Park, and the Pacific Ocean are available from certain locations on and adjacent to the campus site. In particular, views of Golden Gate Park and the Golden Gate Bridge are available from the intersection of Third and Parnassus Avenues. Scenic views from within the 61-acre Mount Sutro Open Space Reserve (Reserve) are generally filtered by vegetation and/or can be obstructed by topography within the Reserve, however, depending on location, the surrounding neighborhoods are still partially visible, including Twin Peaks, Mount Davidson, Ocean Beach, Golden Gate Park, the Presidio, as are the Golden Gate Bridge, Marin Headlands, Mount Tamalpais, and the East Bay hills.

The majority of the NHPH site is densely developed, and consequently long-range scenic views from most locations within the NHPH site are largely obstructed by existing buildings.

Scenic Resources

The heavily vegetated Reserve occupies the central and south portions of the campus site, with a portion that extends north to Parnassus Avenue along the east side of the NHPH site. The Reserve is notable because of its steep topography, rounded peak, and dense forest coverage composed predominantly of eucalyptus trees. These features combine to form a natural refuge from the urban setting that surrounds it. As Mount Sutro is one of the tallest hills in San Francisco, the Reserve is considered a scenic resource.

Visual Character

The visual character of a city or a part of a city, such as the Parnassus Heights campus site, is comprised of a number of physical elements that in combination form a city's image. The aesthetic setting of the campus site area is varied. It reflects the visual characteristics of its natural and built elements, including topography, street grid, buildings (individually and collectively), parks and public open spaces, and transportation infrastructure.

Topography

The topography on the campus site is varied, with slopes generally rising from north to south through the majority of the site. The lowest elevation of the campus site is at the north campus site boundary on Irving Street (approximately 300 feet), and the highest elevation is greater than 900 feet on Mount Sutro in the southern portion of the campus site, declining to approximately 700 feet along the campus site south boundary at Clarendon Avenue. Due to steep slopes, the developed portion of the campus site is mostly limited to the lower slope and shelf of Mount Sutro. Other smaller-scale campus site structures are located in the Reserve, although largely hidden from view in the heavily wooded areas on the slopes of Mount Sutro.

Like the rest of the core campus, the site of the NHPH is located on the north-facing slope of Mount Sutro. The topography of the site of the New Hospital site is varied, with slopes generally rising from north to south through the site; elevations range from approximately 400 feet above sea level (asl) on Parnassus Avenue along the north side of the site, ascending to approximately 430 feet asl along the south side of the site in the vicinity of Long Hospital.

Street Grid and Block Pattern

Streets in the vicinity of the northern portion of the campus site, where the majority of the campus site's development is located, break the conventional perpendicular street grid pattern characteristic of the Inner Sunset neighborhood. Parnassus Avenue runs east-west through the campus core, bisecting this portion of the campus site. Parnassus Avenue also serves as the southern terminus of Hill Point Avenue, Hillway Avenue, 2nd Avenue, 3rd Avenue, and 4th Avenue. The visual character of the public rights-of-way that bisect, or are located adjacent to, the campus site is defined primarily by transit and automobile-related uses. Along Parnassus Avenue, there is one travel lane in each direction, in addition to dedicated turning lanes. Curb-side parking is located on both sides of Parnassus Avenue, except at building entrances.

From the pedestrian perspective, visually, the roadbeds (visual relief) are the open areas between large blocks. The streets' "edges" are the areas dedicated to pedestrian use. These "edges" are narrow; generally 12 feet, and in some cases are non-existent. Along Parnassus Avenue, the street width (excluding sidewalks) is approximately 50 feet, and internal streets within the campus site, such as Medical Center Way and Koret Way, range from approximately 25 to 30 feet in width. The internal campus site streets are typically narrow, which serves to create a tighter urban fabric with less visual relief available from the pedestrian perspective.

Open Spaces

Public open spaces contribute to a neighborhood's identity, serve as visual focal points, and provide visual relief to developed built environments. Within the campus site, public open space is easily accessible. The 61-acre Reserve is designated by the Regents as permanent open space, and is available for public use.

Outside of the campus site boundary, the City's Interior Greenbelt natural area is located adjacent to the east side of the Reserve. Golden Gate Park, including Kezar Stadium, is located one block (approximately 400 feet) north of the campus site boundary. The aforementioned Grandview Park, Buena Vista Park, Corona Heights Park and Tank Hill natural area afford panoramic views of the City.

Building Uses and Built Form

The type and distribution of land uses and building types within the campus site contribute to its existing visual character. The campus site is characterized by a collection of hospitals, medical office buildings, laboratories, service buildings, and housing which were constructed between the late 1910s and early 2000s.

Existing buildings occupying the footprint of the proposed New Hospital are the Langley Porter Psychiatric Institute (LPPI) and three small support structures. LPPI, built in 1941, is five stories in height. LPPI is roughly L-shaped in plan, and contains a north wing along Parnassus Avenue, a west wing that extends south, and an Annex that spurs off the south end. The three support buildings (Butler Building, paint shed, and outpatient clinic) are situated to the east of LPPI.

Existing buildings immediately west of LPPI include Long and Moffitt Hospitals. Long Hospital adjoins the south end of the LPPI and extends west and connects to Moffitt Hospital. Long Hospital was constructed in 1983, and is 15 stories tall. Long Hospital's tower is set back approximately 230 feet from Parnassus Avenue. Moffitt Hospital is 15 stories tall, and was originally built in 1955 and modernized in 1980. Moffitt Hospital's cruciform plan results in its principal façade set back approximately 100 feet from Parnassus Avenue. **Figure 4.1-2** shows a view of LPPI and the adjacent hospitals looking southwest.

Further west along Parnassus Avenue is the 13-story Medical Sciences Building, built in the mid-1950s; the seven-story Clinical Sciences Building, built in 1933; and the 6 to 7-story UC Hall, which was constructed in 1917 and is the second oldest building on the campus site. **Figure 4.1-3** shows a view of the Clinical Sciences Building and Medical Sciences Building, looking east.

SOURCE: ESA, 2021 UCSF New Hospital at Parnassus Heights

Figure 4.1-2
View of the LPPI, and Moffitt and Long Hospitals, Looking South

SOURCE: ESA, 2021 UCSF New Hospital at Parnassus Heights

Figure 4.1-3
View of the Clinical Sciences Building (shown under renovation) Medical Sciences Building, and Moffitt Hospital, Looking East

The north side of Parnassus Avenue is considerably less densely developed than the south side of Parnassus Avenue. The buildings along the north side of Parnassus Avenue immediately across from the NHPH site include Medical Building 1, built in 1972; the Millberry Union, built in 1958; and their respective parking structures.

As shown in **Figure 4.1-4**, Medical Building 1 and its parking structure are visible behind residential uses on the left side of the view, to the right of which is Millberry Union, and behind which the north facades of Moffitt Hospital and Medical Sciences Building are visible.

SOURCE: Prevision Design, 2021 UCSF New Hospital at Parnassus Heights

Figure 4.1-4
View of the Medical Building 1, its Parking Structure, and Millberry Union, Behind Which are Moffitt Hospital and the Medical Sciences Building, Looking South

South of the NHPH site are UCSF back-of-house functions that serve the buildings on the south side of Parnassus Avenue, including loading and deliveries, maintenance vehicle parking, and services to the Central Utility Plant, among other functions. These buildings and services are accessed from Medical Center Way, and are generally hidden from public view from Parnassus Avenue. Further southwest on Medical Center Way is the cantilevered Dolby Regeneration Medicine Building completed in 2010, which includes a series of split-level floors with terraced grass roofs. As shown in **Figure 4.1-5**, this area of the campus site does not have a distinct or cohesive feel, because it traverses a variety of buildings constructed during different eras of the campus site's development.

SOURCE: ESA, 2021 UCSF New Hospital at Parnassus Heights

Figure 4.1-5
View from Medical Center Way of the Parnassus Services Building, Dolby Regeneration Medicine Building and Long Hospital, Looking West

Light and Glare

Sources of light and glare around the campus site include light emitted from building windows, and exterior illuminated signage, street lights and safety lighting. In addition, street lights and motor vehicles can be a source of nighttime light and glare along Parnassus Avenue. These sources of light are typical of those in a developed urban area.

Wind

San Francisco's Existing Wind Environment

Data collected at the old San Francisco Federal Building at Civic Center show that average winds speeds in San Francisco are the highest in the summer and lowest in winter. However, the strongest peak wind speeds occur in winter. The highest average wind speeds occur in mid-afternoon and the lowest in the early morning. Westerly to northwesterly winds are the most frequent and strongest winds during all seasons; southwesterly and west-southwesterly winds are also relatively prevalent.[1] The wind speed data collected at the old Federal Building that is the basis of San Francisco wind-tunnel testing was collected between 1945 and 1950.[2] This data source is relied upon for all wind analyses conducted in San Francisco as it represents the most complete record of wind speed data within the city limits. These wind data are taken from more than 40 years of record keeping at the Old Federal Building; the longer data set conform with the six years of data used in San Francisco wind tests. As reported in the UCSF 2014 LRDP Final EIR, historical wind data collected at Fort Funston, which is upwind of the project site with respect to southwest winds, show that there is reasonable consistency between the Civic Center and the Fort Funston meteorological stations, regardless of their substantially different locations. Similar to Civic Center, the majority of strong winds at Fort Funston were recorded as blowing from the south-southwest through the north-northwest. As also reported in the 2014 LRDP Final EIR, winds approaching the Parnassus Heights campus site from the coast lose speed and become more turbulent as they encounter buildings, vegetation, and the ground. Winds that approach the campus site from the southwest through the northwest tend to be accelerated as they flow between Mount Sutro and the taller campus buildings along the south side of Parnassus Avenue, as well as along Parnassus Avenue between taller campus buildings to either side of the street.

Wind Effects from Buildings

The wind environment for pedestrians can be adversely affected by buildings that are considerably taller than surrounding structures, particularly where such taller buildings present large planar surfaces towards the prevailing winds. A building that stands alone or is much taller than the surrounding buildings can intercept and redirect winds that might otherwise flow overhead and bring them down the vertical face of the building to ground level, where they create ground-level wind and turbulence (variability in wind speed and pressure). These redirected winds, or down-drafts, can be relatively strong and turbulent, and may in some instances be incompatible with the intended uses of nearby ground-level spaces. Conversely, a building with a height that is similar to the heights of surrounding buildings typically would cause little or no additional ground-level wind acceleration and turbulence. Thus, wind impacts are generally caused by large building masses extending substantially above their surroundings, and by buildings oriented so that a large wall catches a prevailing wind, particularly if such a wall includes little or no articulation. Buildings spaced closely together can also result in increased wind speeds at pedestrian level as the winds are channeled between closely spaced structures. However, groups of buildings can interact with and

1 Wind direction is given as the point of origin (i.e., a westerly wind blows from west to east).

2 Arens, E., et al., "Developing the San Francisco Wind Ordinance and its Guidelines for Compliance," *Building and Environment*, Vol. 24, No. 4, p. 297–303, 1989.

slow approaching winds due to the friction and drag created by the many individual structures, resulting in calmer pedestrian winds at locations sheltered by groups of buildings.

Analysis of Pedestrian-Level Winds

CEQA review in San Francisco is concerned with wind conditions at pedestrian level in publicly accessible areas, and UCSF similarly evaluates the project's effects on at-grade winds in its environmental documents.

Consistent with analysis procedures from the San Francisco Planning Department, the 26-miles-per-hour (mph) wind hazard criterion of San Francisco Planning Code Section 148—wind speeds that exceed 26 mph for one full hour of the year—is relied upon for the analysis of significant impacts.[3] Therefore, if a project would cause pedestrian-level wind speeds to exceed 26 mph for a full hour, a project would have a significant wind impact.[4] In general, buildings with a height of less than 80 feet above surrounding structures tend not to result in substantial effects on pedestrian-level winds or to create new exceedances of the hazard criterion. For compliance with Section 148 (applicable to downtown San Francisco), projects are also evaluated against a pedestrian comfort criterion, which is a wind speed of 11 mph for pedestrian areas and 7 mph for seating areas, not to be exceeded more than 10 percent of the time. However, the Planning Department does not use the comfort criteria in its evaluation of a project's wind impacts under CEQA.

Existing Wind Conditions at the Project Site and Vicinity

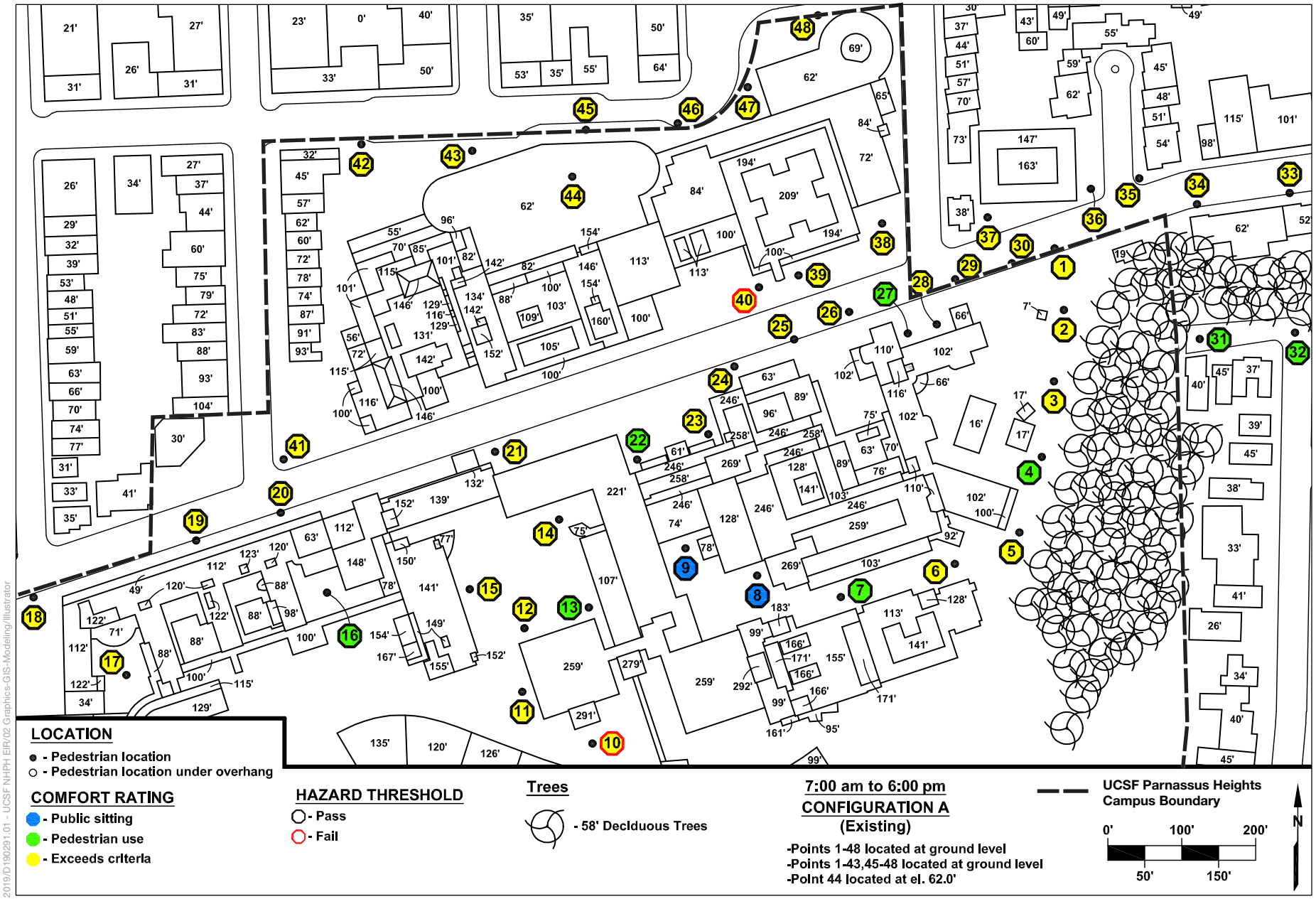
Westerly winds blowing from the Pacific Ocean encounter surface roughness in the form of buildings, ground, and vegetation, resulting in some slowing of winds at ground level. Winds may also be altered by intervening topography; for example, the project site is offered substantial protection from southwest winds by the mass of Mount Sutro. However, because there are virtually no tall buildings between the ocean and the campus site, westerly and northwesterly winds generally flow unimpeded from the ocean to the project site. As a result, the NHPH site and vicinity are generally windy.

Figure 4.1-6 depicts existing wind comfort and hazard conditions. As shown in the figure, under existing conditions, winds exceed the 26-mph wind hazard criterion at two of 48 locations tested for pedestrian wind conditions in the wind tunnel.[5] These two locations exceed the hazard

3 While UCSF is not subject to the San Francisco Planning Code, it relies on the wind test procedures derived from Section 148 in its wind analyses, for consistency with other CEQA documents in San Francisco.

4 The wind hazard criterion of 26 mph is derived from a wind condition that would generate a 3-second gust of wind at 20 meters per second (45 mph), a commonly used guideline for wind safety. This wind speed, on an hourly basis, is 26 mph averaged for a full hour. However, because the Civic Center Federal Building wind data were collected at one-minute averages, the 26-mph one-hour average wind speed is converted to a corresponding one-minute average wind speed of 36 mph, which is then used to determine compliance with the planning code hazard criterion. (Arens, E. et al., "Developing the San Francisco Wind Ordinance and its Guidelines for Compliance," *Building and Environment*, Vol. 24, No. 4, pp. 297–303, 1989.) That is, the 26 mph *one-hour* hazard criterion speed as reported herein is a *one-minute* average of 36 mph. Accordingly, all hazard wind speeds in this analysis are presented based on the 36-mph wind speed averaged over one-minute, and the hazard criterion is based on 36 mph.

5 As described in more detail under Approach to Analysis, below, wind test points were chosen to illustrate the general flow of winds around project buildings at select locations. All test points were at an equivalent height of five to seven feet above grade except for one test point, number 44, which was located at an equivalent height of five to seven feet above the top of the main UCSF parking garage between Parnassus Avenue and Irving Street.



SOURCE: CPP, 2021

UCSF New Hospital Parnassus Heights EIR

Figure 4.1-6
Pedestrian Wind Hazard and Wind Comfort Conditions – Existing Scenario

criterion for a total of nearly five hours per year. Among the 48 test points, the average wind speed that is exceeded one hour per year is 26 mph (based on the 36 mph hazard criterion, as explained in footnote 4. The two locations where the existing wind hazard criterion is exceeded are at:

- a location near the southeast corner of the Health Sciences West building (test point 10; approximately two hours per year); and
- a location along the north side of Parnassus Avenue adjacent to the southwest corner of Medical Building 1 (test point 40; approximately three hours per year).

Regarding the comfort criterion, existing wind speeds exceed 11 mph more than 10 percent of the time at 38 of the 48 locations tested, indicating that the project site is relatively windy under existing conditions. Among all test locations, including those that do not exceed the comfort criterion, wind speeds exceed the comfort criterion 19.5 percent of the time.

The primary cause for both comfort and hazard criteria exceedances on or adjacent to the campus site is due to the existing campus buildings located along either side of Parnassus Avenue between Fourth Avenue and Hill Point Avenue. These buildings range in height from about 50 feet to nearly 200 feet, with several structures 100 feet or more in height. Some of these buildings have large, relatively unbroken facades. Where large building masses are proximate to Parnassus Avenue on both sides of the street—for example, where the Moffitt-Long Hospital complex is directly across the street from Medical Building 1—these buildings result in channeling of winds that increases wind speeds along both sides of Parnassus Avenue. Wind speeds along this portion of Parnassus Avenue can be uncomfortable, particularly on summer afternoons. Finally, as noted above, there are virtually no tall buildings between the coast, from where most winds blow, and the relatively tall campus structures, meaning that there is relatively little interference with prevailing winds until they reach the campus.

Shadow

CEQA review in San Francisco is concerned with the shadow impacts of the proposed project on publicly accessible open spaces and recreation facilities near the project site, and UCSF similarly evaluates shadow impacts in its environmental documents. Therefore, existing publicly accessible open spaces and recreation facilities near the project site that could potentially be affected by the proposed project are described below. The potential extent of shadow impacts of the proposed NHPH is based on a digital shadow analysis prepared by an independent consultant that shows the extent of project shadow on existing and planned public open spaces near the proposed project at representative times of the year—generally, the solstices and equinoxes to bracket the impacts, along with the day of maximum impact—throughout the day between one hour after sunrise to one hour before sunset (see "*Approach to Analysis*," below).

There are a variety of publicly-accessible open spaces on the campus site and in the campus site vicinity that may be affected by shadow created by the construction of the NHPH.

On-Site Open Space

On the campus site, the largest publically-accessible open space includes the Reserve (described below), in addition to various smaller open space areas within the campus core that are owned and maintained by UCSF, including Saunders Court.

Mount Sutro Open Space Reserve

The Reserve is a 61-acre open space reserve owned and managed by UCSF that features approximately 5 miles of publicly-accessible trails. The Reserve contains winding hiking trails in a densely vegetated forest with shadow cast on the open space primarily by eucalyptus trees up to 100 feet tall.

Off-Site Open Space

In the campus site vicinity, there are a number of parks and publicly-accessible open spaces under the jurisdiction of the San Francisco Recreation and Parks Department (SFRPD). These facilities are protected from shadowing by new structures greater than 40 feet tall under Section 295 of the San Francisco Planning Code (Planning Code).[6] A brief description of these SFRPD facilities, related City facilities under its Shared Schoolyard Project, and shadows currently experienced at these facilities, is provided below.

Golden Gate Park

Golden Gate Park is an approximately 1,000-acre large urban park that contains a variety of amenities including landscaped gardens, aquatic features, playgrounds, museums, stadiums, sports fields, skate parks, and other tourism points of interest. Due to the size of the park and the number of trees, shadows from existing nearby buildings never cover a majority of the park. Shadows from existing buildings cover the most park area on the winter solstice before 9:00 a.m.

Grattan Playground

Grattan Playground is a 1.5-acre park that includes two soccer fields, two tennis courts, a basketball court, picnic areas, and a playground. Existing shadows at the Grattan Playground are minimal for most of the year, however, after 6:00 p.m. on the fall/spring equinox, and on the winter solstice before 8:19 a.m. and after 3:53 p.m., the majority of the park is shaded due to the nearby buildings.

Interior Greenbelt

The Interior Greenbelt is a natural area located adjacent to the east side of the Reserve, and includes a 2-mile multi-use trail that leads to the Mount Sutro trail network. The trail traverses a

6 The Planning Department commonly relies upon the hours governed by Planning Code Section 295—from one hour after sunrise to one hour before sunset—in environmental review, separate from Section 295 review, of potential shadow impacts of a project. This is because, during the first hour after sunrise and the last hour before sunset, shadows are very long due to the sun's low position near the horizon, meaning that most of the City is shaded at these times: for example, shadow from a single-story, 20-foot-tall building reaches a length of 250 feet 30 minutes after sunrise on June 21. Moreover, in the first and last hours of sunlight, these very lengthy shadows move more quickly across the ground than do shadows at other times of day. When evaluating the potential for a development to shade a particular open space during the hours subject to Planning Code Section 295, one may initially rule out any location that is more distant than 6.5 times the building height, which is the maximum length of any shadow during the Section 295 period, based on the lowest sun angle (at the winter solstice) at one hour after sunrise and one hour before sunset.

densely vegetated forest composed of mainly eucalyptus trees, which shade the trail throughout the year. As shown in the shade and shadow study prepared by Prevision Design, no portion of the Interior Greenbelt would be affected by shadowing associated with the NHPH, and therefore, this open space is not addressed further in this section as it relates to shadow.

In addition, the following San Francisco Unified School District (SFUSD) public schools participate in the City's Shared Schoolyard Project,[7] which allows for public access to schoolyards on the weekend. Because school open spaces participating in this program function as publicly-accessible open spaces on the weekend, the City requires that shade and shadow impacts on these spaces be analyzed.

Independence High School

Independence High School is a SFUSD public high school and includes an approximately 0.4-acre paved playground featuring a basketball court. There are existing shadows on the paved playground throughout the year early in the morning and in the late afternoon. On the summer solstice, shadows cover a majority of the open space before 7:00 a.m. and again after 6:00 p.m. On the fall/spring equinox, existing shadows cover a majority of the open space before 8.00 a.m., and return to cover a majority of the open space between 5:00 p.m. and sunset. On the winter solstice, existing shadows cover a majority of the open space from sunrise until 9:00 a.m., and return to cover a majority of the open space between 3:00 p.m. to sunset.

Grattan Elementary School

Grattan Elementary School is a SFUSD public elementary school and includes an approximately 0.4-acre paved open area, basketball court, and play structure. Existing buildings in the vicinity cast shadows on the school's open space throughout the year in the early morning between approximately 7:00 to 9:00 a.m. A portion of the open space at this school is not shaded at all daytime hours during the year except on the winter solstice at 3:54 p.m., at which point the open space is fully subsumed by shade from existing buildings.

4.1.2 Regulatory Framework

Federal

There are no federal regulations, applicable to aesthetics, wind, or shadow relevant to the NHPH.

State

State Scenic Highway Program

California's Scenic Highway Program was created by the Legislature in 1963 to preserve and protect scenic highway corridors from change that would diminish the aesthetic value of lands adjacent to designated scenic highways. The State laws governing the Scenic Highway Program

[7] The Shared Schoolyard Project is a partnership between the City, the SFUSD, several other City departments, and San Francisco's neighborhoods and communities that opens up schoolyards to the public for recreation and open space on the weekends. Currently, there are over 50 schools citywide are enrolled in the Shared Schoolyard Project.

are found in the California Streets and Highways Code, Division 1, Chapter 2, Article 2.5, Section 260 et seq. The State Scenic Highway System includes a list of federal and State highways that are either eligible for designation as scenic highways or have been so designated. These highways are identified in Streets and Highways Code Sections 263 through 263.8. A highway may be designated scenic based upon the amount of natural landscape that can be seen by travelers, the scenic quality of the landscape, and the extent to which existing development intrudes upon the traveler's enjoyment of the view (Caltrans, 2021).

UCSF

UCSF 2014 LRDP

The UCSF 2014 LRDP, last amended in January 2021, identifies campus-wide objectives and objectives specific to the Parnassus Heights campus site. The following UCSF 2014 LRDP objectives relate to aesthetics, shadow and/or wind (UCSF, 2021):

Campus-Wide Objectives[8]

1. Respond to City and Community Context

B. Acknowledge and respond to local zoning and height and bulk limitations to the extent possible.

C. Design new buildings to be sensitive to the surrounding neighborhood and landscape, taking into account use, scale, potential noise generation, and density.

D. Incorporate pedestrian-friendly urban design principles to relate campus buildings to surrounding streetscape and neighborhoods.

While not objectives or regulations, the UCSF 2014 LRDP also included *Community Planning Principles*, which were produced in collaboration with the UCSF Community Advisory Group:

Community Planning Principles

Community Planning Goals for Building and Public Realm Design

BD1. Consider viewsheds of surrounding neighborhoods when designing new buildings.

BD4. Incorporate pedestrian-friendly urban design principles so as to better relate campus buildings to the adjoining streetscape, landscape, public space, and pedestrian realm.

BD5. Present proposed building designs, using 3-D modeling and other visualization techniques, to the public for review and comment at critical milestones.

8 Amendment #7 included a revision to the campus wide objectives that states "In recognition of the substantial space need associated with the NHPH, and the need for proximity to existing hospitals, Objectives 1B and 1C do not apply to the NHPH. However, efforts will be made during the design process to come as close as possible to meeting these objectives, where feasible. Please refer to site-specific objectives for the Parnassus Heights campus site and to the Physical Design Framework for applicable objectives and design guidelines." (Amended by 2014 LRDP Amendment #7).

BD6. Consult with the community in the design of buildings and open space, to ensure that they are complementary to the surrounding neighborhoods while being inspiring, creative, and innovative.

BD9. Conform to the planning and design principles set forth in UCSF's 2007 Physical Design Framework when planning for physical development at UCSF's campus sites. These principles are: respond to context while reinforcing identity; welcome the community; ensure connectivity to and within the campus; improve campus cohesiveness; create spaces to promote collegiality; and lead through conservation and sustainability.

CPHP

The CPHP objectives for the NHPH are presented in Chapter 3, *Project Description*. The following additional campus-wide CPHP objectives are specific to space and urban design objectives that relate to NHPH (UCSF, 2020a):

Space

- Facilitate patient/pedestrian safety and functional efficiency by connecting campus buildings across and under Parnassus Avenue.

Urban Design

- Improve the campus's functional organization and foster intuitive wayfinding.
- Develop a framework of open spaces that enhance the campus environment by connecting people to nature.
- Create welcoming spaces for enhancing the patient/visitor experience throughout the campus site.
- Enhance connectivity between the campus site and the surrounding community.

UCSF's Physical Design Framework

UCSF's Physical Design Framework, amended in December 2020, provides guidance for design consultants retained by UCSF to ensure that future projects enhance the physical environment. It also provides guidance that UCSF may use to determine if those designs are consistent with these principles, guidelines and strategies. The six universal planning and design principles that guide physical development at all UCSF-owned campus sites include the following (UCSF, 2020b):

- Respond to context while reinforcing identity;
- Welcome the community;
- Ensure connectivity to and within the campus;
- Improve campus cohesiveness;
- Create spaces to promote collegiality; and
- Lead through conservation and sustainability.

Parnassus Heights Design Guidelines

The Parnassus Heights Design Guidelines were completed in 2020 to build upon the CPHP to ensure landscape and architectural excellence, strengthen the UCSF identity, and ensure a cohesive human experience on the campus site (UCSF, 2020c). These design guidelines outline design goals and guidelines for all future building and landscape projects at the Parnassus Heights campus site. The design guidelines are based on the following design principles, intended to serve as filters incorporated into the design of future buildings and open space on the campus site: 1) Be distinctly local; 2) Create a healing place; 3) Connect Park to Peak; 4) Be welcoming; 5) Enable intuitive wayfinding; 6) Design for human comfort; and 7) Present cohesive identity and unique design.

The Parnassus Heights Design Guidelines address sustainability, design process, and site design, and provide architectural guidelines for campus form and building design, and landscape guidelines that address landscape materials, site furnishings, exterior lighting and planting approach.

City of San Francisco

Although the University is constitutionally exempt from local land use regulation when using properties under its control in furtherance of its educational mission, the University strives to be substantially consistent with local policies where feasible.

UCSF consults with the City when planning new development, and obtains approvals, such as encroachment permits, if improvements are proposed within City rights-of-way adjacent to the campus sites. In addition, it is UCSF's intent to adhere substantially, to the extent possible, to City zoning codes related to building use, height, and bulk limitations; floor area ratios; and parking requirements or restrictions for the purpose of ensuring compatibility with the surrounding areas.

San Francisco General Plan

The *San Francisco General Plan* provides general policies and objectives to guide land use decisions and includes policies that relate to environmental issues.

Urban Design Element

The Urban Design Element is concerned "both with development and with preservation. It is a concerted effort to recognize the positive attributes of the city, to enhance and conserve those attributes, and to improve the living environment where it is less than satisfactory." The Urban Design Element also seeks to protect public views of open space and water bodies, and to protect and enhance the aesthetic character of San Francisco. The following policies of the Urban Design Element are particularly relevant to the NHPH:

> **Policy 1.1:** Recognize and protect major views in the city, with particular attention to those of open space and water.
>
> **Policy 1.3:** Recognize that buildings, when seen together, produce a total effect that characterizes the city and its districts.

Policy 1.6: Make centers of activity more prominent through design of street features and by other means.

Policy 3.4: Promote building forms that will respect and improve the integrity of open spaces and other public areas.

Policy 3.5: Relate the height of buildings to important attributes of the city pattern and to the height and character of existing development.

Policy 3.6: Relate the bulk of buildings to the prevailing scale of development to avoid an overwhelming or dominating appearance in new construction.

The Urban Design Element of the City's General Plan emphasizes the importance of low-rise buildings surrounding large parks at tops of hills to maintain visibility of the park from other areas of the city. The Urban Design Element also states that views from roadways that reveal major destinations or that provide overlooks of important routes and areas of the city assist the traveler in orientation.

The Urban Design Element also includes three maps relevant to the proposed project: "Street Areas Important to Urban Design and Views," "Quality of Street Views," and "Plan to Strengthen City Pattern through Visually Prominent Landscaping." Fourth Avenue (between Irving Street and Parnassus Avenue), Fifth Avenue (between Irving and Kirkham Streets), Sixth Avenue (between Judah and Kirkham Streets), and Stanyan Street, Edgewood Avenue, Woodland Avenue, and Willard Street are described in the City's General Plan as streets providing excellent quality street views. In addition, nearby Seventh Avenue and Judah Street are listed as streets that provide views of important buildings. The "Plan to Strengthen City Pattern Through Visually Prominent Landscaping" map identifies four parks in the vicinity of the campus site (Grandview Park, Tank Hill, Corona Heights Park, and Buena Vista Park) as important vistas to be protected. This map also identifies the Reserve as "Existing Landscaping to be Preserved."

Recreation and Open Space Element

Policy 1.9 from the Recreation and Open Space Element of the San Francisco General Plan states that solar access to public open space should be protected.

San Francisco Planning Code

The Planning Code incorporates by reference the City's zoning maps. The Planning Code also governs permitted uses, densities, and the configuration of buildings in San Francisco.

Use Districts

The site of the New Hospital and majority of related improvements are within the City's Height and Bulk Districts 65-D and 220-F. The "D" designation limits floor plans above 40 feet to a maximum plan length of 110 feet and a maximum diagonal plan dimension of 140 feet. The "F" designation limits floor plans above 80 feet to a maximum plan length of 110 feet and a maximum diagonal plan dimension of 140 feet. The sites of the proposed medical gas tanks replacement project, and vegetation management and slope stabilization improvements are partially located within the City's Open Space Height and Bulk District; and the proposed

Parnassus Avenue pedestrian bridge and tunnel are located within the City's Height and Bulk District 80D. In the Open Space Height and Bulk District, the height and bulk of buildings and structures are determined in accordance with the objectives, principles and policies of the General Plan, and where no building or structure or addition thereto is permitted unless it is in conformity with the General Plan.

Shadow

Planning Code Section 101.1/Proposition M

In November 1986, the voters of San Francisco approved Proposition M (the Accountable Planning Initiative), which added section 101.1 to the Planning Code and established eight Priority Policies. These Priority Policies are the basis upon which inconsistencies with the General Plan are resolved. Priority Policy No. 8 calls for the protection of parks and open space and their access to sunlight and vistas.

Planning Code Section 295/Proposition K

In 1984, San Francisco voters approved an initiative known as "Proposition K, The Sunlight Ordinance," which was codified in 1985 as Planning Code Section 295. Section 295 of the Planning Code generally prohibits new structures above 40 feet in height that would cast additional shadows on open space that is under the jurisdiction of the San Francisco Recreation and Park between one hour after sunrise and one hour before sunset, at any time of the year, unless that shadow would not result in a significant adverse impact on the use of the open space. A project that adds new shadow to sidewalks or a public open space, or exceeds the absolute cumulative limit on a Section 295 park does not necessarily result in a significant impact under CEQA; the City's significance criteria used in CEQA review asks whether a project would "create new shadow in a manner that substantially and adversely affects the use and enjoyment of publicly accessible open spaces."

4.1.3 Impacts and Mitigation Measures

Significance Criteria

Would implementation of the NHPH:

a) Have a substantial adverse effect on a scenic vista?

b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage points.) If the project is in an urbanized area,[9] would the project conflict with applicable zoning and other regulations governing scenic quality?

[9] The campus site qualifies as an "urban area" as defined in CEQA Guidelines Section 21094.5 because it is located in an incorporated city.

d) Create a new source of substantial light or glare which would adversely affect daytime or nighttime views in the area?

e) Create new shadow in a manner that substantially and adversely affects the use and enjoyment of publicly accessible open spaces?

f) Create wind hazards in publicly accessible areas of substantial pedestrian use?

As discussed in more detail under the *Approach to Analysis* for aesthetics, below, and further in Section 4.0, *Introduction to Environmental Analysis*, pursuant to CEQA Section 21099(d), this EIR does not consider aesthetics in determining the significance of project impacts under CEQA. As a result, an assessment of the NHPH effects against criteria a) through d), above, is presented for informational purposes.

Criteria Not Analyzed

As stated in the Initial Study, there would no impact related to the following topic for the reasons described:

- ***Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway.*** A portion of 19th Avenue, between Highway 101 in the Presidio and St. Francis Boulevard, is an eligible state scenic highway. The campus site is 0.85 miles from 19th Avenue and would not affect scenic resources within a state scenic highway. Therefore, this criterion related to scenic resources does not apply and is not addressed further in this section.

Approach to Analysis

Aesthetics

As discussed in further detail in Section 4.0, *Introduction to Environmental Analysis*, the proposed NHPH substantially meets the criteria set forth in CEQA Section 21099(d), which states that "Aesthetic and parking impacts of a residential, mixed-use residential, or employment center project on an infill site located within a transit priority area shall not be considered significant impacts on the environment." Thus, this EIR does not consider aesthetics and the adequacy of parking in determining the significance of project impacts under CEQA. Nevertheless, the public and decision-makers may be interested in information pertaining to the aesthetic effects of the proposed NHPH, and may desire that such information be provided as part of the environmental review process. Therefore, this EIR provides an assessment of potential aesthetic impacts, and identifies, as feasible, mitigation measures to mitigate potential significant lighting/glare impacts.

The analysis in Impacts AES-1 and AES-2, below, is aided by the visual simulations prepared by UCSF's design team and peer reviewed by Prevision Design for the EIR. The visual simulations document views of and through the campus site. A total of nine visual simulations were prepared from representative locations. These identified viewpoints are publicly accessible observation points from locations that can see or be seen from the project site. Viewpoints were selected by UCSF and represent (1) typical views from common types of viewing areas, such as public sidewalks near residential areas with exposure to the proposed NHPH development; or

(2) specific high sensitivity areas such as public parks, scenic viewpoints whose scenic views could be affected by development of the proposed NHPH. The nine viewpoints were selected to capture a representative sample of existing views of and from the campus site in terms of both sensitive viewing locations, such as public recreational uses, and publicly accessible views near the campus site.

Visual simulations were prepared for the following scenarios: 1) Existing plus NHPH; and 2) Existing plus NHPH and planned CPHP buildout. Digitized photographs and computer modeling techniques were utilized to prepare the visual simulations. The visual simulations of the NHPH are based on available preliminary building plans and designs. With respect to cumulative development planned on the campus site under the CPHP, since detailed building plans of that programmatic development are not yet available, building massing in the simulations illustrate rough approximations of their building form, but do not include features such as setbacks, modulation, and potential variation in the depths of façade planes, and fenestration (windows). Therefore, the visual simulations of this cumulative development can be considered a conservative depiction of potential visual changes associated with the CPHP.

Wind

The evaluation of potential wind impacts of the proposed NHPH are based on a pedestrian wind assessment prepared in support of this EIR by Cermak Peterka Peterson (CPP; refer to **Appendix WIND**). The wind assessment included wind tunnel tests conducted using a 1:350 (1 inch = approximately 30 feet) scale model of the proposed New Hospital and surrounding buildings within an approximately 2,000-foot radius centered on the project site, which is sufficient to encompass buildings in the campus core, as well as nearby off-campus buildings, that could affect winds on and near the site. The circular study area extends west to Seventh Avenue, north to Frederick Street and Lincoln Way, east to Stanyan Street, and south to cover a large portion of the Reserve. The model accounts for both topography and notable tree cover (i.e., within the Reserve) within the study area.

Using 16 compass directions (northwest, west-northwest, west, west-southwest, southwest, etc.) wind tunnel tests were conducted for the NHPH site and vicinity using the following scenarios:

- Existing;
- Existing plus NHPH;
- Existing plus NHPH and other planned CPHP Initial Phase Development, including the Irving Street Arrival and Parnassus Research and Academic Building (Cumulative 2030); and
- Existing plus NHPH and planned CPHP buildout (Cumulative 2050).

As discussed in Chapter 3, *Project Description*, in addition to the proposed project which would not extend beyond the UCSF property boundary, two design options are being considered (Design Options 1 and 2) that would include a horizontal projection of the third floor (4-foot and 11.5-foot, respectively) that would extend over the public right-of-way along Parnassus Avenue. As noted in Section 1.6, *Approvals Required*, Design Options 1 and 2 would require City

approval for the projections over the public right-of-way. Given the potential for these designs to affect localized street-level wind conditions, the Existing plus NHPH and cumulative scenarios consider the proposed project and Design Options 1 and 2 at an equal level of detail.

The scale model, which was equipped with permanently mounted wind speed sensors, was placed inside an atmospheric boundary layer wind tunnel. The model had 48 wind speed sensors (study test points) to measure mean and gust wind speeds at an equivalent full-scale height of five to seven feet above ground.[10]

Locations for study test points were selected to indicate how the general flow of winds would be directed around the New Hospital and planned CPHP development. Consistent with the San Francisco Planning Code Section 148, the locations of test points are primarily publicly accessible sidewalks and open spaces under with-project conditions, which are assumed to be areas of substantial pedestrian use.

The analysis was based on a relatively detailed developed massing model of the New Hospital under project conditions, and a comparatively more simple massing model of the planned CPHP development under the two cumulative scenarios, because actual building designs do not yet exist for the structures anticipated in the cumulative scenarios. In general, the massing model can be considered to generate conservative results, in that the model incorporates little in the way of setbacks and no façade detail on the cumulative buildings, thereby increasing the ground-level wind speeds that would result, compared to results that would arise from a more likely building scenario that does include setbacks and other building sculpting features, such as podiums and façade articulation.

In addition to the proposed New Hospital, a number of related improvements are proposed. It should be noted that under the Existing plus NHPH, and Cumulative 2030 and 2050 scenarios, the tree cover density assumed within the Reserve east of the New Hospital is representative of that which would be expected to occur with implementation of the proposed vegetation management under the NHPH and under the UCSF Mount Sutro Open Space Reserve Management Plan. The proposed Parnassus Avenue pedestrian bridge is only assumed in the model under the Cumulative 2050 scenario, since that improvement is anticipated to be implemented after 2030. The proposed renovation of Moffitt and Long Hospitals, widening of Medical Center Way, and Parnassus Avenue tunnel would have no potential to change wind conditions, and consequently, those changes are not considered in the model. Lastly, given the siting of tanks sites relative to the New Hospital, and the mass and heights of the proposed diesel and medical gas tanks, these features would not have the potential to substantially affect pedestrian wind conditions, and are not included in the model.

As noted above, the University is constitutionally exempt from local land use regulation when using properties under its control in furtherance of its educational mission, and therefore UCSF is not subject to the San Francisco Planning Code. However, in the interest of consistency with

[10] One test point, number 44 was located at an equivalent height of five to seven feet above the top of the main UCSF parking garage on Irving Street. All other test points were placed at an equivalent height of five to seven feet above grade.

other wind analyses conducted in San Francisco, UCSF relies upon the San Francisco Planning Code wind hazard threshold of 26 miles per hour (mph) as a significance criterion in its EIRs. Accordingly, the wind hazard criterion of San Francisco Planning Code Section 148 (applicable to downtown San Francisco)—wind speeds that exceed 26 mph for one full hour of the year—is relied upon in this EIR for the analysis of significant impacts. UCSF also relies upon the San Francisco Planning Code wind comfort thresholds for informational purposes. Therefore, if a project would cause pedestrian-level wind speeds to exceed 26 mph for a full hour, a project would have a significant wind impact. As explained in footnote 4, owing to the way the underlying wind data were collected, the 26 mph *one-hour* hazard criterion speed as reported herein is a *one-minute* average of 36 mph. Accordingly, all hazard wind speeds in this analysis are presented based on the 36-mph wind speed averaged over one-minute, and the hazard criterion is based on 36 mph.

In general, buildings with a height of less than 80 feet above surrounding structures tend not to result in substantial effects on pedestrian-level winds or to create new exceedances of the hazard criterion. For information as to more general pedestrian comfort, projects are also evaluated against the San Francisco Planning Code pedestrian comfort criteria, which are wind speeds of 11 mph for pedestrian areas and 7 mph for seating areas, not to be exceeded more than 10 percent of the time.

Shadow

The evaluation of potential impacts of the proposed NHPH related to shade and shadow are based on the shade and shadow study prepared in support of this EIR by Prevision Design (refer to **Appendix SHDW**). To evaluate the shadow impacts of the NHPH development, a 3D virtual model of the NHPH was prepared. The model includes the campus site, potentially affected open spaces, and the surrounding urban environment.

The purpose of this analysis is to inform decision-makers of the potential effects of the proposed NHPH's shadow on existing parks and publicly accessible open spaces, and to determine whether or not the NHPH would create new shadow in a manner that would substantially affect the use and enjoyment of these facilities, which would be considered a significant impact. This EIR considers the NHPH shadow effects under the following scenarios: 1) Existing plus NHPH; 2) Existing plus NHPH and other planned CPHP Initial Phase Development; and 3) Existing plus NHPH and planned CPHP buildout.

As discussed above, in addition to the proposed project which would not extend beyond the UCSF property boundary, two design options are being considered that would include horizontal projections of the third floor (4-foot and 11.5-foot, respectively) that would extend over the public right-of-way along Parnassus Avenue. Since there would not be a difference in resultant shadow effects on existing parks and publicly accessible open spaces between these designs, there was no need to model each design option individually.

The 3D model for the NHPH is based on available preliminary building plans and designs of the proposed NHPH. With respect to cumulative development planned on the campus site under the CPHP, since detailed building plans of that programmatic development are not yet available, the

building massing of other future development planned under the CPHP that are included in the simulations illustrates rough approximations of their building form.

The shadow analysis considers shadow from existing buildings and structures, shadow from the proposed NHPH, and discloses the net new shadow that would occur as a result of the NHPH. The shadow model does not consider shadow from existing trees, because the extent of shadow cast by trees can vary based on the season and because trees can be removed for various reasons.

Shadow Diagrams

In order to provide a visual understanding of the location, size, and extent of the new shading, graphics were prepared to accompany the qualitative analysis. The shadow diagrams graphically depict the movement of project shadows across the project site and surrounding area on four representative days of the year from one hour after sunrise to one hour before sunset:[11] the summer solstice (June 21, the longest day of the year, when the sun is highest in the sky and shadows are the shortest at any given time of day); the spring/autumn equinoxes (March 20/September 22, when the sun's position is nearly identical to the opposite equinox and represent the midway point between the winter and summer solstices); and the winter solstice (December 20, the shortest day of the year, when the sun is lowest in the sky and shadows are the longest at any given time of day).

For each of these days (summer solstice, spring/autumn equinoxes, and winter solstice), this section presents representative shadow diagrams at five times of day: one hour after sunrise; the beginning, middle, and end of the midday period of peak use (10 a.m., 12 p.m., and 3 p.m.); and one hour before sunset. Presenting a series of shadow diagrams from the same day demonstrates how shadow moves across the space and expands and contracts over a specific period of time. They present a representative range of dates and times, including the time of peak midday use of open space on the longest day of the year, on the equinoxes (when day and night are of approximately equal length), and on the shortest day of the year. From these shadow diagrams, shadow impacts on particular open spaces are described and evaluated.

Consistent with San Francisco shadow analysis procedures, shadow is shown at the ground plane only, and shadow on existing and proposed rooftops is not depicted. This is because the analytical model was developed to evaluate shadow on public and publicly accessible open spaces, the vast majority of which are at grade. In instances where existing buildings would be demolished and replaced with open space (e.g., in the cumulative scenario where portions of the CPHP-planned Promenade and extension of Fourth Avenue would replace part of the Dental Clinics Building) shadow cast on this area would not constitute net new shadow as the ground plane is currently subsumed by a building and does not receive sunlight.

[11] The period analyzed is from the first hour after sunrise until the last hour before sunset, because before and after these hours, shadows are extremely long and move very quickly across the ground. Because of this, much of the city other than areas with no buildings or other structures is in shadow during the first and last hours of sunlight. Additionally, use of most open spaces tends to be less intensive early in the morning and later in the day.

Impact Analysis

Impact AES-1: The NHPH would not have a substantial adverse effect on a scenic vista. (*Less than Significant*)

New Hospital

The New Hospital would have a significant effect on scenic vistas if it would substantially block or degrade scenic views from public vantage points. Please note that impacts on views from private property are not considered significant effects on the environment. Scenic vistas considered in this analysis include long-range panoramic views of scenic resources.

The height of the New Hospital would be approximately 269 feet above ground level to the building roof level, and approximately 294 feet above ground level to the top of proposed rooftop perimeter screening.[12] Given the location, and height and mass of the proposed New Hospital, it would be visible from several scenic viewpoints.

As noted above, to analyze the effect on scenic vistas, visual simulations were prepared from a number of publicly accessible vantage points from where the campus site can be seen or from vantage points on the campus site that provide scenic views. The locations and direction of the visual simulations are indicated on **Figure 4.1-7**.

View from Grandview Park

Locations on Grandview Park provide long-range panoramic views of the Pacific Ocean, Golden Gate Park, Marin Headlands, the Presidio, downtown San Francisco, the Reserve, and Sutro Tower. As shown in **Figure 4.1-8**, from this viewpoint, the New Hospital would be noticeable and partially obstruct views of the lower portion of the north slope of Mount Sutro. However, the Reserve would continue to be a prominent scenic resource from this view due to its elevation and visibility from long distance. The introduction of the New Hospital would only slightly obstruct the existing view of downtown San Francisco from this perspective. Other views from Grandview Park, including of the Pacific Ocean, Golden Gate Park, Marin Headlands and the Presidio would remain unchanged. With the development of the New Hospital, this scenic vista would continue to retain nearly all of the qualities that make it scenic: panoramic long-range views of scenic resources. Therefore, implementation of the New Hospital would not result in a substantial adverse impact on scenic vistas as viewed from Grandview Park.

Views from other Prominent Vantage Points

In addition to the view from Grandview Park discussed above, as discussed above under *Regulatory Framework*, the views from Tank Hill natural area, Buena Vista Park, and Corona Heights Park are listed in the Urban Design Element of the San Francisco General Plan as "Important Vista Points to be Protected."

[12] Portions of mechanical equipment and antennas located on the roof would exceed 294 feet.

SOURCE: Prevision Design, 2021; ESA, 2021; Google Earth, 2019

UCSF New Hospital Parnassus Heights EIR

Figure 4.1-7
Visual Simulation Viewpoint Map

Existing

Proposed

SOURCE: Herzog and de Meuron, 2021

UCSF New Hospital at Parnassus Heights

Figure 4.1-8
Viewpoint: 1: Visual Simulation of the NHPH from Grandview Park, Looking East

The New Hospital would be visible from surrounding parks, including the Tank Hill natural area, Buena Vista Park, and Corona Heights Park. Views from these parks are considered scenic as they include panoramic views of the city and the Bay Area. The New Hospital would be visible from these vantage points because it would be taller than surrounding development; however, it would not block existing views of Golden Gate Park or the Golden Gate Bridge from these parks. Moreover, other long-range views from these parks, including those of the Marin Headlands, downtown San Francisco, and the East Bay Hills would not be affected by the New Hospital. Therefore, implementation of the New Hospital would not result in a substantial adverse impact to these scenic vistas.

As discussed in the *Regulatory Framework*, views from certain streets in the vicinity of the campus site are listed in the City's General Plan as having excellent quality street views. These streets include Fourth Avenue (between Irving Street and Parnassus Avenue), Fifth Avenue (between Irving Street and Kirkham Avenue), Sixth Avenue (between Judah and Kirkham Streets), Edgewood Avenue, Willard Street, Woodland Avenue, and Clarendon Avenue.

Along portions of Fourth Avenue, Fifth Avenue, and Sixth Avenue, views toward the north and west afford mid- to long-range scenic views of the Golden Gate Bridge, Golden Gate Park, Marin Headlands, and the Pacific Ocean. The New Hospital would not obstruct views of these scenic resources toward the north and west from these streets.

Vantage points from east of the campus site on Edgewood Avenue and Willard Street provide scenic views of the Marin Headlands, Golden Gate Park, the Presidio and the Golden Gate Bridge. Vantage points from south of the campus site along Clarendon Avenue provide glimpses of the Bay and downtown San Francisco between residences. The New Hospital may obstruct northerly and westerly views of the Marin Headlands or Golden Gate Park from the corner of Edgewood Avenue and Belmont Avenue, however, would not obstruct views of downtown San Francisco from any vantage point on Clarendon Avenue or Willard Street.

As discussed in Chapter 3, *Project Description*, some supporting utility improvements, including electrical switchgear equipment and stormwater storage tank, would be located at the southeast corner of Parnassus Avenue and Medical Center Way on the site of the former Ammonia House. The stormwater storage tank would be installed below grade. In addition, these swithchgear and stormwater storage facilities would be fenced off and screened from street view. These facilities would not be visible from any long-range scenic vantage points, and consequently, these facilities would have a less-than-significant effect on scenic vistas.

Therefore, based on the foregoing, the New Hospital would not have a substantial adverse effect on scenic vistas from these vantage points.

View from the Mount Sutro Open Space Reserve

Figure 4.1-9 shows a visual simulation from the Historic Trail in the Reserve, looking north across the campus core toward Golden Gate Park, the San Francisco Bay, and Angel Island. From this vantage point, the proposed New Hospital would be noticeable and would obstruct northward scenic views across the campus core. However, this and other views from within the Reserve are

Existing

Proposed

SOURCE: Herzog and de Meuron, 2021 UCSF New Hospital at Parnassus Heights

Figure 4.1-9
Viewpoint 2: Visual Simulation of the NHPH Development from the Historic Trail in the Mount Sutro Open Space Reserve, Looking North

largely obstructed under existing conditions by dense vegetation and/or topography, and, as discussed in the *Environmental Setting*, in general, the Reserve does not provide long range scenic views. As such, development of the New Hospital would not adversely affect scenic vistas from within the Reserve.

Overall New Hospital Impact on Scenic Vistas

The New Hospital would be visible from the scenic vistas identified in this analysis, but these scenic vistas would not be substantially or adversely impacted because scenic views of the Marin Headlands, Golden Gate Park, the Presidio, Golden Gate Bridge, the Bay, and downtown San Francisco would be largely unobstructed from nearly all vantage points in the vicinity of the New Hospital. Therefore, the New Hospital's impact on scenic vistas would be less than significant.

Mitigation: None required.

Related Improvements

Renovation of Moffitt and Long Hospitals

The proposed renovation of Moffitt and Long Hospitals would involve mostly interior improvements. Exterior changes to these hospitals that would be visible from publicly accessible vantage points would be limited to transitional connections of these hospitals to the New Hospital (e.g., the Long Hospital Annex), and the proposed exit stair tower that would be installed on the northwest side of the Moffitt Hospital. As discussed in Chapter 3, *Project Description*, similar exterior materials as used for the New Hospital would be used for the Long Hospital Annex; and the stair tower may include glass, tile, plaster and/or stone that would serve to complement both Moffitt Hospital and adjacent New Hospital. While these improvements would be visible from Parnassus Avenue, Kezar Triangle, and/or some locations in Golden Gate Park, they would not increase the height of the hospitals, or be of a type, scale, or nature that would obstruct or degrade scenic vistas. Therefore, these improvements would have a less-than-significant impact on scenic vistas.

Widening of Medical Center Way

The proposed widening of Medical Center Way would occur on the west side of this roadway; as such, this improvement would not encroach into the Reserve. Further, the roadway improvement would not be visible from any off-campus scenic vantage points. Given the type and scale of this improvement, and its lack of visibility from scenic viewpoints, the widening of Medical Center Way would have a less-than-significant impact on scenic vistas.

Replacement of Diesel Fuel Tanks

As described in Chapter 3, *Project Description*, both design options being considered for replacement of diesel fuel tanks would be in the vicinity of the existing tanks on Medical Center Way. Option 1 would install above ground fuel tanks up to 46 feet tall, and Option 2 would be a hybrid underground and above-grade design, where the above-grade diesel fuel tanks would be up to 26.5 feet tall. Under either option, the proposed above ground diesel fuel tanks would be visible from certain proximate locations within the Reserve, such as from trails connecting to, and trailhead access on, Medical Center Way. However, the proposed diesel fuel tanks would be shielded from long-range scenic views by several of the campus site's existing visually prominent

buildings (including Moffitt and Long Hospitals, and the Dolby Regeneration Medicine Building), the proposed New Hospital building, and existing topography. Given these considerations, the diesel fuel tanks would have a less-than-significant effect on scenic vistas.

Replacement of Medical Gas Tanks

The proposed replacement of medical gas tanks would construct new above ground tanks ranging in height between 13 and 44 feet in a section of the Reserve hillside adjacent to, and east of Medical Center Way. This would require regrading and removal of trees at this site. Similar to the proposed diesel fuel tanks site discussed above, the proposed medical gas replacement tanks site would be visible from certain proximate locations within the Reserve, such as from the trails connecting to, and trailhead access on, Medical Center Way. However, the medical gas tanks would be similarly shielded from long-range scenic vantage points, by existing campus site buildings, the proposed New Hospital, and existing topography. Given these factors, the proposed medical gas tanks would have a less-than-significant effect on scenic vistas.

Vegetation Management and Slope Stabilization Improvements

The proposed vegetation management improvements would primarily involve clearing of dead and dying vegetation, and increased spacing of trees and shrubs on the hillside in the Reserve within 100 feet of the New Hospital. The proposed slope stabilization improvements would, depending on the selected technique, involve some alteration of the hillside to increase slope stability and reduce erosion potential. Neither of these proposed improvements would entail any structural development, or be of a nature that would substantially degrade scenic quality. These hillside improvements would be visible from certain proximate locations within the Reserve, including potentially from nearby trails. However, these improvements would be largely shielded from long-range scenic vantage points by existing campus site buildings, the proposed New Hospital, and existing topography. Given these considerations, these improvements would have a less-than-significant effect on scenic vistas.

Parnassus Avenue Pedestrian Bridge and Tunnel

The proposed Parnassus Avenue pedestrian bridge would span approximately 90 feet across Parnassus Avenue from the second level of the proposed modified Long Hospital annex to the second level of the planned Irving Street Arrival, at a height of between 30 and 46 feet above grade. Due to intervening buildings, structures, and natural topography, the pedestrian bridge would not be visible from scenic vantage points, and thus would have a less-than-significant impact on scenic vistas. The proposed tunnel would completely below grade, and similarly, would not be visible from any scenic vantage points, and consequently, would have no impact on scenic vistas.

Mitigation: None required.

Impact AES-2: The NHPH would be located in an urbanized area and would not conflict with applicable zoning and other regulations governing scenic quality. (*Less than Significant*)

The campus site qualifies as an "urban area" as defined in CEQA Guidelines Section 21094.5 because it is located in an incorporated city. Therefore, as discussed above under *Significance Criteria*, as a project located in an urbanized area, the NHPH would have an adverse effect related to scenic quality if it were to conflict with applicable regulations governing scenic quality.

Pursuant to the University of California's constitutional autonomy, development and uses on property under the control of the University that are in furtherance of the University's educational purposes are not subject to local land use regulation. The University is the only agency with land use jurisdiction over programs and projects proposed on the Parnassus Heights campus site, and the 2014 LRDP, as amended, is the applicable land use plan adopted by the University for guiding the development of the campus site while avoiding or mitigating its environmental impacts. As such, the UCSF 2014 LRDP, as amended, governs scenic quality at the campus site, and, accordingly, potential conflicts of the NHPH with the 2014 LRDP as amended are used as the basis to determine if the NHPH would have a significant impact related to scenic quality. (Nevertheless, following this assessment, this EIR also presents – for informational purposes – a discussion of the general consistency of the NHPH with the City of San Francisco General Plan. Please see *Informational Discussion of Consistency with City General Plan*, below.)

To help inform the discussion of NHPH effects on scenic quality, visual simulations of the NHPH have been prepared from a number of key vantage points. Please see representative visual simulations from Seventh Avenue and Judah Street (**Figure 4.1-10**); Kezar Triangle (**Figure 4.1-11**); Lincoln Way and Arguello Boulevard (**Figure 4.1-12**); 3rd Avenue and Parnassus Avenue (**Figure 4.1-13**); Parnassus Avenue and Willard Street (**Figure 4.1-14**); 17th Street and Clayton Street (**Figure 4.1-15**); and Willard Street and Belmont Avenue (**Figure 4.1-16**).

As shown in Figure 4.1-10, the upper levels of the New Hospital are partially visible rising behind existing campus site development along Parnassus Avenue. Figure 4.1-11 illustrates the New Hospital on the east side of the campus core, rising behind Medical Building 1 and partially obscuring Sutro Tower in the background. Figure 4.1-12 illustrates another perspective of the north face of the New Hospital, where its proposed elevated terrace and its landscaping are notably visible, as are its stepped upper levels. In Figure 4.1-13, the proposed New Hospital is partially visible rising behind Moffitt Hospital along the north side of Parnassus Avenue, as well as proposed pedestrian bridge crossing Parnassus Avenue. Figure 4.1-14 shows the east face of the proposed New Hospital, with its unique sawtooth pattern visible on the upper levels. Figure 4.1-15 shows the New Hospital as a new feature on the skyline, with its upper levels visible. Figure 4.1-16 shows another perspective of the east face of the New Hospital that is visible rising behind existing residences on Edgewood Avenue, with ascending levels of the building stepping back.

Existing

Proposed

SOURCE: Herzog and de Meuron, 2021 — UCSF New Hospital at Parnassus Heights

Figure 4.1-10
Viewpoint 3: Visual Simulation of the NHPH
from Seventh Avenue and Judah Street, Looking East

Existing

Proposed

SOURCE: Herzog and de Meuron, 2021 UCSF New Hospital at Parnassus Heights

Figure 4.1-11
Viewpoint 4: Visual Simulation of the Parnassus Heights Campus Site with the NHPH from Kezar Triangle, Looking South

Existing

Proposed

SOURCE: Herzog and de Meuron, 2021

UCSF New Hospital at Parnassus Heights

Figure 4.1-12
Viewpoint 5: Visual Simulation of the Parnassus Heights Campus Site with the NHPH from Lincoln Way and Arguello Boulevard, Looking South

Existing

Proposed

SOURCE: Herzog and de Meuron, 2021

UCSF New Hospital at Parnassus Heights

Figure 4.1-13
Viewpoint 6: Visual Simulation of the Parnassus Heights Campus Site with the NHPH from 3rd Avenue and Parnassus Avenue, Looking East

Existing

Proposed

SOURCE: Herzog and de Meuron, 2021

UCSF New Hospital at Parnassus Heights

Figure 4.1-14
Viewpoint 7: Visual Simulation of the NHPH
from Parnassus Avenue and Willard Street, Looking West

Existing

Proposed

SOURCE: Herzog and de Meuron, 2021

UCSF New Hospital at Parnassus Heights

Figure 4.1-15
Viewpoint 8: Visual Simulation of the NHPH
from 17th Street and Clayton Street, Looking West

Existing

Proposed

SOURCE: Herzog and de Meuron, 2021

UCSF New Hospital at Parnassus Heights

Figure 4.1-16
Viewpoint 9: Visual Simulation of the NHPH
from Willard Street and Belmont Avenue, looking West

Consistency with UC Plans and Policies

Consistency with the 2014 LRDP as Amended

New Hospital

As discussed in Chapter 3, *Project Description*, on January 20, 2021, the Regents approved Amendment #7 to the 2014 LRDP, which incorporated the CPHP planning concepts and proposals and other necessary conforming changes into the 2014 LRDP. The 2014 LRDP contains objectives which are the policies that guide UCSF's physical development. Of the five overarching 2014 LRDP objectives, "Objective 1. "Respond to the City and Community Context," contains sub-objective 1D that relates to scenic quality applicable to the NHPH: "Incorporate pedestrian-friendly urban design principles to relate to campus buildings to surrounding streetscape and neighborhoods."

The New Hospital frontage on Parnassus Avenue would be constructed concurrent with the proposed Parnassus Avenue Streetscape Plan, which includes pedestrian improvements intended to make street crossings safer and more convenient, the creation of more usable outdoor space as well as visual design elements to strengthen the identity of UCSF at the campus site, and enhance the public realm. Improvements proposed specifically as part of the New Hospital would include a new traffic signal at the intersection of Parnassus Avenue and Hillway Avenue, new curb cuts for access to and from the vehicular drop-off loops, and streetscape improvements such as new street trees. These improvements would serve to enhance the public realm as called for in UCSF's Physical Design Framework, and would be consistent with 2014 LRDP sub-objective 1D.

As discussed in the *Regulatory Framework*, Amendment #7 to the 2014 LRDP included a revision to the campus wide objectives that states "In recognition of the substantial space need associated with the NHPH, and the need for proximity to existing hospitals, Objectives 1B and 1C do not apply to the NHPH." Nevertheless, it is acknowledged that the proposed New Hospital would exceed the height limits of the City's 65-D and 220-F Height and Bulk Districts, and would represent a substantial increase in development, and associated increase in scale and density, on the campus site. Furthermore, the New Hospital would contrast sharply both in height and scale with existing residential development to the east, and would represent a prominent newly visible feature in the viewsheds from nearby neighborhoods.

However, UCSF strives to be responsive to City zoning, and sensitive to the surrounding neighborhood and landscape, to the extent possible. With respect to the New Hospital, this would be achieved in part through the design of the New Hospital consistent with UCSF's Physical Design Framework and Parnassus Heights Design Guidelines. As discussed in Chapter 3, *Project Description*, to reduce its perceived height and mass, the New Hospital would be divided into three distinct stacked horizontal layers which would serve to break up the overall mass of the building. The podium layer would articulate on ascending floors to break up the overall mass of the podium, and provide a more pedestrian scale on the ground floor. The middle layer of the New Hospital would be recessed, creating an outdoor publicly accessible terrace along the perimeter of Level 6. As shown in several of the visual simulations, the upper layer of the New Hospital would have a stepped form with expressed slabs, where the east and west faces of these floors would step back to reduce the perceived scale and volume of the building.

In addition, in contrast to the preliminary New Hospital massing concept included in the CPHP, the reduced size of the New Hospital proposed under the NHPH would avoid encroachment into the adjacent hillside in the Reserve east of Medical Center Way. Furthermore, the proposed street level landscaping along Parnassus Avenue and Medical Center Way, and elevated and substantially landscaped terrace on Level 6, would serve to complement the natural open space within the Reserve to the east.

The New Hospital would also be consistent with those CPHP objectives that relate to space and urban design, as it would foster wayfinding and increase connectivity with adjacent uses.

As discussed above, certain supporting utility improvements, including proposed electrical switchgear equipment and an underground stormwater storage tank, would be installed across Medical Center Way from the New Hospital on the site of the former Ammonia House. The site of these utility improvements is currently designated a "Support" functional zone in the 2014 LRDP, and designated by the City within its OS Height and Bulk District. Given the continued use of this site for University utility-related uses, the proposed stormwater tank would be below grade, and that the proposed facilities would be screened from street view with proposed fencing, these facilities would be generally consistent with applicable 2014 LRDP objectives governing scenic quality, and its impact would be less than significant.

Overall New Hospital's Impact on Scenic Quality

The proposed New Hospital would be consistent with applicable 2014 LRDP objectives governing scenic quality. Amendment #7 to the 2014 LRDP incorporated the CPHP planning concepts and proposals and other necessary conforming changes into the 2014 LRDP. While as discussed above, Amendment #7 clarified that sub-objectives 1B and 1C do not apply to the New Hospital in recognition of the substantial amount of space required for the New Hospital and need for proximity to the existing hospitals, UCSF would make efforts to come as close as possible to meeting these objectives, as feasible. The design of the New Hospital would be consistent with UCSF's Physical Design Framework and Parnassus Heights Design Guidelines. The New Hospital would also be consistent with applicable CPHP objectives related to space and urban design. Given the above factors, the New Hospital would not conflict with the 2014 LRDP objectives related to scenic quality. This impact would be less than significant.

Mitigation: None required.

Related Improvements

The 2014 LRDP "Objective 1. "Respond to the City and Community Context" includes three sub-objectives related to scenic quality that apply to the NHPH related improvements: Sub-objective 1B: "Acknowledge and respond to local zoning and height and bulk limitations to the extent possible;" sub-objective 1C: "Design new buildings to be sensitive to the surrounding neighborhood and landscape, taking into account use, scale, potential noise generation, and density;" and sub-objective 1D: "Incorporate pedestrian-friendly urban design principles to relate campus buildings to surrounding streetscape and neighborhoods." The consistency of each of the NHPH related improvements with these sub-objectives is discussed below.

Renovation of Moffitt and Long Hospitals

Regarding 2014 LRDP sub-objective 1B, the renovation of Moffitt and Long Hospitals would not result in an increase in height of these buildings, and would involve only a minor net increase in building square footage, and consequently, would have no effect related to zoning or with respect to height and bulk limitations at these sites. Consequently, the renovation of Moffitt and Long Hospitals would be consistent with sub-objective 1B related to local zoning and height and bulk limitations.

Regarding 2014 LRDP sub-objective 1C, the renovation of Moffitt and Long Hospitals would maintain clinical and support uses at these hospitals; and the scale and density of the buildings would not change appreciably. Consequently, the renovation of Moffitt and Long Hospitals would be consistent with sub-objective 1C with respect to sensitivity to the surrounding neighborhood and landscape. (Please see also Section 4.11, *Noise and Vibration*, as it relates to the less-than-significant impact associated with operation of these hospitals on noise generation.)

Regarding 2014 LRDP sub-objective 1D, the renovation of Moffitt and Long Hospitals would not remove any existing pedestrian-oriented features of the buildings or adjacent area, and Moffitt and Long Hospitals would be modified to provide direct connections to the New Hospital on several levels of the hospitals. Consequently, the renovation of Moffitt and Long Hospitals would be consistent with sub-objective 1D with respect to incorporation of pedestrian-friendly urban design principles to relate campus buildings to surrounding streetscape and neighborhoods.

Given these factors, the renovation of Moffitt and Long Hospitals would not conflict with applicable 2014 LRDP objectives related to scenic quality. This impact would be less than significant.

Widening of Medical Center Way

The proposed widening of Medical Center Way would not involve improvements that would be of a nature that would conflict with local zoning and height and bulk limitations, or involve new building construction; and consequently, would not conflict with 2014 LRDP sub-objectives 1B and 1C. The proposed widening of Medical Center Way would include pedestrian walkways along both sides of roadway and consequently, would be consistent with 2014 LRDP sub-objective 1D for incorporation of pedestrian-friendly urban design principles. Given these factors, the widening of Medical Center Way would not conflict with applicable 2014 LRDP objectives related to scenic quality. This impact would be less than significant.

Replacement of Diesel Fuel Tanks

The two optional locations for the replacement diesel fuel tanks are in approximately the same location as the existing diesel fuel tanks, and within the City's 65-D Height and Bulk district. The proposed heights of the tanks would be within the City height requirement for this area, and consequently, the replacement diesel fuel tanks would be consistent with 2014 LRDP sub-objective 1B. The replacement diesel fuel tanks would not involve new building construction and would not remove or alter any existing pedestrian features on the site, and consequently, would not conflict with 2014 LRDP sub-objectives 1C and 1D. Given these factors, the replacement of diesel fuel tanks would not conflict with applicable 2014 LRDP objectives related to scenic quality. This impact would be less than significant.

Replacement of Medical Gas Tanks

The proposed replacement site for the medical gas tanks is located within the City's OS Height and Bulk district, and consequently, the proposed tanks would not be within the City's height limitations for this area. However, the replacement of medical gas tanks would not involve new building construction, and would not alter or prevent access to nearby trails or trailheads. The medical gas tank site would be enclosed by fencing incorporating landscaping which would serve to partially screen the tanks. Furthermore, shielding provided by existing buildings, the proposed New Hospital, and existing topography would largely shield views of the tanks from off-campus land uses. As discussed above, despite the need to modify the Reserve boundary at this location, when considering the other proposed Reserve boundary modifications on the campus site under the NHPH that would increase Reserve land, the Reserve would be maintained at a minimum of 61 acres. Given these factors, on balance, the replacement of medical tanks would not substantially conflict with the applicable 2014 LRDP objectives related to scenic quality. This impact would be less than significant.

Vegetation Management and Slope Stabilization Improvements

The proposed vegetation management and slope stabilization improvements would not involve any aspects that would be in conflict with sub-objectives 1B through 1D. These improvements would not involve any development that would exceed City height and bulk districts at this location; would not involve new building construction; would not remove existing Reserve trails, or otherwise conflict with the surrounding neighborhood and landscape. Given the above factors, the proposed vegetation management and slope stabilization improvements would not conflict with applicable 2014 LRDP objectives related to scenic quality. This impact would be less than significant.

Parnassus Avenue Pedestrian Bridge and Tunnel

The proposed Parnassus Avenue pedestrian bridge and tunnel are located within the City's 130-D Height and Bulk District. These improvements would be within the City height limitations for this location, consequently would be consistent with 2014 LRDP sub-objective 1B. The proposed improvements would improve pedestrian access across Parnassus Avenue, and consequently, would be consistent with 2014 LRDP sub-objectives 1C and 1D. As such, the proposed Parnassus Avenue pedestrian bridge and tunnel would not conflict with applicable 2014 LRDP objectives related to scenic quality. Furthermore, these improvements would not conflict with the recommendations in the City's Better Streets Plan. This impact would be less than significant.

Mitigation: None required.

Informational Discussion of Consistency with City General Plan

The following discussion considers for informational purposes whether the NHPH would be consistent with San Francisco General Plan policies governing scenic quality. Because of the University's constitutional exemption from local land use regulation, conflicts with City regulations would not constitute significant environmental effects.

The Urban Design Element of the City's General Plan defines the City's desired aesthetic character and quality, and includes policies and principles that guide new development within the City. To the extent the NHPH would conflict with Urban Design Element policies that seek to recognize and protect major views in the city, that analysis is provided in Impact AES-1, above.

With respect to scenic quality, relevant objectives and principles in the Urban Design Element are listed above, under *Regulatory Framework*. In general, the Urban Design Element generally seeks to develop buildings consistent with the prevailing scale of development to avoid an overwhelming or dominating appearance in new construction, to promote building forms that respect and improve the integrity of open space, and to promote the importance of low-rise buildings surrounding large parks at tops of hills to maintain visibility of the park from other areas of the city.

The existing campus site is notable because of the collection of tall buildings that stand out among surrounding off-site development, which is limited to 40 feet in height. Development under the NHPH would further this pattern, by increasing building massing and height with development of the proposed New Hospital. The proposed New Hospital would reinforce the campus site character by adding a tall building in an area of the campus that is already distinguishable for its cluster of tall buildings. As such, the NHPH would be generally consistent with Urban Design Element Policy 1.3, which states that buildings, when seen together, produce a total effect that characterizes the city and its districts, and with Policy 1.6, which strives to make centers of activity more prominent through design of street features and by other means. However, the NHPH would not be consistent with Policy 3.6, which states that the height of buildings should be related to the prevailing scale and character of existing development, when considering the proposed New Hospital would be approximately 80 to nearly 100 feet taller than the next tallest existing buildings at the campus site (Long and Moffitt Hospitals).

With respect to Policy 3.4, which states that building forms should respect and improve the integrity of open spaces and other public areas, the proposed replacement of medical gas tanks would encroach on the adjacent hillside within the Reserve, and require modifications to the Reserve boundary. However, the area previously removed from the Reserve under 2014 LRDP Amendment #7 to accommodate the New Hospital footprint is now proposed to be returned to the Reserve. These changes would maintain the Reserve at a minimum of 61 acres. It should be noted that the area between the Surge and Woods parking lots that was added to the Reserve under 2014 LRDP Amendment #7 would remain as Reserve land. With the modification of the adjacent Reserve boundary and related minor amendment to the 2014 LRDP, the proposed replacement of medical gas tanks would not conflict with Policy 3.6. None of the other related improvements would involve changes to the built environment that would conflict with the City's urban design policies.

Impact AES-3: The NHPH would create a new source of substantial light or glare which would adversely affect daytime or nighttime views in the area. (*Less than Significant with Mitigation*)

New Hospital

In the New Hospital site vicinity, there are various existing sources of night lighting, including interior and exterior lighting in LPPI and other proximate buildings, streetlights on Parnassus Avenue, Medical Center Way, and pedestrian walkways, and from vehicular traffic.

Development of the New Hospital would increase ambient light levels due to light dispersion from the building. New or increased light sources associated with the New Hospital would include stationary light fixtures and lighted signage on or near building entrances, visitor drop-off areas, and along pedestrian walkways for security and for wayfaring purposes; building interior light emitted through building windows; and light emitted from headlamps of vehicles accessing the New Hospital. In addition, glare could be generated from reflective building materials. Increases in night lighting could affect nighttime views on the campus site or in the surrounding neighborhoods.

As described in Chapter 3, *Project Description*, the New Hospital would comply with the allowed backlight, uplight, and glare (BUG) ratings for exterior lighting, for its specific Model Lighting Ordinance (MLO)[13] lighting zone, or the maximum vertical and horizontal lumen[14] allowances for its lighting zone. Either approach would serve to minimize lighting effects associated with the new light sources. Lighting would also be developed in accordance with campus design principle W4 included in the CPHP, which states that adaptable lighting fixtures should be designed to modulate energy consumption and lighting levels, and respond to program needs and neighborhood concerns.

As discussed in Chapter 3, the preliminary list of exterior building materials includes the use of glazed curtain wall paneling, concrete, and use of wood and metal accents. In addition, with respect to bird safe design, exterior building architectural features under consideration includes, but is not limited to, frit/acid etch glazing, transparent coatings, and the specification of specific reflectance values of glazing. See also NHPH Mitigation Measure BIO-2b, Bird-Safe Building Treatments in Section 4.3, *Biological Resources*.

Certain supporting utility improvements, including proposed electrical switchgear equipment and an underground stormwater storage tank, would be installed across Medical Center Way from New Hospital on the site of the former Ammonia House. Any new lighting that may be installed for these facilities would be limited to security lighting, similar to existing lighting at this site. Consequently, these improvements would not be anticipated result in a source of substantial light or glare which would adversely affect daytime or nighttime views in the area.

Given that specific architectural features and building materials of the New Hospital are not yet finalized, the proposed improvements have the potential to include reflective surfaces that may create glare and light that could affect nearby residents, pedestrians and passing motorists. **NHPH Mitigation Measure AES-3** would be implemented to reduce the impact to a less-than-significant level. By employing appropriate design standards and minimizing the quantity of reflective material used in new construction, light and glare impacts and impacts to views related to lighting could be reduced to less-than-significant levels.

[13] The International Dark-Sky Association (IDA) and the Illuminating Engineering Society (IES) developed a Model Lighting Ordinance (MLO) to address the need for a consistent outdoor lighting regulation in North America. The MLO uses a classification of five lighting zones for different land uses, ranging from LZ0 (for pristine natural environments) to LZ4 (for limited application in areas of extensive development in cities). The MLO also limits the amount of light used for properties. In addition, the MLO uses the IES's backlight, uplight, and glare (BUG) classification of outdoor lighting fixtures to ensure that well-shielded fixtures are used, and that no uplighting is used.

[14] The lumen is a measure of the total quantity of visible light emitted by a source per unit of time.

NHPH Mitigation Measure AES-3: Minimize light and glare resulting from new development.

Light and glare from new development shall be minimized through use of landscaping materials and choice of primary facade materials. Design standards and guidelines to minimize light and glare shall be adopted for the new development, include:

- Reflective metal walls and mirrored glass walls shall not be used as primary building materials for facades.
- Installation of illuminated building signage shall strive to be consistent with UCSF design guidelines and/or City Planning Code sign standards for illumination.
- Exterior light fixtures shall be configured to emphasize close spacing and lower intensity light. Light fixtures shall use luminaries that do not direct the cone of light towards off-campus structures.
- New above-ground tanks shall be painted so as to not contain reflective surfaces.

Significance after Mitigation: Less than Significant.

Related Improvements

Renovation of Moffitt and Long Hospitals

Moffitt and Long Hospitals currently include stationary light fixtures and lighted signage on or near building and garage entrances, and along pedestrian walkways for security and for wayfaring purposes; at loading docks at the rear of the hospitals; and building interior lighting which is emitted through building windows. The proposed renovation of Moffitt and Long Hospitals would not be expected to result in a substantial change in the type or number of light sources used at the hospitals that would create a substantial increase in spill light or create glare. However, since the specific extent and design of new or replacement lighting fixtures and/or new exterior materials to be used at these hospitals under the NHPH is not yet determined, NHPH Mitigation Measure AES-3 is conservatively identified to be implemented for these improvements to ensure light or glare would not adversely affect daytime or nighttime views in the area.

Mitigation: Implement NHPH Mitigation Measure AES-3.

Widening of Medical Center Way

In the site vicinity, there are streetlights on Medical Center Way and security lighting on nearby buildings; and under the proposed widening project, new streetlights would be installed on the widened section of Medical Center Way. This new lighting is not anticipated to be of a nature that would generate substantial increase in spill light or create glare. However, since the specific extent and design of the new street lighting on Medical Center Way is not yet determined, and given the proximity of Medical Center Way to the Reserve, NHPH Mitigation Measure AES-3 is conservatively identified to be implemented for this improvement to ensure light or glare would not adversely affect nighttime views in the area.

Mitigation: Implement NHPH Mitigation Measure AES-3.

Replacement of Diesel Fuel and Medical Gas Tanks

In the vicinity of the proposed replacement sites for the diesel and medical gas tanks, there is existing street lighting on Medical Center Way, and security lighting on buildings on nearby buildings. New lighting anticipated to be installed at the replacement sites for the diesel and medical gas tanks is anticipated to be limited to security lighting. This lighting is not anticipated to be of a nature that would generate a substantial increase in spill light or create glare. If above ground tanks were to contain reflective exterior metal surfaces, they would have the potential to be sources of daytime glare. Since the specific extent and design of these features are not yet determined, and given the proximity to the Reserve, NHPH Mitigation Measure AES-3 is conservatively identified to be implemented for these improvements to ensure light or glare would not adversely affect nighttime views in the area.

Mitigation: Implement NHPH Mitigation Measure AES-3.

Vegetation Management and Slope Stabilization Improvements

The proposed vegetation management and slope stabilization improvements would not require installation of night lighting, and the proposed improvements would not be of a nature that would create a source of daytime glare. Consequently, the vegetation management and slope stabilization improvements would have no impact on daytime or nighttime views in the area from night lighting or new sources of glare.

Mitigation: None required.

Parnassus Avenue Pedestrian Bridge and Tunnel

It is anticipated that the proposed pedestrian bridge would include glass panels to allow natural light within the walkway, as well as include light fixtures to provide light at night. Since the specific extent and design of these features are not yet determined, NHPH Mitigation Measure AES-3 is conservatively identified to be implemented for these improvements to ensure light or glare would not adversely affect nighttime views in the area.

Mitigation: Implement NHPH Mitigation Measure AES-3.

Impact AES-4: Implementation of the NHPH would potentially create wind hazards in publicly accessible areas of substantial pedestrian use. (*Significant and Unavoidable with Mitigation*)

NHPH - Wind Hazard Analysis

Development of the New Hospital would alter wind patterns on and near the NHPH site. As noted above, the height of the New Hospital would be approximately 269 feet above ground level to the building roof level, and approximately 294 feet above ground level to the top of proposed rooftop perimeter screening.[15]

[15] Portions of mechanical equipment and antennas located on the roof would exceed 294 feet.

As discussed in the *Environmental Setting*, the focus of this wind analysis for determining significant wind hazard impacts is if the project would cause pedestrian-level wind speeds to exceed 26 mph for a for a single hour of the year. Furthermore, as discussed above, the 26 mph *one-hour* hazard criterion speed as reported herein is equivalent to a *one-minute* average of 36 mph. Accordingly, all hazard wind speeds in this analysis are presented based on the 36-mph wind speed averaged over one-minute, and the hazard criterion is based on 36 mph.

Also, as noted under *Approach to Analysis*, the wind model used in this analysis accounted for existing/future building development, as well as existing topography and notable tree cover (i.e., within the Reserve), however, conservatively did not include any existing/future street trees or other vegetation that could slow pedestrian-level winds in the project vicinity.

As discussed in the *Environmental Setting*, under Existing Conditions, winds exceed the hazard criterion at two of 48 pedestrian-level test points (test point 10, located south of the Health Sciences Instruction and Research (HSIR) West tower; and test point 40, located on the north side of Parnassus Avenue near the southwest corner of Medical Building 1), for a total of five hours per year.

Existing plus NHPH

Table 4.1-1 presents a summary of the wind hazard results for the Existing Conditions; and Existing plus NHPH scenarios, including for the Proposed Project (No Projection), Design Option 1 (Third Floor 4-foot Projection), and Design Option 2 (Third Floor 11.5-foot Projection). **Table 4.1-2** presents the full wind hazard criterion results for the Existing plus NHPH scenarios for the Proposed Project, and Design Options 1 and 2.

TABLE 4.1-1
SUMMARY OF WIND HAZARD RESULTS FOR EXISTING AND EXISTING PLUS NHPH SCENARIOS
(PROPOSED PROJECT, DESIGN OPTION 1, AND DESIGN OPTION 2)

Scenario	Number of Test Points Exceeding the Wind Hazard Criterion	Hours Per Year Wind Hazard Criterion Exceeded	Average Wind Speed exceeded 1 hour per year
Existing Conditions	2	5	26
Existing plus NHPH Scenarios:			
Proposed Project (No Projection)	3	15	27
Design Option 1 (4-ft Projection)	3	17	27
Design Option 2 (11.5-ft Projection)	2	12	26

SOURCE: CPP, 2021

TABLE 4.1-2
COMPLETE RESULTS OF PEDESTRIAN WIND HAZARD ANALYSIS FOR EXISTING AND EXISTING PLUS NHPH SCENARIOS (PROPOSED PROJECT, DESIGN OPTION 1, AND DESIGN OPTION 2)

Test Location	Existing			Proposed Project (No Projection)				Design Option 1 (Third Floor 4-ft Projection)				Design Option 2 (Third Floor 11.5-ft Projection)			
	Wind Speed Exceeded 1 hour/year (mph)	Hours/yr Exceeding Criterion	Exceedance	Wind Speed Exceeded 1 hour/year (mph)	Hours/yr Exceeding Criterion	Hours Change	Exceedance	Wind Speed Exceeded 1 hour/year (mph)	Hours/yr Exceeding Criterion	Hours Change	Exceedance	Wind Speed Exceeded 1 hour/year (mph)	Hours/yr Exceeding Criterion	Hours Change	Exceedance
1	29	0		36	0	0		36	0	0		35	0	0	
2	26	0		26	0	0		25	0	0		24	0	0	
3	26	0		22	0	0		21	0	0		22	0	0	
4	24	0		24	0	0		23	0	0		23	0	0	
5	25	0		29	0	0		28	0	0		27	0	0	
6	24	0		31	0	0		30	0	0		30	0	0	
7	18	0		21	0	0		20	0	0		21	0	0	
8	19	0		22	0	0		22	0	0		23	0	0	
9	13	0		16	0	0		16	0	0		16	0	0	
10	37	2	e	39	5	3	e	39	4	2	e	38	3	1	e
11	29	0		31	0	0		30	0	0		28	0	0	
12	26	0		27	0	0		27	0	0		27	0	0	
13	23	0		25	0	0		24	0	0		23	0	0	
14	25	0		27	0	0		26	0	0		25	0	0	
15	22	0		24	0	0		23	0	0		23	0	0	
16	20	0		21	0	0		20	0	0		20	0	0	
17	27	0		29	0	0		28	0	0		28	0	0	
18	29	0		30	0	0		29	0	0		29	0	0	
19	26	0		27	0	0		27	0	0		27	0	0	
20	27	0		27	0	0		27	0	0		27	0	0	
21	25	0		25	0	0		25	0	0		24	0	0	
22	21	0		22	0	0		22	0	0		21	0	0	
23	27	0		26	0	0		26	0	0		26	0	0	
24	35	0		28	0	0		27	0	0		27	0	0	
25	33	0		27	0	0		26	0	0		27	0	0	
26	35	0		32	0	0		31	0	0		29	0	0	
27	21	0		14	0	0		13	0	0		10	0	0	
28	23	0		12	0	0		11	0	0		13	0	0	

TABLE 4.1-2 (CONTINUED)
COMPLETE RESULTS OF PEDESTRIAN WIND HAZARD ANALYSIS FOR EXISTING AND EXISTING PLUS NHPH SCENARIOS (PROPOSED PROJECT, DESIGN OPTION 1, AND DESIGN OPTION 2)

Test Location	Existing			Proposed Project (No Projection)				Design Option 1 (Third Floor 4-ft Projection)				Design Option 2 (Third Floor 11.5-ft Projection)			
	Wind Speed Exceeded 1 hour/year (mph)	Hours/yr Exceeding Criterion	Exceedance	Wind Speed Exceeded 1 hour/year (mph)	Hours/yr Exceeding Criterion	Hours Change	Exceedance	Wind Speed Exceeded 1 hour/year (mph)	Hours/yr Exceeding Criterion	Hours Change	Exceedance	Wind Speed Exceeded 1 hour/year (mph)	Hours/yr Exceeding Criterion	Hours Change	Exceedance
29	30	0		26	0	0		25	0	0		25	0	0	
30	33	0		34	0	0		32	0	0		35	0	0	
31	22	0		23	0	0		22	0	0		19	0	0	
32	22	0		24	0	0		22	0	0		22	0	0	
33	24	0		27	0	0		27	0	0		26	0	0	
34	28	0		41	9	9	e	42	12	12	e	41	9	9	e
35	35	0		33	0	0		33	0	0		32	0	0	
36	27	0		29	0	0		29	0	0		29	0	0	
37	29	0		37	1	1	e	37	1	1	e	33	0	0	
38	28	0		28	0	0		27	0	0		26	0	0	
39	29	0		34	0	0		34	0	0		35	0	0	
40	38	3	e	36	0	-3		35	0	-3		34	0	-3	
41	23	0		23	0	0		23	0	0		22	0	0	
42	21	0		21	0	0		20	0	0		20	0	0	
43	26	0		27	0	0		26	0	0		26	0	0	
44	30	0		30	0	0		30	0	0		29	0	0	
45	28	0		27	0	0		26	0	0		26	0	0	
46	24	0		24	0	0		24	0	0		23	0	0	
47	22	0		23	0	0		23	0	0		21	0	0	
48	30	0		30	0	0		30	0	0		28	0	0	
	Average Wind Speed (mph)	**Total Hours**	**Total**	**Average Wind Speed (mph)**	**Total Hours**	**Hours Change**	**Total**	**Average Wind Speed (mph)**	**Total Hours**	**Hours Change**	**Total**	**Average Wind Speed (mph)**	**Total Hours**	**Hours Change**	**Total**
	26	5	2 of 48	27	15	10	3 of 48	27	17	12	3 of 48	26	12	7	2 of 48

The following provides detail on wind hazard results for each of the three design scenarios:

Existing plus NHPH – Proposed Project

Figure 4.1-17a graphically present the wind hazard results of the wind tunnel test for the Existing plus NHPH – Proposed Project scenario, and Table 4.1-2 presents the wind hazard criterion results.

Under the Existing plus NHPH scenario for the Proposed Project, the total number of test point locations exceeding the wind hazard criterion would increase by one over existing conditions (i.e., increase from two to three), and the total hours exceeding the wind hazard criterion would increase from five to 15 hours per year, an increase of 10 hours per year.

Under the Existing plus NHPH scenario for the Proposed Project, one of the existing wind hazard criterion exceedance locations (test point 40, located on the north side of Parnassus Avenue near the southwest corner of Medical Building 1) would be eliminated.

There would also be two new exceedance locations (test points 34 and 37) under the Existing plus NHPH – Proposed Project scenario. At test point 34 (located on the south side of Parnassus Avenue approximately 200 feet east of the proposed New Hospital), the number of hours exceeding the wind hazard criterion would increase by nine hours per year, and the equivalent wind speed exceeding one hour per year would be 41 miles per hour. At test point 37 (located on the north side of Parnassus Avenue directly across from the proposed New Hospital), the wind hazard criterion would increase by one hour per year, and the equivalent wind speed would by 37 miles per hour.

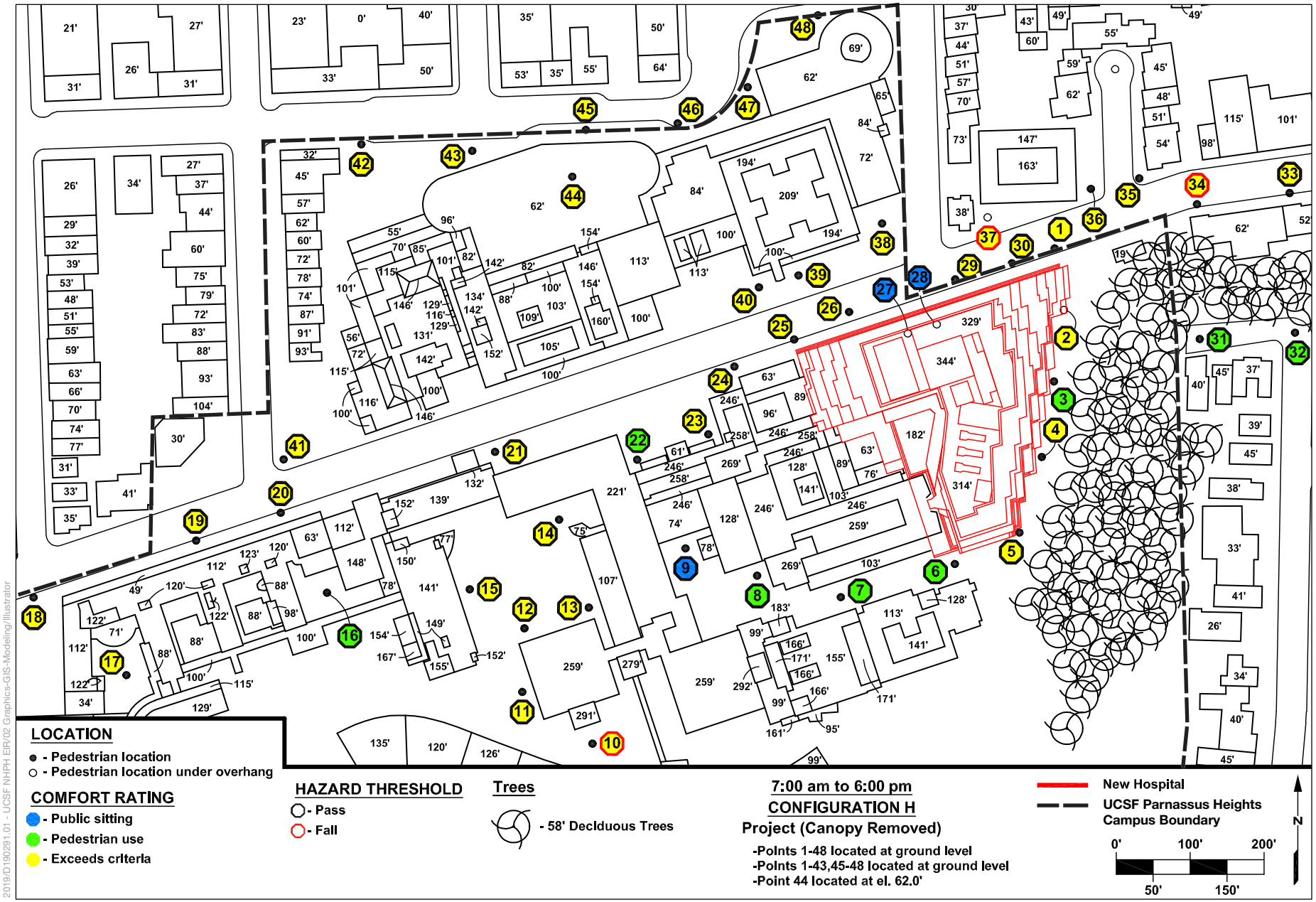
One existing exceedance of the wind hazard criterion (test point 10, located south of the HSIR West tower) would continue to exceed the threshold under the Existing plus NHPH – Proposed Project scenario, except the number of hours exceeding the wind hazard criterion would increase by 3 hours per year.

Existing plus NHPH – Design Option 1 (Third Floor 4-foot Projection)

Figure 4.1-17b graphically present the wind hazard results of the wind tunnel test for this Existing plus NHPH – Design Option 1 scenario, and Table 4.1-2 presents the wind hazard criterion results.

Under the Existing plus NHPH scenario for Design Option 1, the total number of test point locations exceeding the wind hazard criterion would increase by one over existing conditions (i.e., increase from two to three, similar to the Proposed Project), and the total hours exceeding the wind hazard criterion would increase from five to 17 hours per year, an increase of 12 hours per year (2 hours greater than under the Proposed Project).

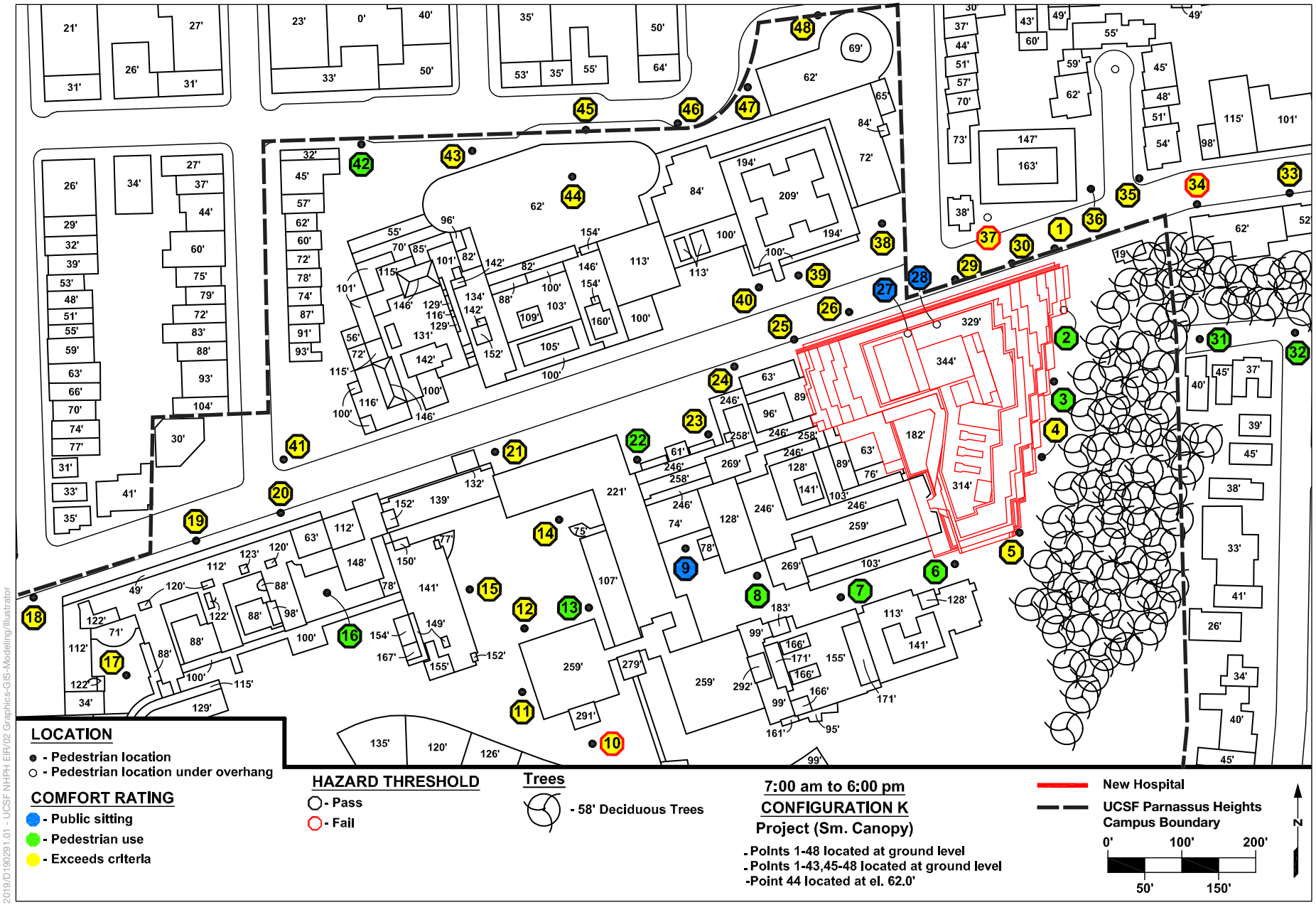
Similar to the Proposed Project, under Design Option 1 one of the existing wind hazard criterion exceedance locations (test point 40, located on the north side of Parnassus Avenue near the southwest corner of Medical Building 1) would be eliminated. Also similar to the Proposed Project, there would be two new exceedance locations (test points 34 and 37) under Design Option 1. At test point 34 (located on the south side of Parnassus Avenue approximately 200 feet east of the proposed New Hospital), the number of hours exceeding the wind hazard criterion would increase by approximately 12 hours per year, and the equivalent wind speed exceeding one hour per year would be 42 miles per hour. At test point 37 (located on the north side of Parnassus



SOURCE: CPP, 2021

UCSF New Hospital Parnassus Heights EIR

Figure 4.1-17a
Pedestrian Wind Hazard and Wind Comfort Conditions – Existing plus NHPH, Proposed Project (No Projection)



SOURCE: CPP, 2021

UCSF New Hospital Parnassus Heights EIR

Figure 4.1-17b
Pedestrian Wind Hazard and Wind Comfort Conditions –
Existing plus NHPH, Design Option 1 (Third Floor 4-foot Projection)

Avenue directly across from the proposed New Hospital), the wind hazard criterion would increase by one hour per year, and the equivalent wind speed would by 37 miles per hour.

One existing exceedance of the wind hazard criterion (test point 10) would continue to exceed the threshold under the Existing plus NHPH scenario – Design Option 1 scenario, except the number of hours exceeding the wind hazard criterion would increase by 2 hours per year.

Existing plus NHPH – Design Option 2 (Third Floor 11.5-foot Projection)

Figure 4.1-17c graphically present the wind hazard results of the wind tunnel test for this Existing plus NHPH – Design Option 2 scenario, and Table 4.1-2 presents the wind hazard criterion results.

Under the Existing plus NHPH scenario for Design Option 2, there would be a total of 2 test point locations that would exceed the wind hazard criterion (same as under Existing Conditions, and one fewer exceedance than with the Proposed Project), and the total hours exceeding the wind hazard criterion would increase from five to 12 hours per year, an increase of 7 hours per year (3 hours less than under the Proposed Project).

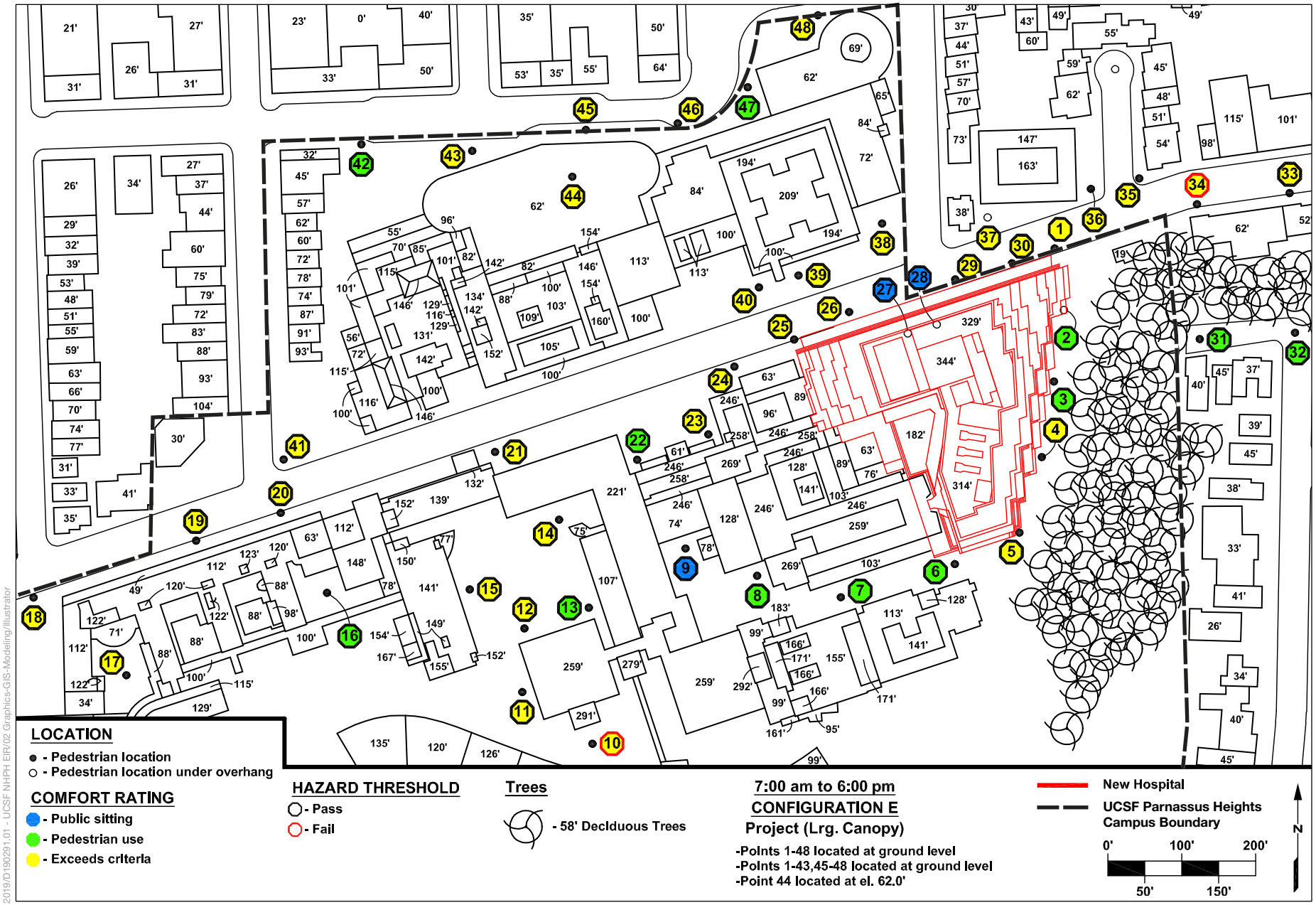
Similar to the Proposed Project, under Design Option 2 the existing wind hazard criterion exceedance location at test point 40 (located on the north side of Parnassus Avenue near the southwest corner of Medical Building 1) would be eliminated. However, Design Option 2 would create only one new wind hazard exceedance—at test point 34 (located on the south side of Parnassus Avenue approximately 200 feet east of the proposed New Hospital), where the number of hours exceeding the wind hazard criterion would increase by 9 hours per year, and the equivalent wind speed exceeding one hour per year would be 41 miles per hour. However, unlike the Proposed Project, Design Option 2 would not create a new exceedance at test point 37 (located on the north side of Parnassus Avenue directly across from the proposed New Hospital).

One existing exceedance of the wind hazard criterion (test point 10) would continue to exceed the threshold under the Existing plus NHPH scenario – Design Option 2 scenario, except the number of hours exceeding the wind hazard criterion would increase by 1 hour per year.

Wind Hazard Summary

As described above, the Existing plus NHPH scenario for the Proposed Project and Design Options 1 and 2 would increase the total number of hours exceeding the wind hazard criterion compared to Existing Conditions (an increase of 10 hours under the Proposed Project, an increase of 12 hours under Design Option 1, and an increase of 7 hours under Design Option 2). The Proposed Project and Design Option 1 would also increase the number of locations at which the wind hazard would be exceeded, from two to three, while Design Option 2 would not increase the number of wind hazard locations. This would be a significant impact.

UCSF has already incorporated a chamfered northeast corner of the New Hospital as a design feature. Specifically, Levels 1 and 2 of the New Hospital's northeast corner were set back, at an angle, by 28 feet to the west of the original design's northeastern corner to alleviate pressure from accelerating winds along Parnassus Avenue. This would allow a greater volume of wind moving east along Parnassus Avenue to retreat down Medical Center Way, towards the Reserve, instead of further accelerating towards the neighbors to the east.



SOURCE: CPP, 2021

UCSF New Hospital Parnassus Heights EIR

Figure 4.1-17c
Pedestrian Wind Hazard and Wind Comfort Conditions – Existing plus NHPH, Design Option 2 (Third Floor 11.5-foot Projection)

In addition, the third-floor projections considered in Design Options 1 and 2 in this EIR are intended to assist in dissipating downwash off the building north elevation. However, since Design Options 1 and 2 would require City approval for the projections over the public right-of-way, there is no certainty that either of these two design options would be implemented.

In addition, implementation of **NHPH Mitigation Measure AES-4** would require UCSF to continue to pursue options for reducing this impact; however, it cannot be concluded that effects would be reduced to a less than significant level. Therefore, this impact would be significant and unavoidable with mitigation.

> **NHPH Mitigation Measure AES-4: Implement Wind Mitigation and Safety Measures.**
>
> Prior to project construction, UCSF shall engage a qualified wind consultant to identify potential further feasible design alterations to the New Hospital and to evaluate potential other wind reduction measures, such as wind screens, with the goal of reducing the number of hours by which wind speeds on Parnassus Avenue exceed the City of San Francisco's pedestrian wind hazard criterion, without increasing the total number of test point locations exceeding the wind hazard criterion. The ultimate intent is to eliminate any wind hazard exceedance on Parnassus Avenue in the vicinity of the New Hospital in the Existing plus NHPH scenario without unduly burdening the New Hospital design program in a manner that would adversely affect the building's intended function.
>
> If UCSF finds that potential design change(s) or other wind speed reduction strategies that would avoid one or more wind hazard exceedances in the Existing plus NHPH scenario to be feasible, then UCSF shall implement the change(s) needed to achieve such avoidance. If UCSF finds that these potential design change(s) or other wind speed reduction strategies are not feasible as they would unduly restrict the proposed building's space program, result in operational inefficiencies, and/or substantially higher costs, the New Hospital may nonetheless be constructed as approved, provided that the New Hospital incorporates wind speed reduction strategies to the maximum feasible extent, as determined by UCSF in consultation with the wind consultant. Potential design changes could include, but not necessarily be limited to, such measures as horizontal or vertical fins or other projections added to the NHPH, added building setbacks, and/or further rounded/chamfered corners, and other building modifications. Other wind speed reduction strategies could potentially include features such as landscaping, localized installation of porous/solid screens, installation of canopies along non-NHPH building frontages, and the like.
>
> **Significance after Mitigation:** Significant and Unavoidable. As noted above, it cannot be stated with certainty that no wind hazard exceedances would result from the New Hospital, and therefore this impact could be significant even with mitigation. Accordingly, this impact would be considered significant and unavoidable with mitigation.

Informational Wind Comfort Analysis

The wind comfort analysis is a measure of overall wind conditions, included in this EIR for informational purposes. The 11-mph wind comfort criterion is not a CEQA criterion of significance, so this discussion is not part of the impact analysis. The wind comfort criterion is useful in describing the overall wind environment because the comfort criterion wind speeds (those exceeded 10 percent of the time) are more representative of "typical" windy conditions than are the hazard criterion wind speeds, which are those exceeded only one hour per year, or approximately one one-hundredth of a percent of the time.

Figures 4.1-17a through 4.1-17c graphically present the wind comfort results of the wind tunnel test for this Existing plus NHPH scenario for the Proposed Project, and Design Options 1 and 2. With NHPH implementation, the wind comfort speeds would not change substantially, although there would be some net reduction in existing wind comfort exceedances. Under existing conditions, 38 of 48 test points exceed the wind comfort criterion, and the average percent of time wind speeds exceed the wind comfort criterion among all 48 test points is 20 percent. Under the Existing plus NHPH scenario for the Proposed Project, the total number of test points exceeding the wind comfort criterion would be reduced to 37, and the average percent of time wind speeds exceed the wind comfort criterion among all 48 test points would increase slightly to 21 percent. Under the Existing plus NHPH scenario for the Design Option 1, the total number of test points exceeding the wind comfort criterion would be reduced to 34, and the average percent of time wind speeds exceed the wind comfort would be 21 percent. Under the Existing plus NHPH scenario for the Design Option 2, the total number of test points exceeding the wind comfort criterion would be reduced to 33, and the average percent of time wind speeds exceed the wind comfort would decrease to 19 percent. As can be seen in Figures 4.1-6 and 4.1-17a through 4.1-17c, all points along the Parnassus Avenue sidewalks currently exceed the pedestrian comfort criterion, and all would continue to do so under all three Project analysis scenarios.

Impact AES-5: The NHPH would not create new shadow in a manner that would substantially and adversely affect the use and enjoyment of publicly accessible open spaces. (*Less than Significant*)

New Hospital and Related Improvements

Development proposed under the NHPH would increase shadow in the vicinity of the campus site. New shadow from the NHPH would reach as far north as the Golden Gate Park baseball fields (at Martin Luther King Jr. Drive and 7th Avenue) early in the morning on the winter solstice. On the fall/spring equinox, NHPH shadow would extend west covering parts of Irving Street between 4th Avenue and 8th Avenue and Judah Street at 7th Avenue early in the morning. In the late afternoon on the fall/spring equinox, NHPH shadow would extend east covering parts of Edgewood Avenue, and Grattan Street between Stanyan Street and Cole Street. The CEQA threshold of significance for shadow impacts used in this EIR is whether the project would create new shadow in a manner that would substantially and adversely affect the use and enjoyment of publicly accessible open spaces. Therefore, the significance of shadow cast on streets, sidewalks, and private properties is not used as the basis for determining shadow impacts. The analysis in this section focuses on whether the NHPH would cast new shadow on publicly accessible open spaces in the vicinity of the campus site and whether this new shadow would adversely affect the use and enjoyment of these open spaces.

The discussion below analyzes impacts of the NHPH on three City parks (Golden Gate Park, Richard Gamble Memorial Park, and Grattan Playground), and on two schoolyards that participate in the Shared Schoolyard Project and provide public access on weekends (Independence High School and Grattan Elementary School). The Interior Greenbelt located adjacent to and east of the Reserve, and the Reserve itself located within the campus site, were also studied for this analysis.

Based on the analysis, it was determined the NHPH would not cast new shadow on the Interior Greenbelt. New shadow cast on the Reserve under the NHPH would generally be minimal because the New Hospital would cast shadow on only the steep narrow portion of the Reserve that is immediately east of the hospital site and would not affect any primary trails or public use areas. The NHPH would cast shadow on a relatively narrow and also steep portion of the Reserve in the afternoon. This shadow would begin as early as approximately 2:00 p.m., around the winter solstice, and as late as approximately 4:00 p.m., around the summer solstice. Shadow from the NHPH would not reach any of the trails on Mount Sutro. Given the lack of impact on the Interior Greenbelt and the relatively minimal shadow on the Reserve, effects on these two recreational areas would be less than significant and they are not discussed further.

In addition, it was determined based on the shadow analysis that the NHPH would not cast new shadow on the Richard Gamble Memorial Park during the spring/fall equinoxes and summer and winter solstices. Therefore, shadow effects on the Richard Gamble Memorial Park are not discussed further.

Table 4.1-3 presents a summary of NHPH shadow effects on public open spaces analyzed. In the table, the time frame presented under the season header (spring/fall equinoxes and summer and winter solstices) are consistent with the period during which Section 295 of the Planning Code regulates solar access.[16] The times shown for the parks and open spaces denote when new shadow, caused by buildings that would be developed under the NHPH, would occur.

TABLE 4.1-3
SUMMARY OF NHPH SHADOW ON PUBLIC OPEN SPACES NEAR THE CAMPUS SITE

Park/Open Space	Season and Section 295 Hours[a]			
	Spring/Fall Equinoxes 7:57 a.m. – 6:09 p.m.	**Summer Solstice 6:46 a.m. – 7:36 p.m.**	**Winter Solstice 8:19 a.m. – 3:54 p.m.**	**Date of Maximum Shading**
Open Spaces Under the Jurisdiction of the Recreation and Parks Department				
Golden Gate Park	None	None	8:19 a.m. – 9:45 a.m. (minor new shadow)	December 20th between 8:19 a.m. – 9:45 a.m.
Grattan Playground	None	None[b]	None	August 2nd between 7:00 p.m. – sunset
Richard Gamble Memorial Park	None	None	None	None
School Playgrounds Open to the Public on Weekends				
Independence High School	None	None	None	September 6 between 7:44 a.m. – 8:00 a.m.
Grattan Elementary School	None	None	None	September 6th between 6:31 p.m. – sunset

NOTES:

[a] The Planning Department commonly relies upon the hours governed by Planning Code Section 295—from one hour after sunrise to one hour before sunset—in environmental review.

[b] Shadow would be cast on the Grattan Playground between April and early September, but would not be cast on the Summer or Winter Solstice, or the Spring/Fall Equinox.

SOURCE: Prevision Design, 2021

[16] Although the University is constitutionally exempt from local land use regulation such as Section 295 of the *Planning Code* when using properties under its control in furtherance of its educational mission, the University strives to be substantially consistent with local policies where feasible.

In order to provide a visual understanding of the location, size, and extent of the new shading, graphics were prepared to accompany the analysis. **Figures 4.1-18** through **4.1-36** depict existing-plus-project shadow for five representative times on the summer solstice (June 21 the longest day of the year, when the sun is highest in the sky and shadows are the shortest at any given time of day), the spring/fall equinoxes (March 19/September 20, when the sun's position is nearly identical to the opposite equinox and represent the midway point between the winter and summer solstices), and the winter solstice (December 20, the shortest day of the year, when the sun is lowest in the sky and shadows are the longest at any given time of day).[17] In these figures, gray areas represent shading occurring under existing conditions, and blue represents net new shading that would occur as a result of the NHPH. (The shadow diagrams also depict net new shadow from cumulative development planned on the campus site under the CPHP. Cumulative shadow is represented in the diagrams with purple cross-hatching and is analyzed below under *Cumulative Impacts*.)

For each of these days (summer solstice, spring/autumn equinoxes, and winter solstice), shadow diagrams at five times of day include: one hour after sunrise; the beginning, middle, and end of the midday period of peak use (10:00 a.m., 12:00 p.m., and 3:00 p.m.); and one hour before sunset. Presenting a series of shadow diagrams from the same day demonstrates how shadow moves across the space and expands and contracts over a specific period of time. They represent a representative range of dates and times, including the time of peak midday use of open space on the longest day of the year, on the equinoxes (when day and night are of approximately equal length), and on the shortest day of the year. From these shadow diagrams, shadow impacts on particular open spaces are described and evaluated. It should be noted that the 3D virtual model of the project used to model shadow impacts includes structures and topography, but does not model shading effects from existing or proposed vegetation.

Golden Gate Park

The New Hospital, which would be up to 294 feet tall,[18] would increase shadow on portions of Golden Gate Park during early morning hours in the winter between mid-October and late February. New shadow would not be cast during any other season. On the winter solstice, which is the day of maximum shading on Golden Gate Park, new shadow from the NHPH would be added to shadow from existing buildings and topography between 8:19 a.m. and 9:45 a.m. As shown in **Figure 4.1-33**, this new shadow would be of limited extent compared to the overall unshaded area of Golden Gate Park. All new NHPH shadow on Golden Gate Park would be cast by the New Hospital.

[17] These dates can vary slightly from year to year.

[18] Portions of mechanical equipment and antennas located on the roof would exceed the 294 feet in height.

2019/D1902291.01 - UCSF NHPH EIR/05 Graphics-GIS-Modeling/Illustrator

SOURCE: Prevision Design, 2021

UCSF New Hospital Parnassus Heights EIR

Figure 4.1-18
Summer Solstice, June 21, 6:46 am

2019/D1902911.01 - UCSF NHPH EIR/05 Graphics-GIS-Modeling/Illustrator

SOURCE: Prevision Design, 2021

UCSF New Hospital Parnassus Heights EIR

Figure 4.1-19
Summer Solstice, June 21, 10:00 am

ESA

2019/D1902291.01 - UCSF NHPH EIR/05 Graphics-GIS-Modeling/Illustrator

SOURCE: Prevision Design, 2021

UCSF New Hospital Parnassus Heights EIR

Figure 4.1-20
Summer Solstice, June 21, 12:00 noon

2019/D190291.01 - UCSF NHPH EIR/05 Graphics-GIS-Modeling/Illustrator

SOURCE: Prevision Design, 2021

UCSF New Hospital Parnassus Heights EIR

Figure 4.1-21
Summer Solstice, June 21, 3:00 pm

2019/D1902291.01 - UCSF NHPH EIR/05 Graphics-GIS-Modeling/Illustrator

SOURCE: Prevision Design, 2021

UCSF New Hospital Parnassus Heights EIR

Figure 4.1-22
Summer Solstice, June 21, 7:36 pm

2019/D1902291.01 - UCSF NHPH EIR/05 Graphics-GIS-Modeling/Illustrator

SOURCE: Prevision Design, 2021

UCSF New Hospital Parnassus Heights EIR

Figure 4.1-23
Approx. Fall Equinox (Spring Similar), September 20, 7:57 am

ESA

2019/D1902291.01 - UCSF NHPH EIR/05 Graphics-GIS-Modeling/Illustrator

SOURCE: Prevision Design, 2021

UCSF New Hospital Parnassus Heights EIR

Figure 4.1-24
Approx. Fall Equinox (Spring Similar), September 20, 10:00 am

2019/D1902291.01 - UCSF NHPH EIR/05 Graphics-GIS-Modeling/Illustrator

SOURCE: Prevision Design, 2021

UCSF New Hospital Parnassus Heights EIR

Figure 4.1-25
Approx. Fall Equinox (Spring Similar), September 20) 12:00 noon

ESA

2019/D1902291.01 - UCSF NHPH EIR/05 Graphics-GIS-Modeling/Illustrator

SOURCE: Prevision Design, 2021

UCSF New Hospital Parnassus Heights EIR

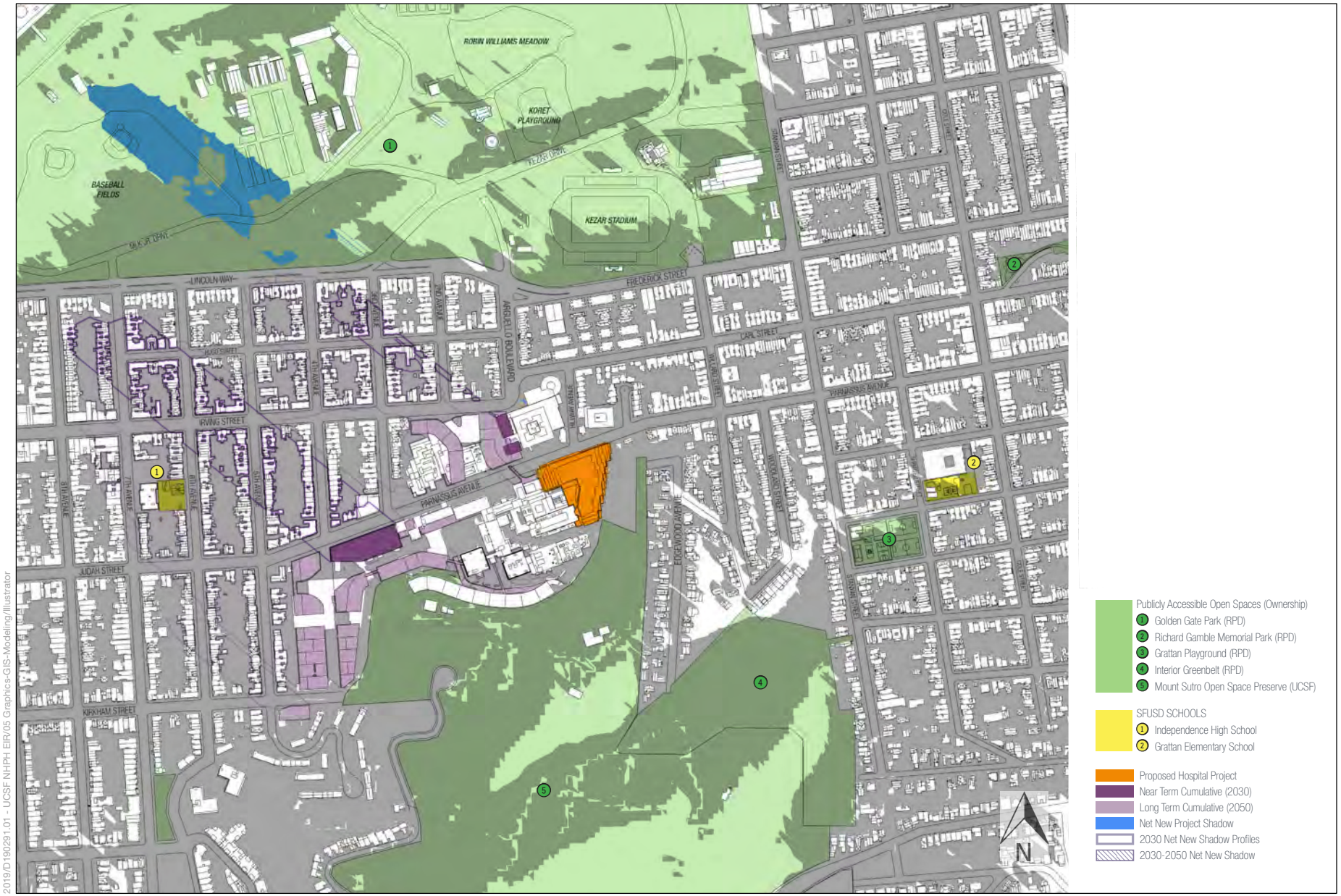
Figure 4.1-26
Fall Equinox (Spring Similar), September 20, 3:00 pm

2019/D190291.01 - UCSF NHPH EIR/05 Graphics-GIS-Modeling/Illustrator

SOURCE: Prevision Design, 2021

UCSF New Hospital Parnassus Heights EIR

Figure 4.1-27
Fall Equinox (Spring Similar), September 20, 6:09 pm



2019/D1902291.01 - UCSF NHPH EIR/05 Graphics-GIS-Modeling/Illustrator

SOURCE: Prevision Design, 2021

UCSF New Hospital Parnassus Heights EIR

Figure 4.1-28
Winter Solstice, December 20, 8:19 am

2019/D190291.01 - UCSF NHPH EIR/05 Graphics-GIS-Modeling/Illustrator

SOURCE: Prevision Design, 2021

UCSF New Hospital Parnassus Heights EIR

Figure 4.1-29
Winter Solstice, December 20, 10:00 am

2019/D1902291.01 - UCSF NHPH EIR/05 Graphics-GIS-Modeling/Illustrator

SOURCE: Prevision Design, 2021

UCSF New Hospital Parnassus Heights EIR

Figure 4.1-30
Winter Solstice, December 20, 12:00 noon

2019/D1902291.01 - UCSF NHPH EIR/05 Graphics-GIS-Modeling/Illustrator

SOURCE: Prevision Design, 2021

UCSF New Hospital Parnassus Heights EIR

Figure 4.1-31
Winter Solstice, December 20, 3:00 pm

ESA

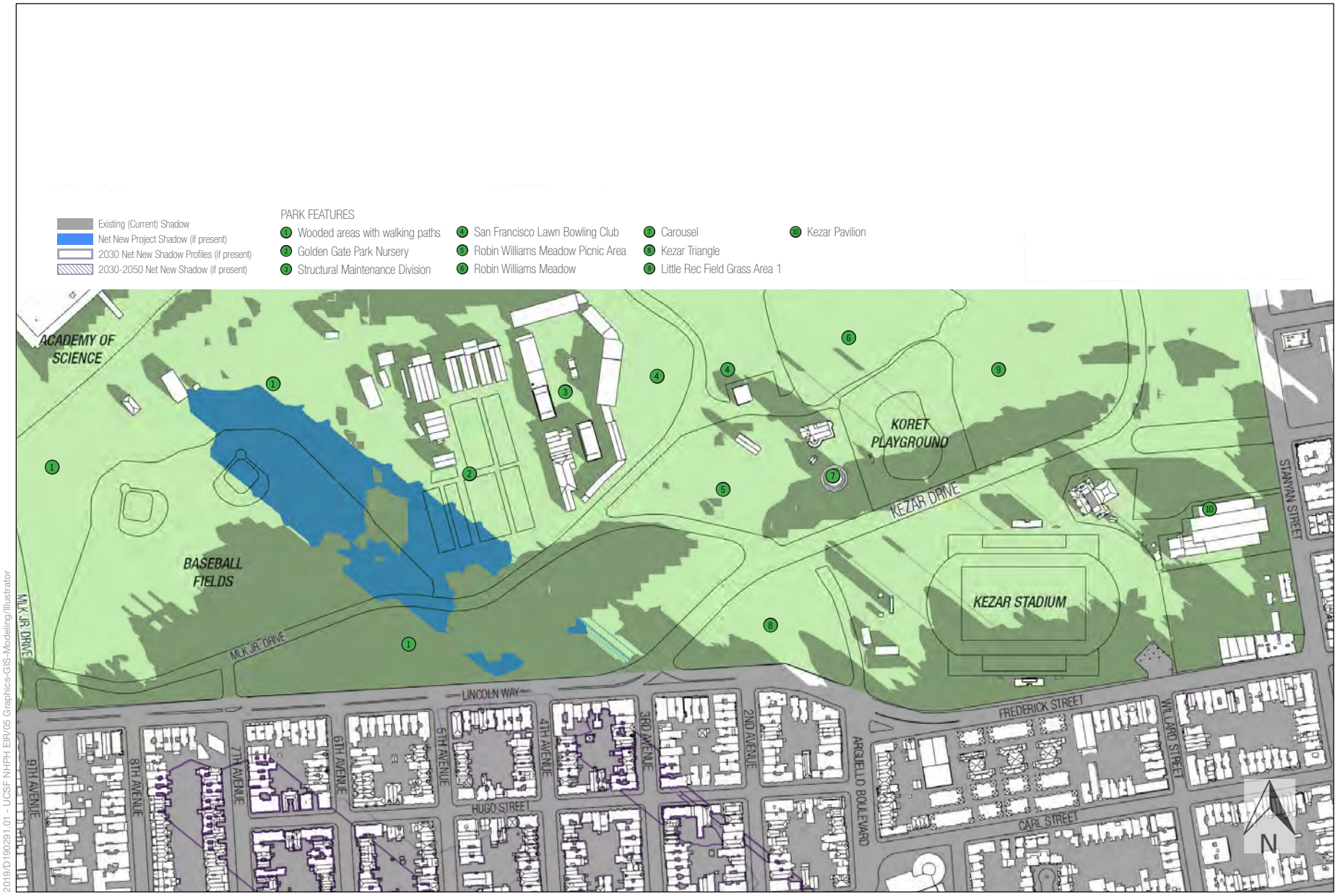
2019/D1902291.01 - UCSF NHPH EIR/05 Graphics-GIS-Modeling/Illustrator

SOURCE: Prevision Design, 2021

UCSF New Hospital Parnassus Heights EIR

Figure 4.1-32
Winter Solstice, December 20, 3:54 pm

ESA



2019/D190291.01 - UCSF NHPH EIR/05 Graphics-GIS-Modeling/Illustrator

SOURCE: Prevision Design, 2021

UCSF New Hospital Parnassus Heights EIR

Figure 4.1-33
Winter Solstice, December 20, 8:19 am,
Date and Time of Maximum Shading on Golden Gate Park

Figure 4.1-33 depicts shadow on the date and time of maximum shading on Golden Gate Park; this figure depicts the same time as Figure 4.1-28 but at a larger scale and in more detail, as it focuses on effects on Golden Gate Park. As can be seen in Figure 4.1-33, new shadow on the winter solstice in the early morning would cover portions of one of the baseball fields, including the third-base line, portions of left field, and the stands behind home plate. In addition, shadows would cover minor portions of the wooded areas and walking paths near Lincoln Way and approximately 25 percent of the Golden Gate Park Nursery. Throughout the morning, shadows would retreat toward the southwest, covering portions of left field and the Golden Gate Park Nursery, eventually receding entirely from the park by 9:45 a.m.

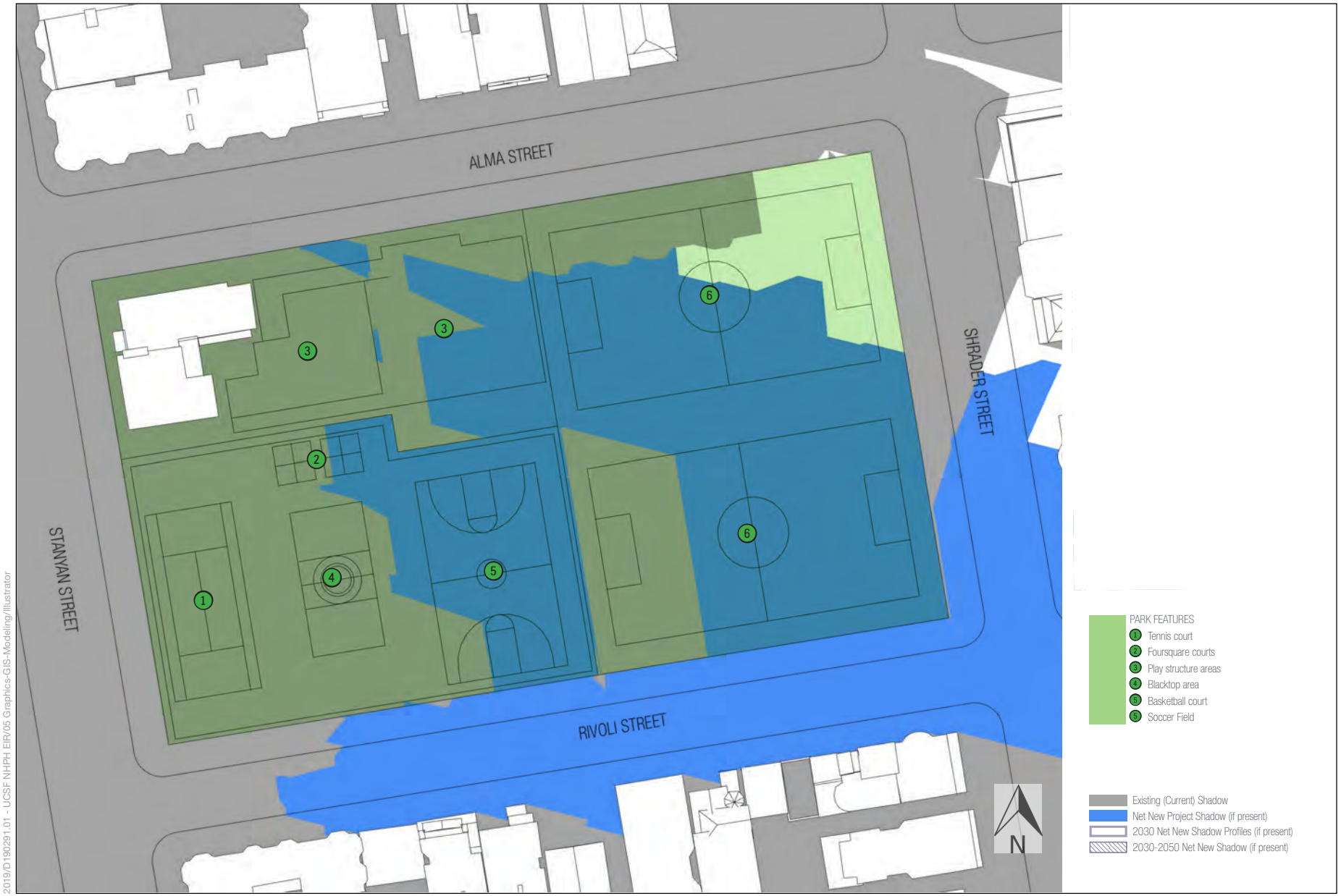
Baseball fields are typically utilized for games or practice during the midday or in the afternoon. While some may use baseball fields early in the morning, the periods of heaviest use would be around midday or in the afternoon when baseball games would be expected to occur. During these times, NHPH shadow would not reach Golden Gate Park. In addition, these fields are likely to be used substantially less during the winter rainy season. Because of the limited extent of potential new shadow that would be cast by the NHPH, both in terms of area covered and length of time, and because the new shadow would not affect the park during times of heaviest use, new shadow would not be expected to affect people's enjoyment of the park substantially. Because of this, the shadow impact from the NHPH development on Golden Gate Park would be less than significant.

Grattan Playground

No shadow from the NHPH would be cast on Grattan Playground on the summer/winter solstice or spring/fall equinox. However, the NHPH would cast new shadow on the Grattan Playground between early April and early September in the late afternoon. All new NHPH shadow on Grattan Playground would be cast by the New Hospital. As shown in **Figure 4.1-34**, on the dates of maximum shading (May 10 and August 2), shadow cast from the NHPH would cover the basketball court, one of two four-square courts, play structure, and large portions of two soccer fields around 7:00 p.m. For the last few minutes prior to one hour before sunset that marks the end of the time period governed by Section 295 of the Planning Code (7:18 p.m.), new shadow from the NHPH would extend to the east portion of the park, covering the features previously mentioned as well as the majority of two soccer fields.

In the first and last hours of sunlight, very lengthy shadows move more quickly across the ground than do shadows at other times of day. While shadow would cover a majority of the park late in the afternoon on the day of maximum shading, new shadow from the NHPH would last on average 22 minutes. On the dates of maximum shading, NHPH shadow would last approximately 18 minutes before the end of the time period governed by Section 295 of the Planning Code (7:18 p.m.).

A review of publicly available information regarding events occurring at this park during the late spring and summer was undertaken to determine whether the NHPH would create new shadow that would substantially and adversely affect the use and enjoyment of this park. Events are frequently scheduled during the late spring and summer on work days, in which members of the public are invited to help plant new plants, remove weeds, and mulch the planters in the



2019/D190291.01 - UCSF NHPH EIR/05 Graphics-GIS-Modeling/Illustrator

SOURCE: Prevision Design, 2021

UCSF New Hospital Parnassus Heights EIR

Figure 4.1-34
August 2, 7:15 pm, Date and Time of Maximum Shading on Grattan Playground

ESA

playground. Because NHPH shadow would be cast in the late afternoon and would be of only a short duration, NHPH shadow cast during the late spring and summer would not substantially and adversely affect this activity.

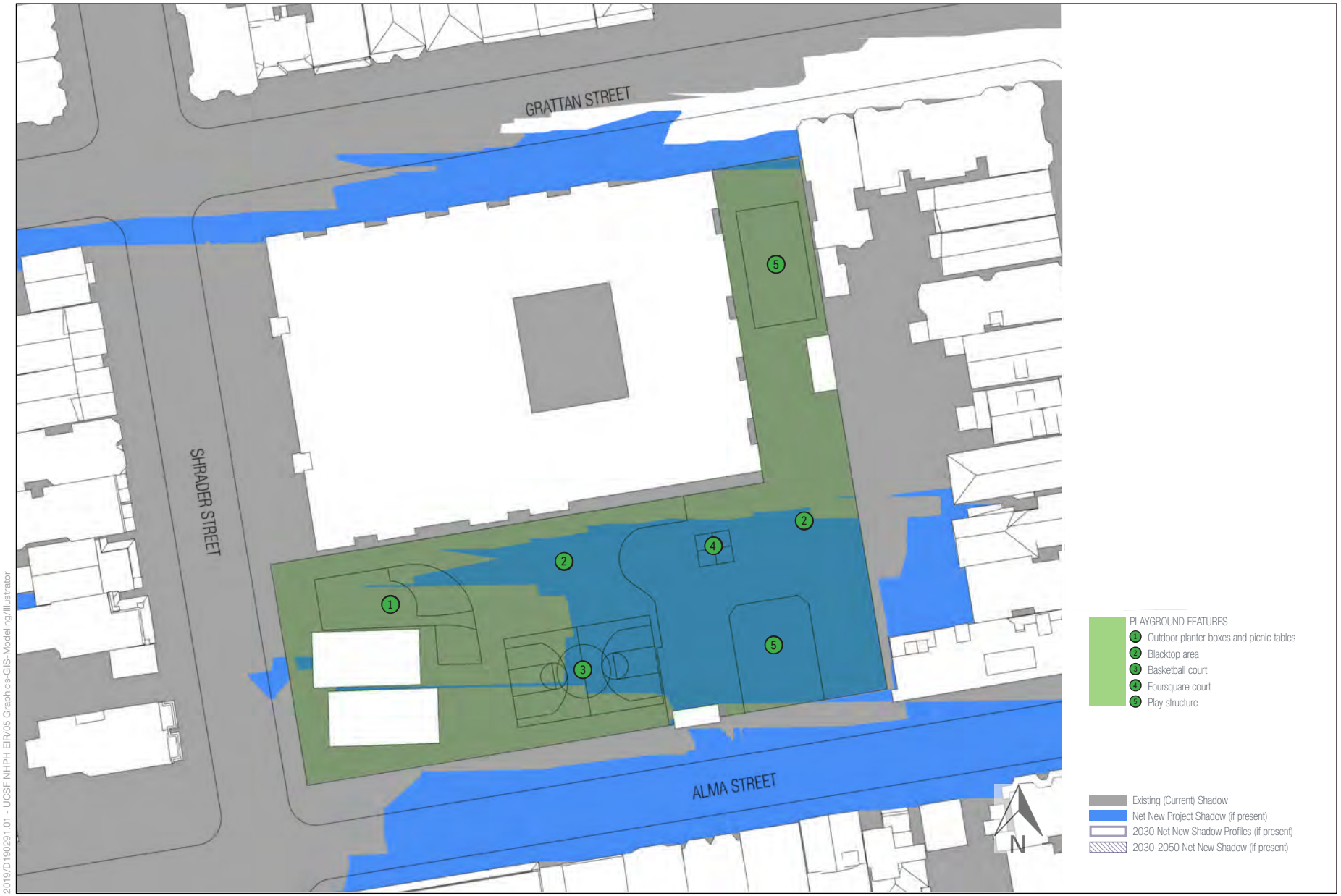
Other unscheduled activities assumed to occur at this park throughout the late spring include typical use of the play structure, tennis court, four-square courts, black top area, and soccer fields. Like weeding and gardening, these activities are active uses that can occur in both sun and shade. While the availability of sunlight can be seen as a benefit to some, it is conceivable that other park users could prefer shade especially during the late spring and summer, and in particular, on warm days. Because NHPH shadow would be cast in the late afternoon and would only last for 37 minutes during the hours governed by Section 295, this shadow would not substantially and adversely affect the use and enjoyment of this park considering it would occur at the end of the day at a time when park users would expect waning sunlight. Therefore, the shadow impact from the NHPH on the Grattan Playground would be less than significant.

Grattan Elementary School

The NHPH would cast new shadow on Grattan Elementary School between late March and late April, and between mid-August and mid-September. During this time, new shadow would be cast on the school playground in the late afternoon, and would last on average 15 minutes. As shown in **Figure 4.1-35**, on the dates of maximum shading (September 6 and April 5), existing shadows would cover approximately half the playground between 6:31 p.m. and sunset, and shadow from the NHPH would cover the remaining half for approximately 20 minutes before being completely subsumed by shadow from other buildings. The entire playground would be in shadow for the final hour of sunlight during the hours governed by Section 295, with new shadow resulting from the NHPH covering the blacktop area, basketball court, four-square court, and play structure. All new NHPH shadow on Grattan Elementary School would be cast by the New Hospital.

At Grattan Elementary School, the regularly-scheduled school day ends at 1:50 p.m. After school programs serve as an extension of the school day, but these would likely have substantially fewer students in attendance than would be on the school campus during the day. In addition, students are likely to be picked up by their parents by 6:31 p.m. when new shadow from the NHPH would affect the school yard. Therefore, new shadow would only reach the school playground when there are expected to be few, if any, students present. Therefore, NHPH shadow would not be expected to substantially or adversely affect the use and enjoyment of this open space during the week.

As stated earlier, this schoolyard participates in the Shared Schoolyard Project, which provides public access on the weekend. Because NHPH shadow would be cast in the late afternoon and would last up to 20 minutes during the hours governed by Section 295, this shadow would not substantially and adversely affect the use and enjoyment of this park considering it would occur at the end of the day at a time when open space users would expect there to be less sunlight available. Therefore, the shadow from the NHPH would not substantially and adversely affect the use and enjoyment of this open space, and according, the impact on the Grattan Elementary School would be less than significant.



SOURCE: Prevision Design, 2021

UCSF New Hospital Parnassus Heights EIR

Figure 4.1-35
September 6, 6:31 pm, Date and Time of Maximum Shading on Grattan Elementary School

Independence High School

Campus development under the NHPH would cast new shadow on Independence High School in early February to late April, from mid-August to mid-September, and from late September to late October. During these times, new shadow from the NHPH would reach the open space in the early morning from 7:57 a.m., the first hour governed by Section 295, to around 8:30 a.m. The average duration of shadow from the NHPH during these times would be approximately 15 minutes.

As shown in **Figure 4.1-36**, on the date of maximum shading (September 6), at 7:44 a.m., existing shadows would cover the majority of the playground including the basketball court, blacktop area, and four-square court. NHPH shadow would cover the remaining area of the playground, including the landscaped area and walking path. Between 7:44 a.m. and 8:00 a.m., shadow from the NHPH would recede from Independence High School entirely.

During the 2019—2020 school year, class begins at 8:00 a.m. Between 8:16 a.m. and 8:45 a.m., during the time of day when shadows would cover the most area of the open space, it is likely that students would be in class indoors, but is reasonable to assume a small number of students would utilize the open space before 8:00 a.m. for physical education. However, these areas would likely have heavier usage during the lunch period, throughout the day, and after school when more students would be on the school campus, compared to first thing in the morning. Because shadow from the NHPH would not affect the school's open space when its usage is anticipated to be highest, new shadow cast by the NHPH would not be expected to adversely affect the use and enjoyment of this open space on weekdays.

Like Grattan Elementary School, Independence High School participates in the Shared Schoolyard Project, which provides public access on the weekend. On the weekend, especially early in the morning, usage of the open space is expected to be less than it would be on weekdays because school would not be in session. In addition, new shadow would not affect the open space after 8:00 a.m., thus, there would be ample time throughout the day to enjoy sunlight. Therefore, the shadow impact from the NHPH on Independence High School would be less than significant.

Overall Impact on Shadow

The NHPH would cast shadow on parks and open spaces in the vicinity of the campus site at different times of the day and year. In particular, NHPH shadow would reach Golden Gate Park in the morning in late fall and winter, on Grattan Playground in the late afternoon between late spring and early fall, on Grattan Elementary School late in the afternoon in early spring and late fall, and on Independence High School early in the morning in early February to late April, from mid-August to mid-September, and from late September to late October. However, shadow from the NHPH would reach these spaces during the time of day when usage is expected to be lowest, thus, implementation of the NHPH would not be expected to adversely or substantially affect the use and enjoyment of these open spaces. This impact would be less than significant.

Mitigation: None required.

SOURCE: Prevision Design, 2021

UCSF New Hospital Parnassus Heights EIR

Figure 4.1-36
September 6, 7:44 am, Date and Time of Maximum Shading on Independence High School

ESA

Cumulative Impacts

Impact C-AES-1: The NHPH, combined with cumulative projects, would not have a substantial adverse effect on a scenic vista or conflict with applicable zoning and other regulations governing scenic quality. (*Less than Significant*)

Section 4.0 *Introduction to Environmental Analysis,* presents the list of reasonably foreseeable future projects in the vicinity that could contribute to cumulative aesthetic impacts. On-campus cumulative development projects include implementation of the development program planned under the CPHP, several demolition projects on the campus site (e.g., Surge, LPPI, Proctor buildings, etc.) that were previously approved under the 2014 LRDP but have not yet been implemented, and on-going implementation of forest management activities in the Reserve under the Mount Sutro Open Space Vegetation Management Plan. The LPPI and supporting building on the NHPH site would be demolished and removed prior to start of the construction of the NHPH. As indicated in Section 4.0, there are no notable off-site cumulative development projects within the vicinity of the Parnassus Heights campus site. The area surrounding the campus site is built-out and opportunity for new development is limited, requiring reuse or redevelopment of existing buildings rather than new construction on undeveloped tracts of adjacent land. As such, cumulative projects are limited to the intensification or rebuilding of existing primarily residential uses, and the potential seismic retrofitting of 350 Parnassus Avenue building. Cumulative projects occurring outside the campus site would be required to comply with City's Planning Code, and would be required to be consistent with the City's General Plan as it pertains to protecting scenic vistas and scenic quality. Moreover, cumulative projects outside the campus site would generally be limited to 40 feet in height, and therefore would not be visually incompatible or result in adverse effects to the future aesthetic character of these neighborhoods.

To help inform the discussion of cumulative effects of the NHPH in combination with cumulative development, including from planned CPHP development, on scenic vistas and scenic quality, visual simulations are presented from several of the same viewpoints that are analyzed in Impacts AES-1 and AES-2 above.

Scenic Vistas

A visual simulation of the NHPH, in combination with cumulative development, from Grandview Park is presented in **Figure 4.1-37**. As shown in this visual simulation, the NHPH is visible amongst cumulative planned development under the CPHP on the campus site, including the planned RAB and West Side development. In general, the additional planned CPHP development would intensify overall development and building heights on the campus site, although the New Hospital would be the tallest building on the campus site. As shown in Figure 4.1-37, planned CPHP cumulative development would further slightly obstruct views of the lower portion of the north slope of Mount Sutro, although the Reserve would continue to be a prominent scenic resource from this view due to its elevation and visibility from long distance. From this vantage point, the additional planned CPHP cumulative would not obstruct the existing view of downtown San Francisco. Views from Grandview Park in other directions would remain unchanged.

SOURCE: Herzog and de Meuron, 2021 UCSF New Hospital at Parnassus Heights

Figure 4.1-37
Viewpoint: 1: Visual Simulation of the NHPH with CPHP Buildout from Grandview Park, Looking East

Other vantage points in the city with scenic views, including those discussed in Impact AES-1, would similarly provide views of the NHPH in conjunction with cumulative development, including planned development under the CPHP. However, similar to the conclusions reached in Impact AES-1 for the NHPH, the NHPH in combination with cumulative development would also not result in a substantial adverse impact on views of scenic vistas from those vantage points.

Accordingly, the NHPH, in combination with cumulative development, including the CPHP, would have a less-than-significant impact on scenic vistas.

Scenic Quality

Visual simulations of the NHPH in combination with CPHP cumulative development, from a number of representative vantage points, are presented in **Figure 4.1-38** through **Figure 4.1-41**. These include visual simulations from Seventh Avenue and Judah Street (Figure 4.1-38); Kezar Triangle (Figure 4.1-39); Lincoln Way and Arguello Boulevard (Figure 4.1-40); and 3rd Avenue and Parnassus Avenue (Figure 4.1-41). As shown in Figure 4.1-38, the planned PRAB is prominently visible in the foreground of campus site development. Figure 4.1-39 illustrates the New Hospital on the left side of the simulation, and planned CPHP development occupying the center and right-hand side of the simulation. In Figure 4.1-40, portions of the planned Irving Street Arrival project are visible, with the proposed New Hospital rising behind Medical Building 1. In Figure 4.1-41, the planned Millberry Union Towers are visible on the south side of Parnassus Avenue, as is the proposed New Hospital along the north side of Parnassus Avenue and the proposed Parnassus pedestrian bridge.

SOURCE: Herzog and de Meuron, 2021

UCSF New Hospital at Parnassus Heights

Figure 4.1-38
Viewpoint: 3: Visual Simulation of the NHPH with CPHP Buildout from Seventh Avenue and Judah Street, Looking East

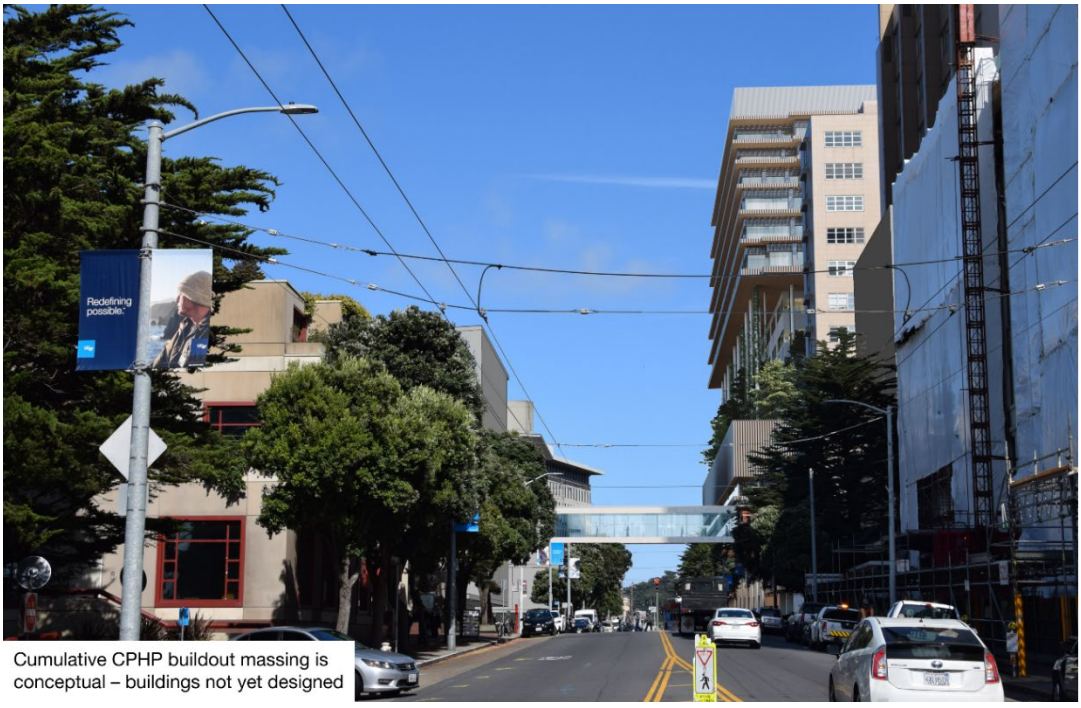
SOURCE: Herzog and de Meuron, 2021

UCSF New Hospital at Parnassus Heights

Figure 4.1-39
Viewpoint 4: Visual Simulation of the Parnassus Heights Campus Site with the NHPH and CPHP Buildout from Kezar Triangle, Looking South

SOURCE: Herzog and de Meuron, 2021 UCSF New Hospital at Parnassus Heights

Figure 4.1-40
Viewpoint 5: Visual Simulation of the Parnassus Heights Campus Site with the NHPH and CPHP Buildout from Lincoln Way and Arguello Boulevard, Looking South



SOURCE: Herzog and de Meuron, 2021 *UCSF New Hospital at Parnassus Heights*

Figure 4.1-41
Viewpoint 6: Visual Simulation of the Parnassus Heights Campus Site with the NHPH and CPHP Buildout from 3rd Avenue and Parnassus Avenue, Looking East

It should be noted that for the other study vantage points, including from Parnassus Avenue and Willard; 17th Street and Clayton Street; and Willard and Belmont, while the New Hospital would be visible from these viewpoints none of the other planned CPHP development would be visible, and consequently, cumulative visual simulations are not needed for these vantage points.

Besides the New Hospital, certain CPHP planned development in the campus core, including the Irving Street Arrival, Millberry Union Towers, and certain West Side development would also exceed the height limit of the City's Height and Bulk District; however, the balance of planned CPHP development would be within the City's Height and Bulk Districts. As such, CPHP planned development would be partially consistent with 2014 LRDP sub-objective 1B.

Since the CPHP planned development would be consistent with the existing land use types at the campus site, this cumulative development would be generally consistent with the surrounding neighborhood from a land use perspective. Nonetheless, as shown in in Figure 4.1-37 through Figure 4.1-41, buildout of the CPHP program would result in a substantial increase in development, and associated increase in scale and density, on the campus site. However, similar to the New Hospital, design considerations would be incorporated into the other planned CPHP development to minimize the effects of heights and scale of these uses on the surrounding neighborhood. Furthermore, there would be a net increase in publicly accessible open space to minimize the loss of existing landscaping elsewhere on the campus site under CPHP program. In addition, Amendment No 7 to the 2014 LRDP resulted in a net increase of area on the campus site designated as Reserve. As such, on balance, the planned CPHP development would be generally consistent with 2014 LRDP sub-objective 1C.

The planned CPHP planned development would also be constructed consistent with the pedestrian improvements included in the Parnassus Avenue Streetscape Plan, and as such this cumulative development – similar to the New Hospital - would be consistent with 2014 LRDP sub-objective 1D.

As described in Impact AES-2, the proposed New Hospital and related improvements would be consistent with applicable 2014 LRDP objectives governing scenic quality, and as described above, planned cumulative development on the campus site would similarly be consistent with applicable 2014 LRDP objectives governing scenic quality.

Accordingly, the NHPH, in combination with cumulative development, including development under the CPHP, would have a less-than-significant impact on scenic quality.

Mitigation: None required.

Impact C-AES-2: The NHPH, combined with cumulative projects, would not create a new source of substantial light or glare which would adversely affect daytime or nighttime views in the area. (*Less than Significant*)

Implementation of the development program planned in the CPHP and development of the NHPH would introduce new sources of substantial light and glare, but this impact would be mitigated to

a less-than-significant level through implementation of CPHP Mitigation Measure AES-3 and NHPH Mitigation Measure AES-3. While off-campus cumulative projects would also introduce new sources of light and glare, these projects would be subject to mirrored and reflective glass controls in Planning Commission Resolution 9212, as well as design guidelines and Planning Code compliance. Therefore, cumulative projects, in combination with the NHPH, would not have substantial or adverse light and glare impacts. This impact would be less than significant.

Mitigation: None required.

Impact C-AES-3: Implementation of the NHPH, combined with cumulative projects, would potentially create wind hazards in publicly accessible areas of substantial pedestrian use. (*Significant and Unavoidable with Mitigation*)

Wind Hazard Analysis

As indicated above, there are no notable off-site cumulative development projects in the campus site vicinity. As for on-site projects, as noted under the Approach to Analysis above, the wind assessment modeled two different cumulative development scenarios, Existing plus NHPH and other planned CPHP Initial Phase Development, including the Irving Street Arrival and RAB (Cumulative 2030); and Existing plus NHPH and planned CPHP buildout (Cumulative 2050).

Table 4.1-4 presents a summary of the wind hazard results for the Existing Conditions; and for Existing plus NHPH scenarios, and Cumulative 2030 and Cumulative 2050 scenarios for the Proposed Project, Design Option 1 (Third Floor 4-foot Projection), and Design Option 2 (Third Floor 11.5-foot Projection). **Table 4.1-5** and **Table 4.1-6** presents the full wind hazard criterion results for the Cumulative 2030 and Cumulative 2050 scenarios, respectively, for the Proposed Project, and Design Options 1 and 2.

TABLE 4.1-4
SUMMARY OF WIND HAZARD RESULTS FOR EXISTING, EXISTING PLUS NHPH AND CUMULATIVE 2030 AND 2050 SCENARIOS

Scenario	Number of Test Points Exceeding the Wind Hazard Criterion	Hours Per Year Wind Hazard Criterion Exceeded	Average Wind Speed exceeded 1 hour per year
Existing Conditions	2	5	26
Existing plus NHPH Scenarios:			
Proposed Project (No Projection)	3	15	27
Design Option 1 (4-ft Projection)	3	17	27
Design Option 2 (11.5-ft Projection)	2	12	26
Cumulative 2030 Scenarios:			
Proposed Project (No Projection)	3	29	27
Design Option 1 (4-ft Projection)	3	25	27
Design Option 2 (11.5-ft Projection)	4	13	26
Cumulative 2050 Scenarios:			
Proposed Project (No Projection)	4	28	27
Design Option 1 (4-ft Projection)	4	32	27
Design Option 2 (11.5-ft Projection)	4	21	26

TABLE 4.1-5
COMPLETE RESULTS OF PEDESTRIAN WIND HAZARD ANALYSIS FOR EXISTING AND CUMULATIVE 2030 SCENARIOS (FOR PROPOSED PROJECT, DESIGN OPTION 1 AND DESIGN OPTION 2)

Test Location	Existing			Cumulative 2030 Proposed Project				Cumulative 2030 Design Option 1				Cumulative 2030 Design Option 2			
	Wind Speed Exceeded 1 hour/year (mph)	Hours/yr Exceeding Criterion	Exceedance	Wind Speed Exceeded 1 hour/year (mph)	Hours/yr Exceeding Criterion	Hours Change	Exceedance	Wind Speed Exceeded 1 hour/year (mph)	Hours/yr Exceeding Criterion	Hours Change	Exceedance	Wind Speed Exceeded 1 hour/year (mph)	Hours/yr Exceeding Criterion	Hours Change	Exceedance
1	29	0		36	0	0		36	0	0		36	0	0	
2	26	0		25	0	0		25	0	0		24	0	0	
3	26	0		21	0	0		21	0	0		22	0	0	
4	24	0		23	0	0		23	0	0		23	0	0	
5	25	0		28	0	0		28	0	0		28	0	0	
6	24	0		31	0	0		30	0	0		30	0	0	
7	18	0		21	0	0		21	0	0		21	0	0	
8	19	0		21	0	0		21	0	0		22	0	0	
9	13	0		16	0	0		16	0	0		15	0	0	
10	37	2	e	39	5	3	e	39	5	3	e	39	4	2	e
11	29	0		31	0	0		30	0	0		30	0	0	
12	26	0		27	0	0		26	0	0		26	0	0	
13	23	0		24	0	0		23	0	0		23	0	0	
14	25	0		26	0	0		26	0	0		25	0	0	
15	22	0		23	0	0		22	0	0		22	0	0	
16	20	0		22	0	0		22	0	0		22	0	0	
17	27	0		34	0	0		34	0	0		34	0	0	
18	29	0		33	0	0		33	0	0		33	0	0	
19	26	0		30	0	0		30	0	0		29	0	0	
20	27	0		33	0	0		33	0	0		31	0	0	
21	25	0		27	0	0		26	0	0		26	0	0	
22	21	0		25	0	0		24	0	0		24	0	0	
23	27	0		26	0	0		26	0	0		26	0	0	
24	35	0		28	0	0		28	0	0		28	0	0	
25	33	0		27	0	0		27	0	0		26	0	0	
26	35	0		31	0	0		31	0	0		29	0	0	
27	21	0		14	0	0		14	0	0		11	0	0	
28	23	0		12	0	0		11	0	0		14	0	0	

TABLE 4.1-5 (CONTINUED)
COMPLETE RESULTS OF PEDESTRIAN WIND HAZARD ANALYSIS FOR EXISTING AND CUMULATIVE 2030 SCENARIOS (FOR PROPOSED PROJECT, DESIGN OPTION 1 AND DESIGN OPTION 2)

Test Location	Existing			Cumulative 2030 Proposed Project				Cumulative 2030 Design Option 1				Cumulative 2030 Design Option 2			
	Wind Speed Exceeded 1 hour/year (mph)	Hours/yr Exceeding Criterion	Exceedance	Wind Speed Exceeded 1 hour/year (mph)	Hours/yr Exceeding Criterion	Hours Change	Exceedance	Wind Speed Exceeded 1 hour/year (mph)	Hours/yr Exceeding Criterion	Hours Change	Exceedance	Wind Speed Exceeded 1 hour/year (mph)	Hours/yr Exceeding Criterion	Hours Change	Exceedance
29	30	0		26	0	0		26	0	0		26	0	0	
30	33	0		34	0	0		33	0	0		36	1	1	e
31	22	0		23	0	0		22	0	0		19	0	0	
32	22	0		22	0	0		22	0	0		22	0	0	
33	24	0		27	0	0		27	0	0		26	0	0	
34	28	0		43	14	14	e	42	12	12	e	40	6	6	e
35	35	0		32	0	0		32	0	0		31	0	0	
36	27	0		30	0	0		30	0	0		30	0	0	
37	29	0		33	0	0		31	0	0		32	0	0	
38	28	0		29	0	0		29	0	0		28	0	0	
39	29	0		35	0	0		35	0	0		35	0	0	
40	38	3	e	41	10	7	e	40	8	5	e	37	2	-1	e
41	23	0		28	0	0		7	0	0		27	0	0	
42	21	0		21	0	0		20	0	0		19	0	0	
43	26	0		27	0	0		26	0	0		25	0	0	
44	30	0		23	0	0		23	0	0		22	0	0	
45	28	0		27	0	0		26	0	0		25	0	0	
46	24	0		23	0	0		23	0	0		22	0	0	
47	22	0		23	0	0		23	0	0		22	0	0	
48	30	0		30	0	0		29	0	0		28	0	0	
	Average Wind Speed (mph)	**Total Hours**	**Total**	**Average Wind Speed (mph)**	**Total Hours**	**Hours Change**	**Total**	**Average Wind Speed (mph)**	**Total Hours**	**Hours Change**	**Total**	**Average Wind Speed (mph)**	**Total Hours**	**Hours Change**	**Total**
	26	5	2 of 48	27	29	24	3 of 48	27	25	20	3 of 48	26	13	8	4 of 48

TABLE 4.1-6
COMPLETE RESULTS OF PEDESTRIAN WIND HAZARD ANALYSIS FOR EXISTING AND CUMULATIVE 2050 SCENARIOS (FOR PROPOSED PROJECT, DESIGN OPTION 1 AND DESIGN OPTION 2)

Test Location	Existing			Cumulative 2050 Proposed Project				Cumulative 2050 Design Option 1				Cumulative 2050 Design Option 2			
	Wind Speed Exceeded 1 hour/year (mph)	Hours/yr Exceeding Criterion	Exceedance	Wind Speed Exceeded 1 hour/year (mph)	Hours/yr Exceeding Criterion	Hours Change	Exceedance	Wind Speed Exceeded 1 hour/year (mph)	Hours/yr Exceeding Criterion	Hours Change	Exceedance	Wind Speed Exceeded 1 hour/year (mph)	Hours/yr Exceeding Criterion	Hours Change	Exceedance
1	29	0		37	2	2	e	37	2	2	e	37	2	2	e
2	26	0		25	0	0		25	0	0		24	0	0	
3	26	0		21	0	0		21	0	0		22	0	0	
4	24	0		22	0	0		23	0	0		22	0	0	
5	25	0		27	0	0		27	0	0		27	0	0	
6	24	0		29	0	0		30	0	0		30	0	0	
7	18	0		20	0	0		20	0	0		21	0	0	
8	19	0		21	0	0		22	0	0		22	0	0	
9	13	0		16	0	0		16	0	0		15	0	0	
10	37	2	e	39	4	2	e	39	4	2	e	39	5	3	e
11	29	0		28	0	0		28	0	0		27	0	0	
12	26	0		29	0	0		28	0	0		28	0	0	
13	23	0		25	0	0		24	0	0		24	0	0	
14	25	0		22	0	0		22	0	0		21	0	0	
15	22	0		27	0	0		27	0	0		26	0	0	
16	20	0		20	0	0		20	0	0		19	0	0	
17	27	0		28	0	0		29	0	0		28	0	0	
18	29	0		29	0	0		30	0	0		29	0	0	
19	26	0		30	0	0		30	0	0		30	0	0	
20	27	0		32	0	0		32	0	0		31	0	0	
21	25	0		25	0	0		25	0	0		25	0	0	
22	21	0		27	0	0		26	0	0		25	0	0	
23	27	0		24	0	0		24	0	0		24	0	0	
24	35	0		26	0	0		27	0	0		26	0	0	
25	33	0		28	0	0		27	0	0		25	0	0	
26	35	0		31	0	0		31	0	0		28	0	0	
27	21	0		14	0	0		14	0	0		11	0	0	
28	23	0		12	0	0		11	0	0		14	0	0	

TABLE 4.1-6 (CONTINUED)
COMPLETE RESULTS OF PEDESTRIAN WIND HAZARD ANALYSIS FOR EXISTING AND CUMULATIVE 2050 SCENARIOS (FOR PROPOSED PROJECT, DESIGN OPTION 1 AND DESIGN OPTION 2)

Test Location	Existing			Cumulative 2050 Proposed Project				Cumulative 2050 Design Option 1				Cumulative 2050 Design Option 2			
	Wind Speed Exceeded 1 hour/year (mph)	Hours/yr Exceeding Criterion	Exceedance	Wind Speed Exceeded 1 hour/year (mph)	Hours/yr Exceeding Criterion	Hours Change	Exceedance	Wind Speed Exceeded 1 hour/year (mph)	Hours/yr Exceeding Criterion	Hours Change	Exceedance	Wind Speed Exceeded 1 hour/year (mph)	Hours/yr Exceeding Criterion	Hours Change	Exceedance
29	30	0		26	0	0		27	0	0		26	0	0	
30	33	0		34	0	0		35	0	0		37	2	2	e
31	22	0		24	0	0		23	0	0		19	0	0	
32	22	0		22	0	0		23	0	0		22	0	0	
33	24	0		29	0	0		29	0	0		27	0	0	
34	28	0		43	17	17	e	44	20	20	e	43	12	12	e
35	35	0		35	0	0		35	0	0		32	0	0	
36	27	0		30	0	0		30	0	0		30	0	0	
37	29	0		34	0	0		35	0	0		31	0	0	
38	28	0		31	0	0		31	0	0		24	0	0	
39	29	0		34	0	0		34	0	0		34	0	0	
40	38	3	e	39	5	2	e	40	6	3	e	35	0	-3	
41	23	0		21	0	0		21	0	0		23	0	0	
42	21	0		21	0	0		21	0	0		20	0	0	
43	26	0		21	0	0		21	0	0		20	0	0	
44	30	0		25	0	0		25	0	0		23	0	0	
45	28	0		26	0	0		26	0	0		25	0	0	
46	24	0		22	0	0		23	0	0		22	0	0	
47	22	0		24	0	0		24	0	0		23	0	0	
48	30	0		29	0	0		30	0	0		28	0	0	
	Average Wind Speed (mph)	**Total Hours**	**Total**	**Average Wind Speed (mph)**	**Total Hours**	**Hours Change**	**Total**	**Average Wind Speed (mph)**	**Total Hours**	**Hours Change**	**Total**	**Average Wind Speed (mph)**	**Total Hours**	**Hours Change**	**Total**
	26	5	2 of 48	27	28	23	4 of 48	27	32	27	4 of 48	26	21	16	4 of 48

Cumulative 2030

The following provides detail on wind hazard results under Cumulative 2030 conditions for each of the three design scenarios:

Cumulative 2030 – Proposed Project

Figure 4.1-42a graphically presents the wind hazard results of the wind tunnel test for the Cumulative 2030 – Proposed Project scenario, and Table 4.1-5 presents the full wind hazard criterion results. Similar to the Existing plus NHPH scenario for the Proposed Project presented in Impact AES-4 above, the Cumulative 2030 scenario for the Proposed Project would result in exceedances of the wind hazard criterion.

Under the Cumulative 2030 scenario for the Proposed Project, one new test point location (test point 34, located on the south side of Parnassus Avenue approximately 200 feet east of the proposed New Hospital) would exceed the wind hazard criterion compared to existing conditions. The total number of locations exceeding the wind hazard criterion would increase from existing conditions by one, the total hours per year exceeding the wind hazard criterion would increase by 24 hours, and the average wind speed exceeded one hour per year would increase to 27 mph, compared to existing conditions.

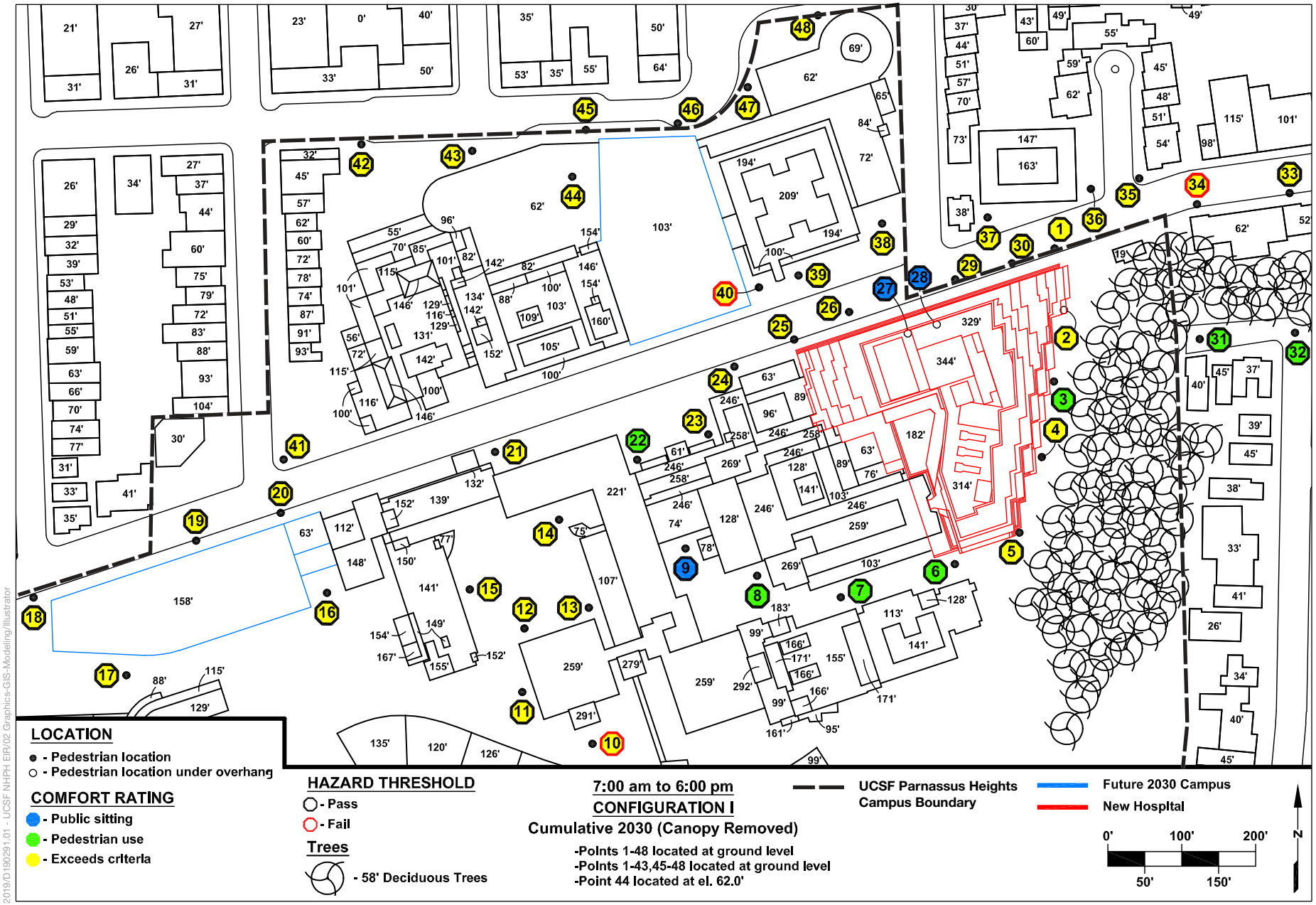
Compared to the Existing plus NHPH scenario for the Proposed Project, there would be one new exceedance under the Cumulative 2030 scenario for the Proposed Project (test point 40, located on the north side of Parnassus Avenue near the southwest corner of Medical Building 1, which also represents an existing exceedance). However, the Cumulative 2030 scenario for the Proposed Project would also avoid an exceedance at test point 37 (located on the north side of Parnassus Avenue directly across from the proposed New Hospital).

Cumulative 2030 – Design Option 1

Figure 4.1-42b graphically presents the wind hazard results of the wind tunnel test for the Cumulative 2030 – Design Option 1 scenario, and Table 4.1-5 presents the full wind hazard criterion results. Similar to the Existing plus NHPH scenario for Design Option 1 presented in Impact AES-4 above, the Cumulative 2030 scenario for the Design Option 1 would result in exceedances of the wind hazard criterion.

Under the Cumulative 2030 scenario for the Design Option 1, one new test point location (test point 34, located on the south side of Parnassus Avenue approximately 200 feet east of the proposed New Hospital) would exceed the wind hazard criterion compared to existing conditions. The total number of locations exceeding the wind hazard criterion would increase from existing conditions by one, the total hours per year exceeding the wind hazard criterion would increase by 20 hours, and the average wind speed exceeded one hour per year would increase to approach 27 mph, compared to existing conditions.

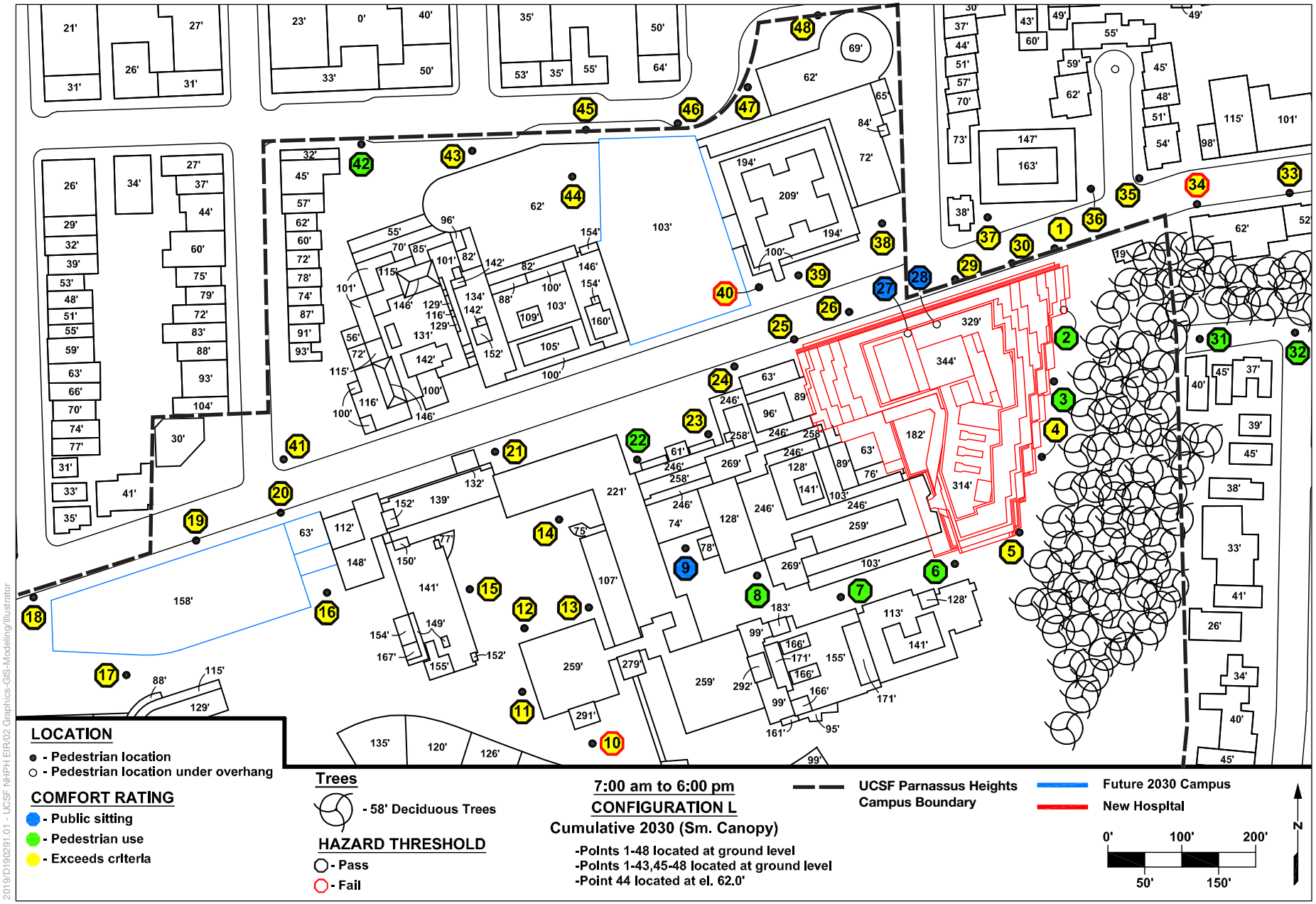
Compared to the Existing plus NHPH scenario for Design Option 1, there would be one new exceedance under the Cumulative 2030 scenario for Design Option 1 (test point 40, located on the north side of Parnassus Avenue near the southwest corner of Medical Building 1, which also represents an existing exceedance). However, the Cumulative 2030 scenario for Design Option 1



SOURCE: CPP, 2021

UCSF New Hospital Parnassus Heights EIR

Figure 4.1-42a
Pedestrian Wind Hazard and Wind Comfort Conditions – Cumulative 2030, Proposed Project (No Projection)



SOURCE: CPP, 2021

UCSF New Hospital Parnassus Heights EIR

Figure 4.1-42b
Pedestrian Wind Hazard and Wind Comfort Conditions – Cumulative 2030, Design Option 1 (Third Floor 4-foot Projection)

would also avoid an exceedance at test point 37 (located on the north side of Parnassus Avenue directly across from the proposed New Hospital).

Cumulative 2030 – Design Option 2

Figure 4.1-42c graphically presents the wind hazard results of the wind tunnel test for the Cumulative 2030 – Design Option 2 scenario, and Table 4.1-5 presents the full wind hazard criterion results. Similar to the Existing plus NHPH scenario for Design Option 2 presented in Impact AES-4 above, the Cumulative 2030 scenario for the Design Option 2 would result in exceedances of the wind hazard criterion.

Under the Cumulative 2030 scenario for the Design Option 2, two new test point locations (test point 30, located on the south side of Parnassus Avenue adjacent to the proposed new Hospital; and test point 34, located on the south side of Parnassus Avenue approximately 200 feet east of the proposed New Hospital) would exceed the wind hazard criterion compared to existing conditions. The total number of locations exceeding the wind hazard criterion would increase from existing conditions by two, the total hours per year exceeding the wind hazard criterion would increase by 8 hours, and the average wind speed exceeded one hour per year would remain at 26 mph, compared to existing conditions.

Compared to the Existing plus NHPH scenario for Design Option 2, there would be two new exceedances under the Cumulative 2030 scenario for Design Option 2 (test point 30; and test point 40, located on the north side of Parnassus Avenue near the southwest corner of Medical Building 1, which also represents an existing exceedance).

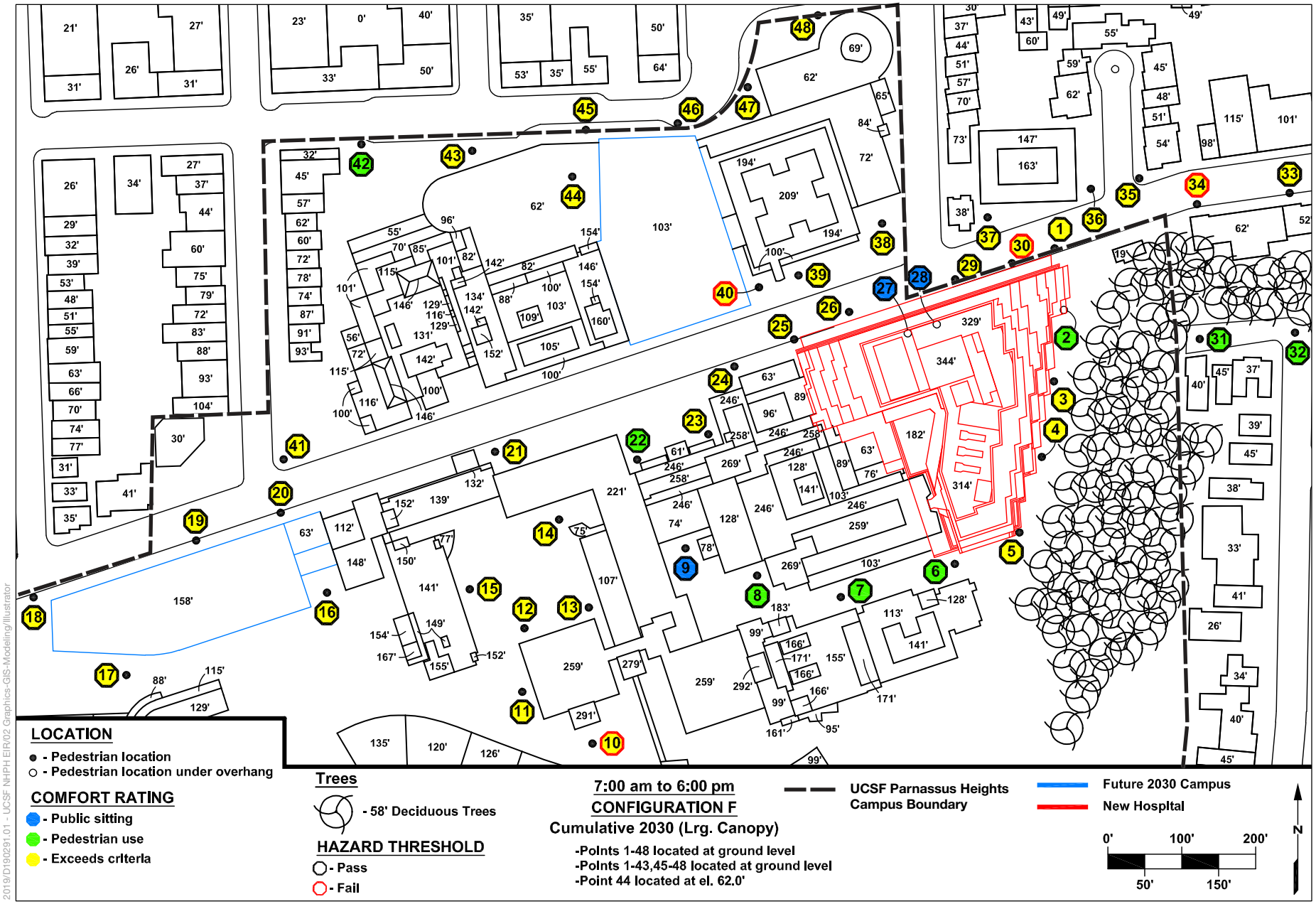
Cumulative 2050

The following provides detail on wind hazard results under Cumulative 2050 conditions for each of the three design scenarios:

Cumulative 2050 – Proposed Project

Figure 4.1-43a graphically presents the wind hazard results of the wind tunnel test for this Cumulative 2050 – Proposed Project scenario, and Table 4.1-6 presents the full wind hazard criterion results. Similar to the Existing plus NHPH scenario for the Proposed Project presented in Impact AES-4 above, the Cumulative 2050 scenario for the Proposed Project would result in exceedances of the wind hazard criterion.

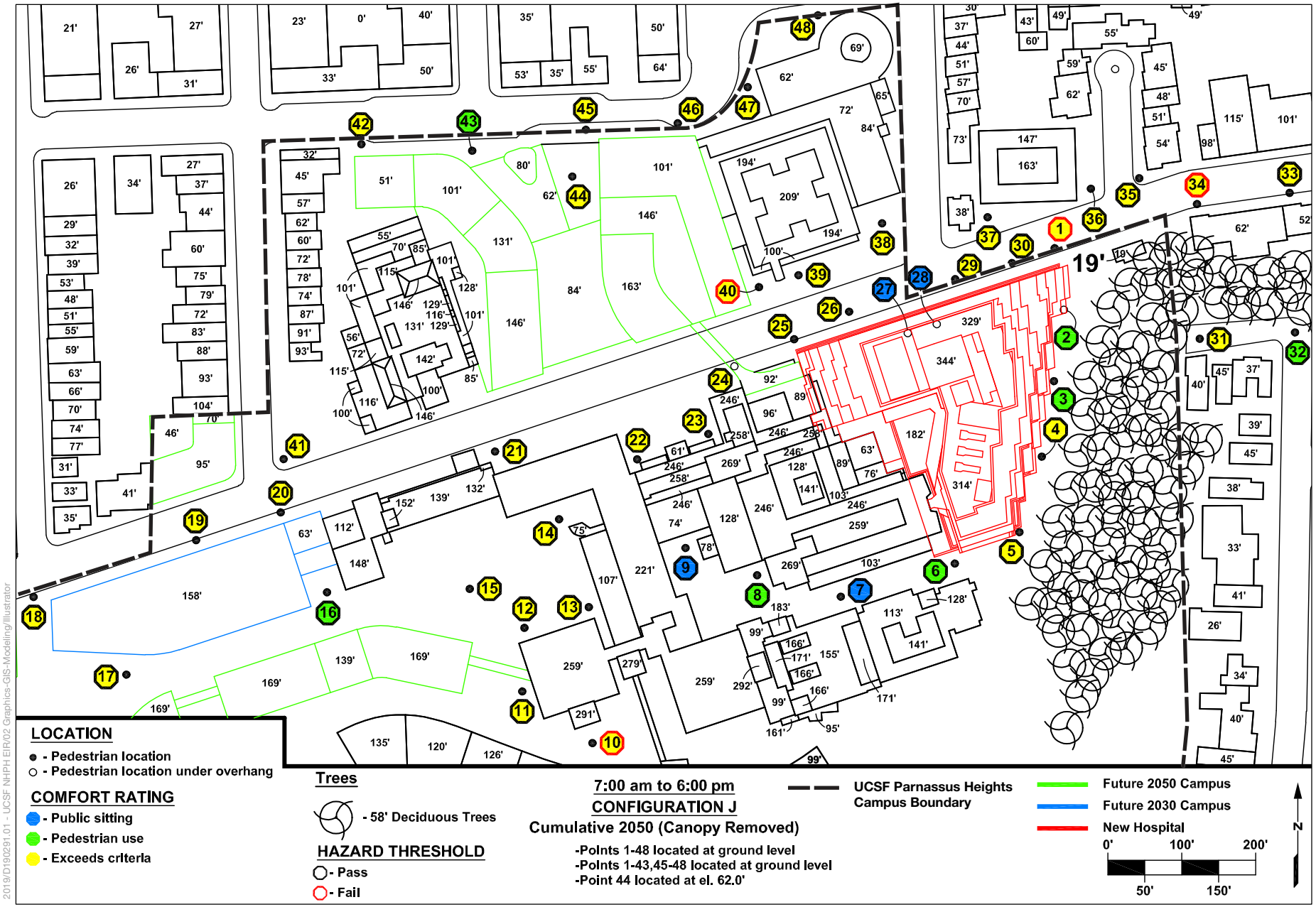
Under the Cumulative 2050 scenario for the Proposed Project, two new test point locations (test point 1, located on the south side of Parnassus Avenue adjacent to the northeast corner of the proposed New Hospital; and test point 34, located on the south side of Parnassus Avenue approximately 200 feet east of the proposed New Hospital) would exceed the wind hazard criterion compared to existing conditions. The total number of locations exceeding the wind hazard criterion would increase from existing conditions by two, the total hours per year exceeding the wind hazard criterion would increase by 23 hours, and the average wind speed exceeded one hour per year would increase to 27 mph, compared to existing conditions.



SOURCE: CPP, 2021

UCSF New Hospital Parnassus Heights EIR

Figure 4.1-42c
Pedestrian Wind Hazard and Wind Comfort Conditions – Cumulative 2030, Design Option 2 (Third Floor 11.5-foot Projection)



SOURCE: CPP, 2021

UCSF New Hospital Parnassus Heights EIR

Figure 4.1-43a
Pedestrian Wind Hazard and Wind Comfort Conditions – Cumulative 2050, Proposed Project (No Projection)

Compared to the Existing plus NHPH scenario for the Proposed Project, there would be two new exceedances under the Cumulative 2050 scenario for the Proposed Project (test point 1; and test point 40, located on the north side of Parnassus Avenue near the southwest corner of Medical Building 1, which also represents an existing exceedance). However, the Cumulative 2050 scenario for the Proposed Project would also avoid an exceedance at test point 37 (located on the north side of Parnassus Avenue directly across from the proposed New Hospital).

Cumulative 2050 – Design Option 1 (Third Floor 4-foot Projection)

Figure 4.1-43b graphically presents the wind hazard results of the wind tunnel test for this Cumulative 2050 – Design Option 1 scenario, and Table 4.1-6 presents the full wind hazard criterion results. Similar to the Existing plus NHPH scenario for Design Option 1 presented in Impact AES-4 above, the Cumulative 2050 scenario for the Design Option 1 would result in exceedances of the wind hazard criterion.

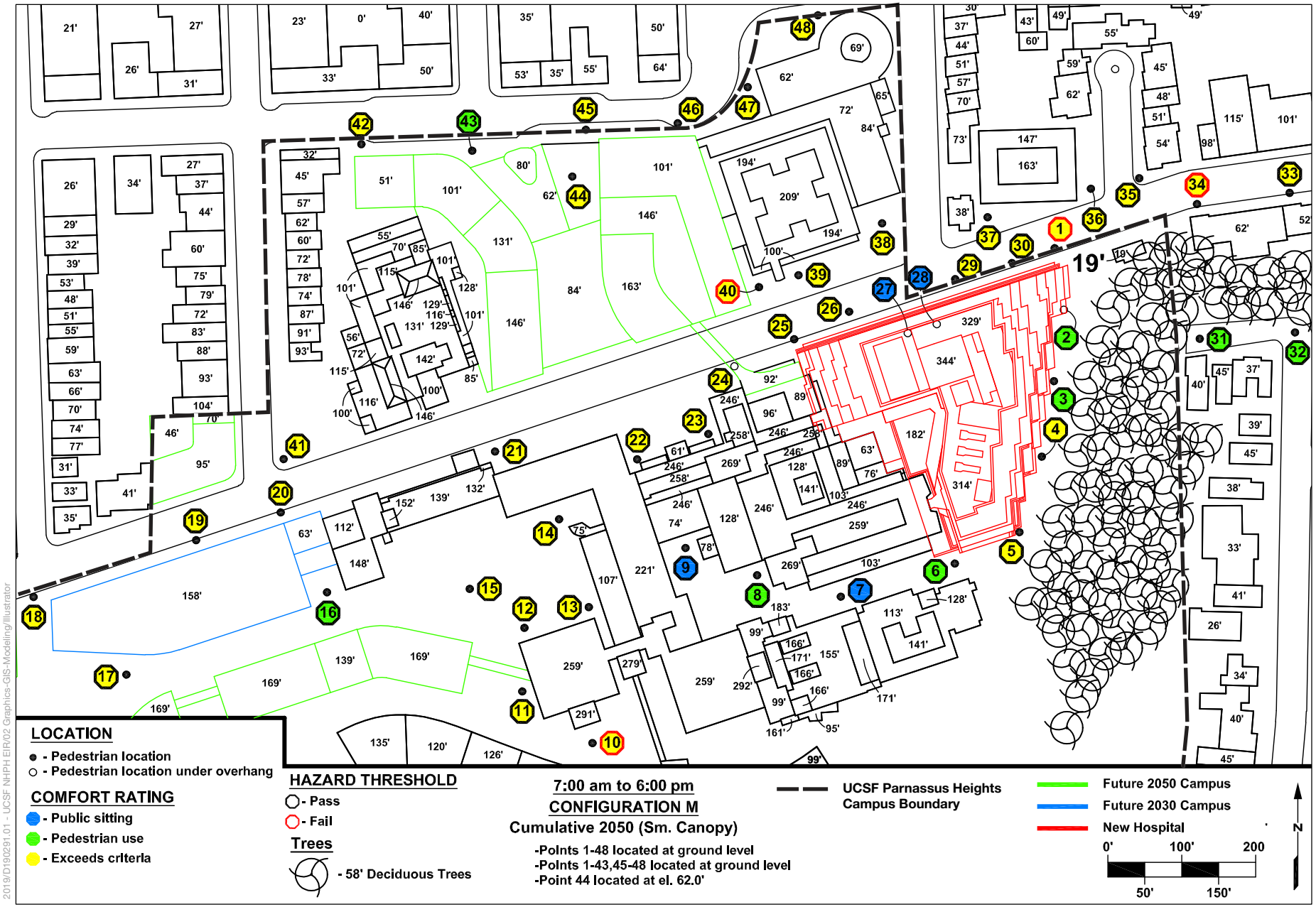
Under the Cumulative 2050 scenario for Design Option 1, two new test point locations (test point 1, located on the south side of Parnassus Avenue adjacent to the northeast corner of the proposed New Hospital; and test point 34, located on the south side of Parnassus Avenue approximately 200 feet east of the proposed New Hospital) would exceed the wind hazard criterion compared to existing conditions. The total number of locations exceeding the wind hazard criterion would increase from existing conditions by two, the total hours per year exceeding the wind hazard criterion would increase by 27 hours, and the average wind speed exceeded one hour per year would increase to 27 mph, compared to existing conditions.

Compared to the Existing plus NHPH scenario for Design Option 1, there would be two new exceedances under the Cumulative 2050 scenario for Design Option 1 (test point 1; and test point 40, located on the north side of Parnassus Avenue near the southwest corner of Medical Building 1, which also represents an existing exceedance). However, the Cumulative 2050 scenario for Design Option 1 would also avoid an exceedance at test point 37 (located on the north side of Parnassus Avenue directly across from the proposed New Hospital).

Cumulative 2050 – Design Option 2 (Third Floor 11.5-foot Projection)

Figure 4.1-43c graphically presents the wind hazard results of the wind tunnel test for this Cumulative 2050 – Design Option 2 scenario, and Table 4.1-6 presents the full wind hazard criterion results. Similar to the Existing plus NHPH scenario for Design Option 2 presented in Impact AES-4 above, the Cumulative 2050 scenario for the Design Option 2 would result in exceedances of the wind hazard criterion.

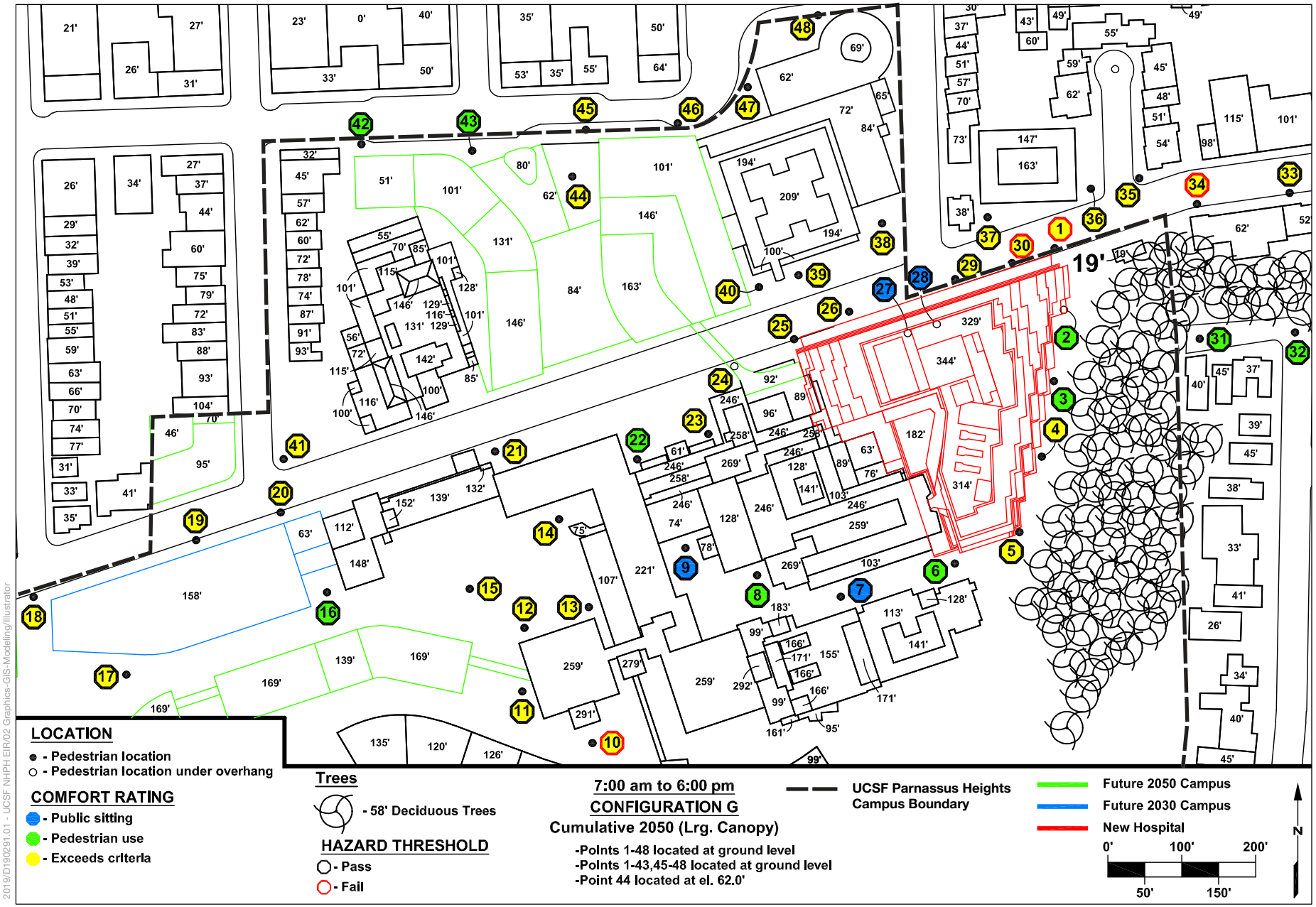
Under the Cumulative 2050 scenario for the Design Option 2, three new test point locations (test point 1, located on the south side of Parnassus Avenue adjacent to the northeast corner of the proposed New Hospital; test point 30, located just west of test point 1; and test point 34, located on the south side of Parnassus Avenue approximately 200 feet east of the proposed New Hospital) would exceed the wind hazard criterion compared to existing conditions. However, this scenario would eliminate an existing exceedance at test point 40, located on the north side of Parnassus Avenue near the southwest corner of Medical Building 1. The total number of locations exceeding the wind hazard criterion would increase from existing conditions by two, the total hours per year



SOURCE: CPP, 2021

UCSF New Hospital Parnassus Heights EIR

Figure 4.1-43b
Pedestrian Wind Hazard and Wind Comfort Conditions – Cumulative 2050, Design Option 1 (Third Floor 4-foot Projection)



SOURCE: CPP, 2021

UCSF New Hospital Parnassus Heights EIR

Figure 4.1-43c
Pedestrian Wind Hazard and Wind Comfort Conditions – Cumulative 2050, Design Option 2 (Third Floor 11.5-foot Projection)

exceeding the wind hazard criterion would increase by 16 hours, and the average wind speed exceeded one hour per year would remain at 26 mph, compared to existing conditions.

Compared to the Existing plus NHPH scenario for Design Option 2, there would be two new exceedances under the Cumulative 2050 scenario for Design Option 2 (test point 1; and test point 30, located just west of test point 1). Similar to the Existing Plus NHPH scenario for Design Option 2, the Cumulative 2050 scenario for Design Option 2 would also avoid an exceedance at test point 37 (located on the north side of Parnassus Avenue directly across from the proposed New Hospital).

Wind Hazard Summary

As described above, the Cumulative 2030 and 2050 scenarios for the Proposed Project and Design Options 1 and 2 would increase the total number of hours exceeding the wind hazard criterion compared to Existing Conditions. Because the two cumulative development scenarios would result in additional exceedances of the wind hazard criterion compared to existing conditions, this would be a significant cumulative impact. Moreover, as described above under Impact AES-4, development of the NHPH alone would be responsible for a considerable proportion of this cumulative impact.

It is noted that, as stated above in the *Approach to Analysis*, this cumulative analysis is likely conservative in that it is based on a simple massing model of the cumulative buildings, and not on actual building designs, which have not yet been prepared. In general, a more likely building scenario includes building setbacks and other building sculpting features, such as podiums, which would be expected to result in less substantial wind effects.

As stated under Impact AES-4, above, UCSF has already incorporated a chamfered northeast corner in the New Hospital as a design feature to alleviate pressure from accelerating winds along Parnassus Avenue. In addition, the third-floor projections considered in Design Options 1 and 2 in this EIR are intended to assist in dissipating downwash off the building north elevation. However, as noted in Impact AES4, since Design Options 1 and 2 would require City approval for the projections over the public right-of-way, there is no certainty that these two design options would be implemented.

Implementation of **NHPH Mitigation Measure AES-4**, described above, would require that UCSF avoid, to the maximum extent feasible, wind hazard exceedances resulting from the New Hospital. Implementation of **NHPH Mitigation Measure C-AES-3**, presented here, would require UCSF to pursue further options for reducing the cumulative wind impact; however, it cannot be concluded that effects would be reduced to a less than significant level. Therefore, the cumulative wind impact would be significant and unavoidable with mitigation.

> **NHPH Mitigation Measure C-AES-3: Design new cumulative buildings to minimize wind impacts at pedestrian level.**
>
> Prior to the approval of the design of individual cumulative buildings, which will be developed pursuant to the CPHP, for which one or more building facades would have a height of 80 feet or more, UCSF shall engage a qualified wind consultant to conduct wind

tunnel testing of the proposed building(s) to determine whether the building(s) would result in new exceedance(s) of the City of San Francisco's pedestrian wind hazard criterion. The wind tunnel testing shall be conducted for the building(s) under consideration in the context of then-existing conditions as well as in the context of conditions representative of then-anticipated CPHP buildout (the buildout scenario in this EIR, as may be modified from time to time by UCSF to reflect actual building designs known at the time) so as to determine whether the individual building(s) and/or the buildout condition would result in exceedances of the wind hazard criterion.

If the wind tunnel analysis determines that the building(s)' design or buildout conditions would increase the hours of wind hazard exceedance or the number of test points subject to hazardous winds, compared to then-existing conditions, UCSF shall work with the wind consultant to identify feasible mitigation strategies, including design changes (e.g., setbacks, rounded/chamfered building corners, stepped facades, etc.), to eliminate or reduce wind hazards to the maximum feasible extent. If UCSF finds that these changes or other wind speed reduction strategies are not feasible as they would unduly restrict the proposed building's space program, result in operational inefficiencies, and/or substantially higher costs, the building(s) may nonetheless be approved provided that the project incorporates wind speed reduction strategies to the maximum feasible extent, as determined by UCSF in consultation with the wind consultant. Wind speed reduction strategies could also include features such as landscaping, localized installation of porous/solid screens, installation of canopies along building frontages, and the like.

Significance after Mitigation: Significant and Unavoidable. For the reasons set forth above with respect to the building-specific analysis for the New Hospital, it cannot be stated with certainty that no wind hazard exceedances would result from cumulative development including the proposed NHPH, and therefore this impact could be significant even with mitigation. Accordingly, this impact would be considered significant and unavoidable with mitigation.

Informational Wind Comfort Analysis

As stated in Impact AES-4, above, the wind comfort analysis is a measure of overall wind conditions, included in this EIR for informational purposes. The 11-mph wind comfort criterion is not a CEQA criterion of significance, so this discussion is not part of the impact analysis.

Figures 4.1-42a through 4.1-42c graphically present the wind comfort results of the wind tunnel test for this Cumulative 2030 scenarios for the Proposed Project and Design Options 1 and 2; and Figures 4.1-34a through 4.1-43c graphically present the wind comfort results of the wind tunnel test for this Cumulative 2050 scenarios for the Proposed Project, and Design Options 1 and 2.

With NHPH implementation in conjunction with 2030 cumulative development, the wind comfort speeds would not change substantially overall. Under existing conditions, 38 of 48 test points exceed the wind comfort criterion, and the average percent of time wind speeds exceed the wind comfort criterion among all 48 test points is 20 percent. Under the Cumulative 2030 scenario for the Proposed Project, the total number of test points exceeding the wind comfort criterion would remain at 38, and the average percent of time wind speeds exceed the wind comfort criterion among all 48 test points would increase slightly to 21 percent. Under the Existing plus NHPH scenario for the Design Option 1, the total number of test points exceeding the wind comfort criterion would be

reduced to 35, and the average percent of time wind speeds exceed the wind comfort would increase slightly to 21 percent. Under the Existing plus NHPH scenario for the Design Option 2, the total number of test points exceeding the wind comfort criterion would be reduced to 37, and the average percent of time wind speeds exceed the wind comfort would remain at 20 percent.

Under the Cumulative 2050 scenario for the Proposed Project, the total number of test points exceeding the wind comfort criterion would reduce to 37, and the average percent of time wind speeds exceed the wind comfort criterion among all 48 test points would remain at 20 percent. Under the Existing plus NHPH scenario for the Design Option 1, the total number of test points exceeding the wind comfort criterion would be reduced to 36, and the average percent of time wind speeds exceed the wind comfort would remain at 20 percent. Under the Existing plus NHPH scenario for the Design Option 2, the total number of test points exceeding the wind comfort criterion would be reduced to 34, and the average percent of time wind speeds exceed the wind comfort would reduce to 18 percent. As can be seen in Figures 4.1-43a through 4.1-43c, and similar to existing conditions and with-NHPH conditions, all points along the Parnassus Avenue sidewalks would continue to exceed the pedestrian comfort criterion under all three Project analysis scenarios for both cumulative years.

Impact C-AES-4: Implementation of the NHPH, combined with cumulative projects, would not create new shadow that would substantially and adversely affect the use and enjoyment of publicly accessible open spaces. (*Less than Significant*)

As indicated above, on-campus cumulative development projects include implementation of the development program planned under the CPHP, several demolition projects on the campus site that were previously approved under the 2014 LRDP but have not yet been implemented, and on-going implementation of forest management activities in the Reserve under the Mount Sutro Open Space Vegetation Management Plan. As discussed above, the area surrounding the campus site is built-out and opportunity for new development is limited. All off-site cumulative projects are limited to the intensification or rebuilding of existing primarily residential uses and would be required to comply with the City's Planning Code, which limits cumulative projects in the vicinity of the campus site to 40 feet in height. Moreover, cumulative projects would be required to comply with Section 295 of the Planning Code, which generally prohibits new structures above 40 feet in height that would cast additional shadows on applicable open space. Therefore, off-site cumulative development projects would not be expected to adversely or substantially affect the use and enjoyment of open spaces in the vicinity of the campus site.

Implementation of on-campus cumulative development is included in the shadow diagrams in Figures 4.1-18 through 4.1-36. As shown in Figure 4.1-23, net new shadow from implementation of the CPHP, and in particular the proposed RAB, would cover approximately 25 percent of the blacktop area at Independence High School from 7:57 a.m. until 8:00 a.m. on the spring/fall equinoxes. Between 8:00 a.m. to 9:00 a.m. on the spring/fall equinoxes, this shadow would recede entirely from the open space. As described above under Impact AES-5, it is likely that students would be in class indoors after school begins at 8:00 a.m., but is reasonable to assume a

small amount of students would utilize the open space before 8:00 a.m. for physical education. However, these areas would likely have heavier usage during the lunch period, throughout the day, and after school when more students would be on the school campus, compared to first thing in the morning. Because shadow from other CPHP development in combination with the NHPH would not affect the school's open space when its usage is anticipated to be highest, new shadow cast by the NHPH would not be expected to adversely affect the use and enjoyment of this open space on weekdays.

Independence High School participates in the Shared Schoolyard Project, which provides public access on the weekend. On the weekend, especially early in the morning, usage of the open space is expected to be less than it would be on weekdays because school would not be in session. In addition, new shadow would not affect the open space after 8:00 a.m., thus, there would be ample time throughout the day to enjoy sunlight.

Net new shadow from implementation of the CPHP would not combine with shadow from the NHPH to affect Golden Gate Park, Richard Gamble Memorial Park, Grattan Playground, Grattan Elementary School, or the Interior Greenbelt located adjacent to and east of the Reserve on the four representative days of the year (summer solstice, spring/fall equinoxes, and winter solstice). However, as shown in Figures 4.1-27, 4.1-31, and 4.1-32, net new shadow from the CPHP would cover a minor area in the northwest portion of the Preserve adjacent to Medical Center Way between 4:00 p.m. to sunset on the spring/fall equinoxes, and between 2:00 p.m. and sunset on the winter solstice. This shadow is not anticipated to affect the use and enjoyment of the Reserve because it would not affect any primary trails or public use areas. Therefore, shadow effects from the CPHP in combination with the NHPH would not be expected to adversely affect the use and enjoyment of the Reserve.

Overall, implementation of the NHPH in combination with cumulative projects would not be expected to adversely or substantially affect the use and enjoyment of open spaces considered in this analysis. This impact would be less than significant.

Mitigation: None required.

4.1.4 References

Caltrans, 2021. https://dot.ca.gov/programs/design/lap-landscape-architecture-and-community-livability/lap-liv-i-scenic-highways/lap-liv-i-scenic-highways-faq2. Accessed September 24, 2021.

Cermak Peterka Petersen (CPP), 2021. *UCSF New Hospital at Parnassus Heights (NHPH) Pedestrian Wind Assessment, San Francisco, CA*. December 2, 2021.

University of California San Francisco (UCSF), 2020a. *Comprehensive Parnassus Heights Plan, Final Report.* October 2019; updated in June 2020.

UCSF, 2020b. *Physical Design Framework.* September 2010; last updated September 2020.

UCSF, 2020c. *Parnassus Heights Design Guidelines.* May 13, 2020.

UCSF, 2021. *UCSF 2014 Long Range Development Plan*. November 2014; last amended January 2021.

4.2 Air Quality

This section describes and evaluates the potential for the construction and operation of the NHPH to result in significant air quality impacts. This section discusses the existing air quality conditions in the project area, presents the regulatory framework for air quality management, and analyzes the potential for the proposed project to affect existing air quality conditions, both regionally and locally, due to activities that emit criteria and non-criteria air pollutants. It analyzes the types and quantities of emissions that would be generated on a temporary basis due to proposed construction activities as well as those generated over the long term from the operation of the NHPH. The analysis determines whether those emissions are significant in relation to applicable air quality standards and identifies feasible mitigation measures for significant adverse impacts. The section also includes an analysis of cumulative air quality impacts. The impact of greenhouse gas (GHG) emissions resulting from NHPH development are presented and discussed in Section 4.7, *Greenhouse Gas Emissions*.

The analysis in this section is based on a review of existing air quality conditions in the region and air quality regulations administered by the United States Environmental Protection Agency (USEPA), the California Air Resources Board (CARB), and the Bay Area Air Quality Management District (BAAQMD). The analysis utilizes methodologies set forth in the updated BAAQMD *CEQA Air Quality Guidelines* (May 2017). The analysis in this section also summarizes the findings of a Health Risk Assessment prepared in support of this EIR.

For purposes of providing distinction between the various components of this project, references made in this EIR to “New Hospital” relate only to the New Hospital portion of the overall project, whereas references made to “NHPH” relate to the overall project, including the New Hospital and its related improvements.

4.2.1 Environmental Setting

Climate and Meteorology

The campus site is located in the San Francisco Bay Area Air Basin (SFBAAB). Air quality in the basin is influenced by such natural factors as topography, meteorology, and climate, in addition to the presence of existing air pollution sources and ambient conditions. The air basin’s moderate climate steers storm tracks away from the region for much of the year, although storms often affect the region from November through April. San Francisco’s proximity to the Pacific Ocean and exposure to onshore breezes provides generally very good air quality in the city and at the campus site.

Annual temperatures in the campus site area average in the mid-50s (degrees Fahrenheit), ranging from the low-40s on winter mornings to the mid-70s during summer afternoons. Daily and seasonal oscillations of temperature are small because of the moderating effects of the nearby San Francisco Bay and the ocean. In contrast to the steady temperature regime, rainfall is highly variable and confined almost exclusively to the “rainy” period from November through April.

Precipitation varies widely from year to year as shifts in the annual storm track of a few hundred miles can mean the difference between a very wet year and drought conditions.

Atmospheric conditions, such as wind speed and direction, and variable air temperatures, interact with the physical features of the landscape to influence the movement and dispersal of air pollutants, regionally. The campus site is within the Peninsula climatological subregion. Marine air traveling through the Golden Gate is a dominant weather factor affecting dispersal of air pollutants within the region. The prevailing wind direction on the San Francisco mainland is from the west at an average annual wind speed of 10.3 miles per hour (WRCC, 2020). At higher temperatures ozone formation can increase.

Ambient Air Quality – Criteria Air Pollutants

As required by the 1970 federal Clean Air Act, the USEPA initially identified six air pollutants that are pervasive in urban environments and for which State and federal health-based ambient air quality standards have been established. USEPA calls these pollutants "criteria air pollutants" because the agency has regulated them by developing specific public-health-based and welfare-based criteria as the basis for setting permissible levels. Ozone, carbon monoxide (CO), particulate matter (PM), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and lead are the six criteria air pollutants originally identified by USEPA. Since that time, subsets of particulate matter have been also identified for which permissible levels have been established. These include particulate matter of 10 microns in diameter or less (PM_{10}) and particulate matter of 2.5 microns in diameter or less ($PM_{2.5}$).

BAAQMD is the regional agency with jurisdiction for regulating air quality within the nine - county SFBAAB. The region's air quality monitoring network provides information on ambient concentrations of criteria air pollutants at various locations in the San Francisco Bay Area. **Table 4.2-1** presents a five-year summary for the period 2016 to 2020 of the highest annual criteria air pollutant concentrations, collected at the air quality monitoring station operated and maintained by BAAQMD at 16th and Arkansas Streets (Potrero Hill), approximately 3 miles east of the campus site. Table 4.2-1 also compares measured pollutant concentrations with the most stringent applicable ambient air quality standards (State or federal). Concentrations shown in bold indicate an exceedance of the standard.

Ozone

Ozone is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving reactive organic gases (ROG, also sometimes referred to as volatile organic compounds or VOC by some regulating agencies) and nitrogen oxides (NO_X). The main sources of ROG and NO_X, often referred to as ozone precursors, are combustion processes (including motor vehicle engines) and the evaporation of solvents, paints, and fuels. In the Bay Area, automobiles are the single largest source of ozone precursors. Ozone is referred to as a regional air pollutant because its precursors are transported and diffused by wind concurrently with ozone production through the photochemical reaction process. Ozone causes eye irritation, airway constriction, and shortness of breath and can aggravate existing respiratory diseases, such as asthma, bronchitis, and emphysema.

Table 4.2-1 shows that, according to published data, the most stringent applicable standards for ozone (State 1-hour standard of 0.09 parts per million [ppm] and the federal 8-hour standard of 0.07 ppm) were not exceeded in San Francisco from 2016 through 2018 or in 2020 but the 8-hour standard was exceeded on one day in 2019.

TABLE 4.2-1
SUMMARY OF SAN FRANCISCO AIR QUALITY MONITORING DATA (2016–2020)

Pollutant	Most Stringent Applicable Standard	Number of Days Standards Were Exceeded and Maximum Concentrations Measured[a]				
		2016	2017	2018	2019	2020
Ozone						
- Days 1-Hour Standard Exceeded		0	0	0	0	0
- Maximum 1-Hour Concentration (ppm)	>0.09 ppm[b]	7	9	7	9	9
- Days 8-Hour Standard Exceeded		0	0	0	1	0
- Maximum 8-Hour Concentration (ppm)	>0.07 ppm[c]	6	5	5	7	6
Carbon Monoxide (CO)						
- Days 1-Hour Standard Exceeded		0	0	0	0	NA
- Maximum 1-Hour Concentration (ppm)	>20 ppm[b]	1.7	2.5	1.9	1.2	NA
- Days 8-Hour Standard Exceeded		0	0	0	0	NA
- Maximum 8-Hour Concentration (ppm)	>9 ppm[b]	1.1	1.4	1.6	1.0	NA
Suspended Particulates (PM_{10})						
- Days 24-Hour Standard Exceeded[d]		0	**2**	0	0	**23**
- Maximum 24-Hour Concentration (µg/m^3)	>50 µg/m^3 [b]	17	**77**	43	42	**102**
- Annual Average (µg/m^3)	>20 µg/m^3 [b]	17	**22**	20	15	12
Suspended Particulates ($PM_{2.5}$)						
- Days 24-Hour Standard Exceeded		0	**7**	**14**	0	**8**
- Maximum 24-Hour Concentration (µg/m^3)	>35 µg/m^3	20	**50**	**177**	25	**147**
- Annual Average (µg/m^3)	>12 µg/m^3 [b,c]	7.5	9.7	12	7.7	10.5
Nitrogen Dioxide (NO_2)						
- Days 1-Hour Standard Exceeded		0	0	0	0	0
- Maximum 1-Hour Concentration (ppm)	>0.1 ppm[c]	.06	.07	.07	.06	0.05

NOTES:

Bold values are in excess of applicable standard.
ppm = parts per million.
µg/m^3 = micrograms per cubic meter.
ND = No data or insufficient data.

[a] Number of days exceeded is for all days in a given year, except for PM_{10}. PM_{10} has been monitored every 12 days effective January 2013.
[b] State standard, not to be exceeded.
[c] Federal standard, not to be exceeded.
[d] PM10 is based on a sampling schedule of one out of every 12 days, for a total of approximately 30 samples per year.

SOURCE: BAAQMD, 2020a. Bay Area Air Pollution Summary, 2016 – 2020. Available online at: http://www.baaqmd.gov/about-air-quality/air-quality-summaries. Accessed June 1, 2021.

Carbon Monoxide (CO)

CO is an odorless, colorless gas usually formed as the result of the incomplete combustion of fuels. The single largest source of CO is motor vehicles; the highest emissions occur during low travel speeds, stop-and-go driving, cold starts, and hard acceleration. Exposure to high concentrations of CO reduces the oxygen-carrying capacity of the blood and can cause headaches, nausea, dizziness,

and fatigue; impair central nervous system function; and induce angina (chest pain) in persons with serious heart disease. Very high levels of CO can be fatal. As shown in Table 4.2-1, the more stringent State CO standards were not exceeded from 2016 through 2019. Monitoring of CO was discontinued after 2019. Measurements of CO indicate hourly maximums ranged between 6 percent to 13 percent of the more stringent State standard, and maximum 8-hour CO levels that were approximately 11 percent to 18 percent of the allowable 8-hour standard.

Particulate Matter (PM_{10} and $PM_{2.5}$)

Particulate matter is a class of air pollutants that consists of heterogeneous solid and liquid airborne particles from human-made and natural sources. Particulate matter is measured in two size ranges: PM_{10} and $PM_{2.5}$. In the Bay Area, motor vehicles generate about one-half of the SFBAAB's particulate emissions, through tailpipe emissions as well as brake pad and tire wear. Wood burning in fireplaces and stoves, industrial facilities, and ground-disturbing activities such as construction are other sources of such fine particulate emissions. These fine particulates are small enough to be inhaled into the deepest parts of the human lung and can cause adverse health effects. According to the CARB, studies in the United States and elsewhere "have demonstrated a strong link between elevated particulate levels and premature deaths, hospital admissions, emergency room visits, and asthma attacks." Studies of children's health in California have demonstrated that particle pollution "may significantly reduce lung function growth in children"(CARB, 2007). CARB also reports that statewide attainment of PM standards could prevent thousands of premature deaths, lower hospital admissions for cardiovascular and respiratory disease and asthma-related emergency room visits, and avoid hundreds of thousands of episodes of respiratory illness in California (CARB, 2007). Among the criteria air pollutants that are regulated, particulates appear to represent a serious ongoing health hazard. As long ago as 1999, BAAQMD was reporting in its *CEQA Air Quality Guidelines* that studies had shown that elevated particulate levels contribute to the death of approximately 200 to 500 people per year in the Bay Area. $PM_{2.5}$ is of particular concern because epidemiologic studies have demonstrated that people who live near freeways, especially people who live within 500 feet of freeways or high-traffic roadways, have poorer health outcomes, including increased asthma symptoms and respiratory infections and decreased pulmonary function and lung development in children (SFDPH, 2008).

As presented above in Table 4.2-1, the State 24-hour PM_{10} standard was exceeded on 25 monitored occasions from 2016 through 2020 in San Francisco, 23 of which occurred in 2020 and are likely the result of smoke from complex wildfires throughout California that year

The State 24-hour $PM_{2.5}$ standard was exceeded on 29 days from 2016 through 2020 in San Francisco: 7 days in 2017, 14 days in 2018, and 8 days in 2020. Many of these exceedances of the 24-hour $PM_{2.5}$ standard can be attributed to the October 2017, November and December 2018, and 2020 fires in Northern California. The State annual average standard for PM_{10} was exceeded in 2017 while the federal and State annual average standard for $PM_{2.5}$ was not exceeded from 2016 through 2020.

At least two recent studies are indicating potential links between pollution exposure and novel COVID-19 mortality. However, these studies are preliminary and qualify that "If COVID-19

spread is indeed impacted by air pollution levels, which is not yet known, some of the effects detected in our study could be mediated by" transmission of infectious disease.[1,2]

Nitrogen Dioxide (NO_2)

NO_2 is a reddish brown gas that is a byproduct of combustion processes. Automobiles and industrial operations are its main sources. Aside from its contribution to ozone formation, NO_2 can increase the risk of acute and chronic respiratory disease and reduce visibility. NO_2 may be visible as a coloring component of the air on high pollution days, especially in conjunction with high ozone levels. The current State one-hour standard for NO_2 (0.18 ppm) is being met in San Francisco. In 2010, the USEPA implemented the current federal one-hour NO_2 standard (0.10 ppm) (see *Regulatory Framework* below). Currently, the SFBAAB is designated as an attainment area for the NO_2 standard (U.S. EPA, 2017). As shown in Table 4.2-1, this new federal standard was not exceeded at the San Francisco station from 2016 through 2020.

The USEPA has also established requirements for a new monitoring network to measure NO_2 concentrations near major roadways in urban areas with a population of 500,000 or more. Sixteen new near-roadway monitoring sites are required in California, three of which are in the Bay Area. These monitors are located in Berkeley, Oakland, and San Jose. The Oakland station commenced operation in February 2014, the San Jose station commenced operation in March 2015, and the Berkeley station commenced operation in July 2016. The new monitoring data has not resulted in a need to change area attainment designations.

Sulfur Dioxide (SO_2)

SO_2 is a colorless, acidic gas with a strong odor. It is produced by the combustion of sulfur-containing fuels such as oil, coal, and diesel. SO_2 has the potential to damage materials and can cause health effects at high concentrations. It can irritate lung tissue and increase the risk of acute and chronic respiratory disease (BAAQMD, 2017a). Pollutant trends suggest that the SFBAAB currently meets and will continue to meet the State standard for SO_2 for the foreseeable future.

In 2010, the USEPA set a new one-hour SO_2 standard (see *Regulatory Framework*, below). The USEPA initially designated the SFBAAB as an attainment area for SO_2. Similar to the new federal standard for NO_2, the USEPA established requirements for a new monitoring network to measure SO_2 concentrations beginning in January 2013 (USEPA, 2010a). No additional SO_2 monitors are required for the Bay Area because BAAQMD jurisdiction has never been designated as non-attainment for SO_2 and no state implementation plans or maintenance plans have been prepared for SO_2 (BAAQMD, 2019).

1 Wu, X., Nethery, R.C., Sabath, M.B., Braun, D. and Dominici, F., 2020. *Air pollution and COVID-19 mortality in the United States: strengths and limitations of an ecological regression analysis*. Science Advances (in press). Available at: https://projects.iq.harvard.edu/covid-pm/home.

2 Michael Petroni *et al* 2020 *Environ. Res. Lett.* 15 0940a9, Hazardous air pollutant exposure as a contributing factor to COVID-19 mortality in the United States. Available at: https://iopscience.iop.org/article/10.1088/1748-9326/abaf86/pdf.

Lead

Leaded gasoline (phased out in the United States beginning in 1973), paint (on older houses, cars), smelters (metal refineries), and manufacture of lead storage batteries have been the primary sources of lead released into the atmosphere. Lead has a range of adverse neurotoxic health effects, which put children at special risk. Some lead-containing chemicals cause cancer in animals. Lead levels in the air have decreased substantially since leaded gasoline was eliminated.

Ambient lead concentrations are only monitored on an as-warranted, site-specific basis in California. On October 15, 2008, the USEPA strengthened the national ambient air quality standard for lead by lowering it from 1.50 $\mu g/m^3$ to 0.15 $\mu g/m^3$ on a rolling three-month average. The USEPA revised the monitoring requirements for lead in December 2010 (USEPA, 2010b). These requirements focus on airports and large urban areas resulting in an increase in 76 monitors nationally. Lead monitoring stations in the Bay Area are located at Palo Alto Airport, Reid-Hillview Airport (San Jose), and San Carlos Airport. Non-airport locations for lead monitoring are in Redwood City and San Jose.

Air Quality Index

The USEPA developed the Air Quality Index (AQI) scale to make the public health impacts of air pollution concentrations easily understandable. The AQI, much like an air quality "thermometer," translates daily air pollution concentrations into a number on a scale between 0 and 500. The numbers in the scale are divided into six color-coded ranges, with numbers 0 through 500 as outlined below.

- Green (0-50) indicates "good" air quality. No health impacts are expected when air quality is in the green range.
- Yellow (51-100) indicates air quality is "moderate." Unusually sensitive people should consider limiting prolonged outdoor exertion.
- Orange (101-150) indicates air quality is "unhealthy for sensitive groups." Active children and adults, and people with respiratory disease, such as asthma, should limit outdoor exertion.
- Red (151-200) indicates air quality is "unhealthy." Active children and adults, and people with respiratory disease, such as asthma, should avoid prolonged outdoor exertion; everyone else, especially children, should limit prolonged outdoor exertion.
- Purple (201-300) indicates air quality is "very unhealthy." Active children and adults, and people with respiratory disease, such as asthma, should avoid prolonged outdoor exertion; everyone else, especially children, should limit outdoor exertion.
- Maroon (301-500) indicates air quality is "hazardous." This would trigger health warnings of emergency conditions, and the entire population is more likely to be affected.

The AQI numbers refer to specific amounts of pollution in the air. They are based on the federal air quality standards for ozone, CO, NO_2, SO_2, PM_{10}, and $PM_{2.5}$. In most cases, the federal standard for these air pollutants corresponds to the number 100 on the index chart. Thus, if the concentration of any of these pollutants rises above its respective standard, the air quality can be unhealthy for the public. In determining the air quality forecast, local air districts, including

BAAQMD, use the anticipated concentration measurements for each of the major pollutants, convert them into index numbers, and determine the highest index for each zone in a district.

Readings below 100 on the AQI scale would not typically affect the health of the general public. Levels above 300 rarely occur in the United States. Index statistics over recent years indicate that air quality in the Bay Area is predominantly in the "Good" or Moderate" categories and is healthy on most days for most people.

Historical air district data indicate that the SFBAAB experienced air quality in the red level (unhealthy) on 13 days between the years 2013 and 2017. The October 2017 fires in Northern California resulted in the federal 24-hour $PM_{2.5}$ standard being exceeded on up to seven days just in the first part of the month of October 2017 in certain counties (BAAQMD, 2020). Even though the air district's data have not been validated yet, these levels of $PM_{2.5}$ in many counties have been the highest levels recorded in recent times. As a result, the index in several neighboring counties reached the "very unhealthy" designation, ranging from values of 201 to 300. During that period, the air district issued "Spare the Air" alerts and recommended that individuals stay inside with windows closed and refrain from significant outdoor activity. However, this was an extraordinary event and is a rare occurrence in the Bay Area.

As shown in **Table 4.2-2**, the basin had a total of 17 orange-level (unhealthy for sensitive groups) days in 2015, 13 days in 2016, 9 days in 2017, 8 days in 2018, and 10 days in 2019. The air basin experienced a total of 19 red-level (unhealthy) days, occurring in 2016 to 2018. In 2017 and 2018, the air basin experienced a total of 8 purple-level (very unhealthy) days. California wildfires contributed to the relatively high number of unhealthy days in 2017 and 2018[3].

TABLE 4.2-2
AIR QUALITY INDEX STATISTICS FOR THE SAN FRANCISCO BAY AREA AIR BASIN

Air Quality Index Statistics for San Francisco Bay Area Air Basin	Number of Days by Year				
	2015	2016	2017	2018	2019
Unhealthy for Sensitive Groups (Orange)	17	13	9	8	10
Unhealthy (Red)	0	2	9	8	0
Very Unhealthy (Purple)	0	0	3	5	0

SOURCE: Bay Area Air Quality Management District, 2020b

Toxic Air Contaminants and Local Health Risks and Hazards

In addition to criteria air pollutants, individual projects may emit *toxic air contaminants* (TACs). TACs collectively refer to a diverse group of air pollutants that may cause chronic (i.e., of long duration) and acute (i.e., severe but short-term) adverse effects on human health, including carcinogenic effects. Human health effects of TACs include birth defects, neurological damage, cancer, and death. There are hundreds of different types of TACs with varying degrees of

[3] Due to substantial complex wildfires in 2020 it is likely that, once compiled by BAAQMD, year 2020 AQI data will also indicate increased unhealthful AQI levels.

toxicity. Thus, individual TACs vary greatly in the health risk they present; at a given level of exposure, one TAC may pose a hazard that is many times greater than another.

Unlike criteria air pollutants, TACs are not subject to ambient air quality standards but are regulated by BAAQMD using a risk-based approach to determine which sources and which pollutants to control as well as the degree of control. A *health risk assessment* (HRA) is an analysis that estimates human health exposure to toxic substances, and when considered together with information regarding the toxic potency of the substances, a HRA provides quantitative estimates of health risks.[4]

Exposures to fine PM ($PM_{2.5}$) are strongly associated with mortality, respiratory diseases, and poor lung development in children, and other health effects, such as hospitalization for cardiopulmonary disease (SFDPH, 2008). Diesel particulate matter (DPM), a byproduct of diesel fuel combustion, is also of concern. CARB identified DPM as a TAC in 1998, primarily based on evidence demonstrating cancer effects in humans (CARB, 1998). The estimated cancer risk from exposure to diesel exhaust is much higher than the risk associated with any other TAC routinely measured in the region.

San Francisco Modeling of Toxic Air Pollutant Exposure Zones

In an effort to identify areas of San Francisco most adversely affected by sources of TACs and elevated concentrations of particulate matter, the City and County of San Francisco partnered with BAAQMD to inventory and assess air pollution exposure from vehicles, stationary sources, and area sources within San Francisco. Citywide dispersion modeling was conducted using AERMOD[5] to assess the emissions from the following primary sources: vehicles on local roadways, permitted stationary sources, port and maritime sources, and diesel emissions from Caltrain. Emissions of PM_{10} (DPM is assumed equivalent to PM_{10}), $PM_{2.5}$, and total organic gases[6] (TOGs) were modeled on a 20 by 20–meter receptor grid covering the entire city. The citywide modeling results represent a comprehensive assessment of existing cumulative exposures to air pollution throughout the city. The methodology and technical documentation for modeling citywide air pollution are available in a recently updated draft document entitled *San Francisco Citywide Health Risk Assessment: Technical Support Documentation* (SFDPH, 2020).

Modeling results were used to identify areas in the city with poor air quality, which are designated as the *Air Pollutant Exposure Zone* (APEZ), based on the following health-protective criteria: (1) cumulative $PM_{2.5}$ concentrations greater than 10 $\mu g/m^3$ and/or (2) excess cancer risk

4 In general, a health risk assessment is required if BAAQMD concludes that projected emissions of a specific air toxic compound from a proposed new or modified source suggest a potential public health risk. The applicant is then required to prepare a health risk assessment for the source in question. Such an assessment generally evaluates chronic, long-term effects, estimating the increased risk of cancer as a result of exposure to one or more TACs.

5 AERMOD is the USEPA's preferred or recommended steady state air dispersion plume model. For more information on AERMOD and to download the AERMOD Implementation Guide, *https://www.epa.gov/scram/air-quality-dispersion-modeling-preferred-and-recommended-models,* accessed February 12, 2019.

6 Total organic gases (TOGs) is a broad descriptor that is inclusive of organic TACs beyond those identified as reactive organic gases (ROG).

from the contribution of emissions from all modeled sources greater than 100 per one million persons exposed.

An additional health vulnerability layer was incorporated in the APEZ for those San Francisco ZIP codes in the worst quintile of Bay Area Health Vulnerability scores (ZIP codes 94102, 94103, 94105, 94124, and 94130). In these areas, the definition of the APEZ is adjusted to more stringent criteria: (1) excess cancer risk from the contribution of emissions from all modeled sources greater than 90 per one million persons exposed and/or (2) cumulative $PM_{2.5}$ concentrations greater than 9 $\mu g/m^3$.

Lastly, all parcels within 500 feet of a major freeway were also included in the APEZ, consistent with findings in CARB's Air Quality and Land Use Handbook: A Community Health Perspective, which suggests air pollutant levels decrease substantially at approximately 500 feet from a freeway (CARB, 2005).

The most recent citywide modeling results indicate that the Parnassus Heights campus site and its surrounding area are not located within an APEZ, or a health vulnerable zip code. The nearest APEZ to the project area is along Lincoln Way, west of 5th Avenue.

Fine Particulate Matter

In April 2011, USEPA published Policy Assessment for the Particulate Matter Review of the National Ambient Air Quality Standards (Particulate Matter Policy Assessment). In this document, USEPA staff concluded that the then-current federal annual $PM_{2.5}$ standard of 15 $\mu g/m^3$ should be revised to a level within the range of 13 to 11 $\mu g/m^3$, with evidence strongly supporting a standard within the range of 12 to 11 $\mu g/m^3$. The APEZs for San Francisco are based on the health protective $PM_{2.5}$ standard of 11 $\mu g/m^3$, as supported by the USEPA's Particulate Matter Policy Assessment, although lowered to 10 $\mu g/m^3$ to account for uncertainty in accurately predicting air pollutant concentrations using emissions modeling programs.

Excess Cancer Risk

The 100 per one million persons exposed (100 excess cancer risk) criterion discussed above in the "San Francisco Modeling of Air Pollution Exposure Zones" section is based on USEPA guidance for conducting air toxic analyses and making risk management decisions at the facility and community-scale level (BAAQMD, 2009). As described by BAAQMD, USEPA considers a cancer risk of 100 per one million or less to be within the "acceptable" range of cancer risk. Furthermore, in the 1989 preamble to the benzene National Emissions Standards for Hazardous Air Pollutants (NESHAP) rulemaking,[7] USEPA states that it "… strives to provide maximum feasible protection against risks to health from hazardous air pollutants by (1) protecting the greatest number of persons possible to an individual lifetime risk level no higher than approximately one in one million and (2) limiting to no higher than approximately one in ten thousand [100 in 1 million] the estimated risk that a person living near a plant would have if he or she were exposed to the maximum pollutant concentrations for 70 years." The 100 per million excess cancer cases is also consistent

[7] 54 *Federal Register* 38044, September 14, 1989.

with the ambient cancer risk in the most pristine portions of the Bay Area based on air district regional modeling (BAAQMD, 2009).

In addition to monitoring criteria pollutants, both BAAQMD and CARB operate TAC monitoring networks in the SFBAAB. These stations measure 10 to 15 TACs, depending on the specific station. The TACs selected for monitoring are those that traditionally have been found in the highest concentrations in ambient air and therefore tend to produce the most significant risk. The nearest air district ambient TAC monitoring station to the project area is the station at 10 Arkansas Street in San Francisco. The ambient concentrations of carcinogenic TACs measured at the Arkansas Street station, approximately 3 miles northeast of the campus site, are presented in **Table 4.2-3**. The estimated cancer risk from a lifetime exposure (70 years) to these substances is also reported in the table. When TAC measurements at this station are compared to ambient concentrations of various TACs for the Bay Area as a whole, the cancer risks associated with mean TAC concentrations in San Francisco are similar to those for the Bay Area as a whole. Therefore, the estimated average lifetime cancer risk resulting from exposure to TAC concentrations monitored at the San Francisco station do not appear to be any greater than for the Bay Area as a region.

TABLE 4.2-3
2019 ANNUAL AVERAGE AMBIENT CONCENTRATIONS OF CARCINOGENIC TOXIC AIR CONTAMINANTS MEASURED AT BAAQMD MONITORING STATION, 10 ARKANSAS STREET, SAN FRANCISCO

Substance	Concentration	Cancer Risk per Million[a]
Gaseous TACs (ppb)		
Acetaldehyde	0.38	6
Benzene	0.111	29
1,3-Butadiene	0.024	26
Carbon Tetrachloride	0.069	53
Formaldehyde	1.29	27
Perchloroethylene	0.006	0.7
Methylene Chloride	0.078	0.8
Chloroform	0.017	1
Trichloroethylene	0.010	0.3
Particulate TACs (ng/m^3)		
Chromium (Hexavalent)b	0.043	18
Total Risk for All TACs		**161.8**

NOTES:

TACs = toxic air contaminants; ppb = part per billion; ng/m^3 = nanograms per cubic meter.

[a] Cancer risks were estimated by applying published unit risk values to the measured concentrations.

SOURCE: CARB, Ambient Air Toxics Summary – 2019, http://www.arb.ca.gov/adam/toxics/sitesubstance.html, accessed June 14, 2021.

Roadway-Related Pollutants

Motor vehicles are responsible for a large share of air pollution, especially in California. Vehicle tailpipe emissions contain diverse forms of particles and gases, and vehicles also contribute to particulates by generating road dust and tire wear. Epidemiologic studies have demonstrated that

people living close to freeways or busy roadways have poorer health outcomes, including increased asthma symptoms and respiratory infections, and decreased pulmonary function and poor lung development in children. Air pollution monitoring conducted in conjunction with epidemiologic studies has confirmed that roadway-related health effects vary with modeled exposure to PM and NO_2. In traffic-related studies, the additional noncancer health risk attributable to roadway proximity was seen within 1,000 feet of the roadway and was strongest within 300 feet (CARB, 2005). As a result, CARB recommends that new sensitive land uses not be located within 500 feet of a freeway or urban roads carrying 100,000 vehicles per day. The campus site is not located within 500 feet of a freeway or a busy roadway.

Diesel Particulate Matter (DPM)

CARB identified DPM as a TAC in 1998, primarily based on evidence demonstrating cancer effects in humans. The exhaust from diesel engines includes hundreds of different gaseous and particulate components, many of which are toxic. Mobile sources such as trucks and buses are among the primary sources of diesel emissions, and concentrations of DPM are higher near heavily traveled highways. The board estimated that as of 2000, the average Bay Area cancer risk from exposure to DPM, based on a population-weighted average ambient DPM concentration, is approximately 480 in one million, which is much higher than the risk associated with any other toxic air pollutant routinely measured in the region. The statewide risk from DPM as determined by the board declined from 750 in one million in 1990 to 570 in one million in 1995; by 2012, the board estimated the average statewide cancer risk from DPM at 520 in one million (CARB, 2009; CARB, 2019).

In 2000, CARB approved a comprehensive Diesel Risk Reduction Plan to reduce diesel emissions from both new and existing diesel-fueled vehicles and engines. Subsequent board regulations apply to new trucks and diesel fuel. With new controls and fuel requirements, 60 trucks built in 2007 would have the same particulate exhaust emissions as one truck built in 1988. The regulation is anticipated to result in an 80 percent decrease in statewide diesel health risk in 2020 as compared with the diesel risk in 2000. Despite notable emission reductions, the board recommends that proximity to sources of DPM emissions be considered in the siting of new sensitive land uses. The board notes that these recommendations are advisory and should not be interpreted as defined “buffer zones,” and that local agencies must balance other considerations, including transportation needs, the benefits of urban infill, community economic development priorities, and other quality of life issues. With careful evaluation of exposure, health risks, and affirmative steps to reduce risk where necessary, CARB’s position is that infill development, mixed use, higher density, transit-oriented development, and other concepts that benefit regional air quality can be compatible with protecting the health of individuals at the neighborhood level (CARB, 2005).

Studies have demonstrated that DPM from diesel-fueled engines is a human carcinogen and that chronic (long-term) inhalation exposure to DPM poses a chronic health risk. Health effects from carcinogenic air toxics are usually described in terms of individual cancer risk. Individual cancer risk is the likelihood that a person exposed to air toxic concentrations over a 30-year period will contract cancer, based on the use of standard risk-assessment methodology. The maximally

exposed individual (MEI) represents the worst–case risk estimate, based on a theoretical person continuously exposed for a lifetime at the point of highest compound concentration in the air. This is a highly conservative assumption, since most people do not remain at home all day and on average residents change residences every 11 to 12 years. In addition, this methodology assumes that residents are experiencing outdoor concentrations for the entire exposure period.

Soil Contamination and Naturally Occurring Asbestos

San Francisco is among the identified counties where ultramafic bedrock materials are present. These bedrock materials contain naturally occurring asbestos particles or fibers, which could be disturbed during excavation activities. As discussed in Section 4.8, *Hazards and Hazardous Materials*, the campus site appears to be located east of any mapped ultramafic bedrock units for the City of San Francisco or where reported asbestos occurrences have been mapped. Please also see Impact HAZ-1 in Section 4.8, which includes mitigation to ensure that earthwork activities associated with construction of new development on the campus site under the NHPH would not expose workers or the public to naturally occurring asbestos, if present.

Sensitive Receptors

Air quality does not affect every individual in the population in the same way, and some groups are more sensitive to adverse health effects than others. Population subgroups sensitive to the health effects of air pollutants include: the elderly and the young; population subgroups with higher rates of respiratory disease, such as asthma and chronic obstructive pulmonary disease; and populations with other environmental or occupational health exposures (e.g., indoor air quality) that affect cardiovascular or respiratory diseases. BAAQMD defines sensitive receptors as children, adults, and seniors occupying or residing in residential dwellings, schools, day care centers, hospitals, and senior-care facilities. Workers are not considered sensitive receptors because all employers must follow regulations set forth by the Occupation Safety and Health Administration (OSHA) to ensure the health and well-being of their employees (BAAQMD, 2011b).

The proximity of sensitive receptors to motor vehicles is an air pollution concern, especially in San Francisco where building setbacks are limited and roadway volumes are higher than most other parts of the Bay Area. Vehicles also contribute to particulates by generating road dust and through tire wear.

On the Parnassus Heights campus site, existing sensitive receptors within 1,000 feet of the NHPH site, including the proposed New Hospital and related improvements, include UCSF campus housing on Third and Fifth Avenues, and Irving Street. The UCSF Marilyn Reed Lucia Child Development Center at 610 Parnassus Avenue is also located within 1,000 feet of the project site. Moffitt and Long Hospitals are also sensitive receptors that are adjacent to the proposed New Hospital.

Off-campus receptors (residences) are located approximately 180 feet to the east of the NHPH site. There are two public schools operated by the San Francisco Unified School District within one quarter mile of the NHPH site: Independence High School is located at 1350 7th Avenue,

approximately one quarter mile to the northwest; and Grattan Elementary School (which also contains Grattan Nursery and School-Age Children's Center) is located at 165 Grattan Avenue, approximately one quarter mile east. The private Haight Ashbury Community Nursery School is located at 1180 Stanyan Street, approximately 1,000 feet to the east.

Existing Stationary Sources of Air Pollution

The BAAQMD inventory of permitted stationary sources of emissions identifies one permitted operator of stationary emissions (UCSF) present within or near the 1,000-foot zone of influence of the NHPH site. UCSF operates 21 permitted air pollution sources on the campus site. These sources, listed in **Table 4.2-4**, are primarily stationary diesel engines for back-up power generators, combustion turbines, boilers, and duct burners.

TABLE 4.2-4
STATIONARY SOURCES AT THE PARNASSUS HEIGHTS CAMPUS SITE

Source #	Facility Type	Source #	Facility Type
2478	UCSF source #9: Gas turbine generator	2478	UCSF source #21: Diesel generator
2478	UCSF source #10: Duct burner for heat recovery	2478	UCSF source #26: Diesel generator
2478	UCSF source #11: Gas turbine generator	2478	UCSF source #27: Diesel generator
2478	UCSF source #12:Duct burner for heat recovery	2478	UCSF source #30: Diesel generator
2478	UCSF source #13: Auxiliary boiler	2478	UCSF source #32: Diesel generator
2478	UCSF source #14: Auxiliary boiler	2478	UCSF source #33: Diesel generator
2478	UCSF source #16: Diesel generator	2478	UCSF source #34: Diesel generator
2478	UCSF source #17: Diesel generator	2478	UCSF source #35: Diesel generator
2478	UCSF source #18: Diesel generator	2478	UCSF source #36: Diesel generator
2478	UCSF source #19: Diesel generator	2478	UCSF source #37: ETO Sterilizer
2478	UCSF source #20: Diesel generator		

SOURCE: BAAQMD, 2019b.

Major Roadways Contributing to Air Pollution

In the City of San Francisco, Parnassus Avenue is the only arterial street in the existing local roadway system within the 1,000-foot zone of influence of the NHPH site that has at least 10,000 vehicles in annual average daily traffic based on the City's SF CHAMP roadway model (SFCTA, 2015). This traffic contributes to localized concentrations of $PM_{2.5}$, DPM, and other contaminants emitted from motor vehicles near the street level. There are no freeways within 1,000 feet. The *San Francisco Citywide Health Risk Assessment: Technical Support Documentation*, which includes both stationary and roadway sources, indicates that roadways around the NHPH site are not substantial contributors to localized cancer risks or $PM_{2.5}$ concentrations (SFDPH, 2020).

4.2.2 Regulatory Framework

Federal

The 1970 Clean Air Act (last amended in 1990) requires that regional planning and air pollution control agencies prepare a regional air quality plan to outline the measures by which both stationary and mobile sources of pollutants will be controlled in order to achieve all standards by the deadlines specified in the act. These ambient air quality standards are intended to protect the public health and welfare, and they specify the concentration of pollutants (with an adequate margin of safety) to which the public can be exposed without adverse health effects. They are designed to protect those segments of the public most susceptible to respiratory distress, including asthmatics, the very young, the elderly, people weak from other illness or disease, or persons engaged in strenuous work or exercise. Healthy adults can tolerate occasional exposure to air pollution levels that are somewhat above ambient air quality standards before adverse health effects are observed.

Table 4.2-5 summarizes current State and federal ambient air quality standards and attainment status for the SFBAAB. In general, the SFBAAB experiences low concentrations of most pollutants when compared to federal standards, except for ozone and particulate matter (PM_{10} and $PM_{2.5}$), for which standards are exceeded periodically (see Table 4.2-1).

In June 2004, the SFBAAB was designated as a marginal nonattainment area with respect to the national 8-hour ozone standard.[8] The USEPA lowered the national 8-hour ozone standard from 0.80 to 0.75 parts ppm effective May 27, 2008. In October 2015, the USEPA designated the SFBAAB as a marginal nonattainment region for the 0.70 ppm ozone standard established in 2015. The SFBAAB is in attainment for other criteria pollutants, with the exception of the 24-hour standards for $PM_{2.5}$, for which the Bay Area is designated as "Unclassified." "Unclassified" is defined by the Clean Air Act as any area that cannot be classified, on the basis of available information, as meeting or not meeting the national primary or secondary ambient air quality standard for the pollutant.

On January 9, 2013, USEPA issued a final rule to determine that the SFBAAB attains the 24-hour $PM_{2.5}$ national standard. This USEPA rule suspends key State Implementation Plan (discussed below) requirements as long as monitoring data continues to show that the Bay Area attains the standard. Despite this USEPA action, the Bay Area will continue to be designated as "non-attainment" for the national 24-hour $PM_{2.5}$ standard until such time as the Air District submits a "re-designation request" and a "maintenance plan" to USEPA, and USEPA approves the proposed re-designation.

State

Although the federal Clean Air Act established national ambient air quality standards, individual states retained the option to adopt more stringent standards and to include other pollution sources. California had already established its own air quality standards when federal standards were established, and because of the unique meteorological problems in California, there is considerable

[8] "Marginal nonattainment area" means an area designated marginal nonattainment for the 1-hour national ambient air quality standard for ozone.

divergence between the State and national ambient air quality standards, as shown in Table 4.2-5. California ambient standards tend to be at least as protective as national ambient standards and are often more stringent.

TABLE 4.2-5
STATE AND FEDERAL AMBIENT AIR QUALITY STANDARDS AND ATTAINMENT STATUS FOR THE SAN FRANCISCO BAY AREA AIR BASIN

Pollutant	Averaging Time	State (SAAQS[a])		Federal (NAAQS[b])	
		Standard	Attainment Status	Standard	Attainment Status
Ozone	1-hour	0.09 ppm	**N**	NA	See Note c
	8-hour	0.070 ppm	**N**	0.070 ppm[d]	**N**/Marginal
Carbon Monoxide (CO)	1-hour	20 ppm	A	35 ppm	A
	8-hour	9 ppm	A	9 ppm	A
Nitrogen Dioxide (NO_2)	1-hour	0.18 ppm	A	0.100 ppm	U
	Annual	0.030 ppm	NA	0.053 ppm	A
Sulfur Dioxide (SO_2)	1-hour	0.25 ppm	A	0.075 ppm	A
	24-hour	0.04 ppm	A	0.14 ppm	A
	Annual	NA	NA	0.03 ppm	A
Particulate Matter (PM_{10})	24-hour	50 µg/m^3	**N**	150 µg/m^3	U
	Annual[e]	20 µg/m^3 [f]	**N**	NA	NA
Fine Particulate Matter ($PM_{2.5}$)	24-hour	NA	NA	35 µg/m^3	**N**
	Annual	12 µg/m^3	**N**	12 µg/m^3	U/A
Sulfates	24-hour	25 µg/m^3	A	NA	NA
Lead	30-day	1.5 µg/m^3	A	NA	NA
	Cal. Quarter	NA	NA	1.5 µg/m^3	A
	Rolling 3-month average	NA	NA	0.15	U
Hydrogen Sulfide	1-hour	0.03 ppm	U	NA	NA
Visibility-Reducing Particles	8-hour	See Note g	U	NA	NA

NOTES:

A = Attainment; **N** = Non-attainment; U = Unclassified; NA = Not Applicable, no applicable standard; ppm = parts per million; µg/m^3 = micrograms per cubic meter.

[a] SAAQS = State ambient air quality standards (California). SAAQS for ozone, CO (except Lake Tahoe), SO_2 (1-hour and 24-hour), NO_2, PM, and visibility-reducing particles are values that are not to be exceeded. All other State standards shown are values not to be equaled or exceeded.

[b] NAAQS = national ambient air quality standards. NAAQS, other than ozone and particulates, and those based on annual averages or annual arithmetic means, are not to be exceeded more than once a year. The 8-hour ozone standard is attained when the 3-year average of the fourth highest daily concentration is 0.08 ppm or less. The 24-hour PM_{10} standard is attained when the 3-year average of the 99th percentile of monitored concentrations is less than the standard. The 24-hour $PM_{2.5}$ standard is attained when the 3-year average of the 98th percentile is less than the standard.

[c] The U.S. Environmental Protection Agency (EPA) revoked the national 1-hour ozone standard on June 15, 2005.

[d] This Federal 8-hour ozone standard was approved by USEPA in October 2015 and became effective on December 28, 2015.

[e] State standard = annual geometric mean; national standard = annual arithmetic mean.

[f] In June 2002, CARB established new annual standards for $PM_{2.5}$ and PM_{10}.

[g] Statewide visibility-reducing particle standard (except Lake Tahoe Air Basin): Particles in sufficient amount to produce an extinction coefficient of 0.23 per kilometer when the relative humidity is less than 70 percent. This standard is intended to limit the frequency and severity of visibility impairment due to regional haze and is equivalent to a 10-mile nominal visual range.

SOURCES: Bay Area Air Quality Management District, Standards and Attainment Status, 2017, *http://www.baaqmd.gov/research-and-data/air-quality-standards-and-attainment-status*, accessed August 8, 2019.; USEPA National Ambient Air Quality Standards, 2016. Available online at https://www.epa.gov/criteria-air-pollutants/naaqs-table. Accessed August 8, 2019.

In 1988, California passed the California Clean Air Act (California Health and Safety Code Sections 39600 et seq.), which, like its federal counterpart, called for the designation of areas as attainment or nonattainment, but based on State ambient air quality standards rather than the federal standards. As indicated in Table 4.2-5, the SFBAAB is designated as "nonattainment" for State ozone (both 1-hour and 8-hour standards), PM_{10}, and $PM_{2.5}$ standards. The SFBAAB is designated as "attainment" for other pollutants.

Off-Road Emissions Regulation for Compression-Ignition Engines and Equipment

Engines designated as nonroad engines by USEPA are known as off-road engines in California State regulations implemented by CARB. Similar to the USEPA Nonroad Diesel Rule, the Off-Road Emissions Regulation for New Compression-Ignition Engines and Equipment applies to diesel engines such as those found in construction, general industrial, and terminal equipment. Initially adopted in 2000 and amended in 2004, the regulation establishes Tier emission standards, test procedures, and warranty and certification requirements. For some model years and engine sizes, the CARB Tier emission standards are more stringent than the USEPA standards.

CARB In-Use Off-Road Diesel Vehicle Regulation

In July 2007, CARB adopted the In-Use Off-Road Diesel Vehicle Regulation and amended it in December 2011. The regulation requires owners of off-road mobile equipment powered by diesel engines 25 horsepower (HP) or larger to meet the fleet average or best available control technology (BACT) requirements for NO_X and PM emissions by January 1 of each year. The regulation also establishes idling restrictions, limitations on buying and selling older off-road diesel vehicles (Tier 0), reporting requirements, and retrofit and replacement requirements. The requirements and compliance dates vary by fleet size, with performance requirements for large fleets beginning in 2014, medium fleets in 2017, and small fleets in 2019. Requirements regarding idling, disclosure, reporting, and labeling took effect in 2008 and 2009. The Diesel Off-road On-line Reporting System is an online tool designed to help fleet owners report their off-road diesel vehicle inventories and actions taken to reduce vehicle emissions to CARB, as required by the In-Use Off-Road Diesel Vehicle Regulation.

Regional and Local Regulations

Bay Area Air Quality Management District

BAAQMD is the regional agency with jurisdiction over the nine-county region located in the SFBAAB. The Association of Bay Area Governments (ABAG), Metropolitan Transportation Commission (MTC), county transportation agencies, cities and counties, and various non-governmental organizations also participate in the efforts to improve air quality through a variety of programs. These programs include the adoption of regulations and policies, as well as implementation of extensive education and public outreach programs. BAAQMD is responsible for attaining and/or maintaining air quality in the region within federal and State air quality standards. Specifically, BAAQMD has the responsibility to monitor ambient air pollutant levels

throughout the region and to develop and implement strategies to attain the applicable federal and State standards.

BAAQMD does not have authority to regulate emissions from motor vehicles. Specific rules and regulations adopted by BAAQMD limit the emissions that can be generated by various stationary sources, and identify specific pollution reduction measures that must be implemented in association with various activities. These rules regulate not only emissions of the six criteria air pollutants, but also TAC emissions sources. Stationary sources are regulated through BAAQMD's permitting process and standards of operation. Through this permitting process, including an annual permit review, BAAQMD monitors the generation of stationary emissions and uses this information in developing its air quality plans. Any sources of stationary emissions constructed as part of the project would be subject to the BAAQMD Rules and Regulations. Both federal and State ozone plans rely heavily upon stationary source control measures set forth in BAAQMD's Rules and Regulations.

Per its Policy and Procedure Manual, BAAQMD requires implementation of Best Available Control Technology for Toxics and would deny an *Authority to Construct* or a *Permit to Operate* for any new or modified source of TACs that exceeds a cancer risk of 10 in one million or a chronic or acute hazard index of 1.0. The permitting process under BAAQMD Regulation 2 Rule 5 requires a Health Risk Screening Analysis, the results of which are posted on the District's website. These permitting requirements are developed by BAAQMD to ensure that the health risks of stationary sources are below applicable standards

BAAQMD has also identified a series of Best Management Practices for the control of fugitive dust generated during construction activities. These measures, which focus on reducing dust generated by excavation, material movement and movement of off-road equipment on unpaved surfaces are considered sufficient by BAAQMD to reduce dust-related impacts to a less than significant level (BAAQMD, 2017a).

Bay Area Air Quality Planning Relative to State and Federal Standards

For State air quality planning purposes, the SFBAAB is classified as a serious non-attainment area for the 1-hour ozone standard. The "serious" classification triggers various plan submittal requirements and transportation performance standards. One such requirement is that BAAQMD update the Clean Air Plan every three years to reflect progress in meeting the air quality standards and incorporate new information regarding the feasibility of control measures and new emission inventory data (Sections 40924 and 40925 of the California Health and Safety Code). The Bay Area's record of progress in implementing previous measures must also be reviewed. The plans for the air basin are prepared with the cooperation of the MTC and ABAG.

In April 2017, the air district adopted the *2017 Clean Air Plan* whose primary goals are to protect public health and to protect the climate (BAAQMD, 2017b). The plan includes a wide range of proposed control measures to reduce combustion-related activities, decrease fossil fuel combustion, improve energy efficiency, and decrease emissions of potent GHGs. The *2017 Clean Air Plan* updates the *Bay Area 2010 Clean Air Plan* and complies with State air quality planning requirements as codified in the California Health and Safety Code (although the 2017 plan was

delayed beyond the 3-year update requirement of the code). The SFBAAB is designated non-attainment for both the 1- and 8-hour State ozone standards. In addition, emissions of ozone precursors in the air basin contribute to air quality problems in neighboring air basins. Under these circumstances, State law requires the Clean Air Plan to include all feasible measures to reduce emissions of ozone precursors and to reduce the transport of ozone precursors to neighboring air basins.

The *2017 Clean Air Plan* contains 85 measures to address reduction of several pollutants: ozone precursors, particulate matter, air toxics, and GHGs. Other measures focus on a single type of pollutant, potent GHGs such as methane and black carbon that consists of harmful fine particles that affect public health. These control strategies are grouped into the following categories:

- Stationary Source Measures;
- Transportation Control Measures;
- Energy Control Measures;
- Building Control Measures;
- Agricultural Control Measures;
- Natural and Working Lands Control Measures;
- Waste Management Control Measures;
- Water Control Measures; and
- Super GHG Control Measures.

Under the California Clean Air Act, BAAQMD is required to develop an air quality attainment plan for criteria pollutants that are designated as non-attainment within the air basin. Several project components may be subject to BAAQMD rules and regulations governing criteria pollutants, TACs, and odorous compounds, even though permits may not be required. Stationary sources, such as generators, are required to have permits from BAAQMD before constructing, changing, or operating the source. If the project is subject to BAAQMD permit requirements, the sources would need to comply with BAAQMD Regulation 2 and proceed through the two-stage Authority to Construct and Permit to Operate process.

UCSF

The UCSF 2014 LRDP identified campus-wide objectives and objectives specific to the Parnassus Heights campus site. The following UCSF 2014 LRDP campus-wide objective relates to air quality:

Campus-Wide Objectives

1. **Respond to City and Community Context**

   F. Consider neighborhood and city-wide impacts related to UCSF's physical growth.

The UCSF 2014 LRDP also included *Community Planning Principles*, which were produced in collaboration with the UCSF Community Advisory Group:

Community Planning Principles

Environmental Planning and Safety

EP3. Meet or exceed city, state, and federal standards with respect to health and safety, noise and construction-related environmental impacts.

City of San Francisco

Pursuant to the University of California's constitutional autonomy, development and uses on property owned or leased by the University that are in furtherance of the University's educational purposes are not subject to local land use regulation, including the City and County's General Plan. However, UCSF reviews local general plan policies as planning guidelines and has included the objectives of the Air Quality Element in this Draft EIR for informational purposes.

San Francisco General Plan Air Quality Element

The *San Francisco General Plan* (General Plan) includes the 1997 Air Quality Element. The objectives specified by the City include the following:

***Objective 1*:** Adhere to state and federal air quality standards and regional programs.

***Objective 2*:** Reduce mobile sources of air pollution through implementation of the Transportation Element of the General Plan.

***Objective 3*:** Decrease the air quality impacts of development by coordination of land use and transportation decisions.

***Objective 4*:** Minimize particulate matter emissions from road and construction sites.

***Objective 5*:** Link the positive effects of energy conservation and waste management to emission reductions.

4.2.3 Impacts and Mitigation Measures

Significance Criteria

Would implementation of the NHPH:

a) Conflict with or obstruct implementation of the applicable air quality plan?

b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?

c) Expose sensitive receptors to substantial pollutant concentrations?

d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

e) Exceed the LRDP EIR standard of significance by exposing receptors to toxic air contaminant emissions that (1) result in a cancer risk greater than 10 cancer cases per 1 million people exposed in a lifetime; or (2) for acute or chronic effects, result in concentrations of toxic air contaminant emissions with a Hazard Index of 1.0 or greater.

With respect to criterion (a), the analysis below in Impact AIR-4 applies qualitative BAAQMD guidance thresholds that lead agencies should consider three questions in assessing consistency with the 2017 CAP: (1) Would the project support the primary goals of the Clean Air Plan? (2) Does the project include applicable control measures from the Clean Air Plan? and (3) Does the project disrupt or hinder implementation of control measures identified in the Clean Air Plan?

With respect to criterion (b), the analysis below applies BAAQMD significance criteria identified in Table 4.2-6 for assessment of construction-related impacts of criteria air pollutants emissions in Impact AIR-1 and operational criteria air pollutant emissions in Impact AIR-2.

With respect to criteria (c) and (e) above, the analysis in Impact AIR-3 and Impact AIR-4 apply BAAQMD significance criteria for health risks and hazards.

Criteria Not Analyzed

As stated in the Initial Study, there would no impact related to criterion (d) (other emissions such as odors) for the reasons described below:

- ***Odors.*** The proposed NHPH would not include development of land uses identified by BAAQMD as typically associated with odors, such as wastewater treatment plants, landfills, composting facilities, refineries, or chemical plants. As the proposed NHPH would not result in development that would be a potential source of odors.

Approach to Analysis

Air quality analysis conducted for this impact assessment employs the emission factors, models and tools distributed by a variety of agencies including CARB, the California Air Pollution Officers Association (CAPCOA), the California Office of Environmental Health Hazard Assessment (OEHHA) and USEPA. Additionally, the analysis follows methodologies identified in the BAAQMD *CEQA Air Quality Guidelines* (May 2017).

BAAQMD has developed separate guidelines for assessing the air quality impacts for projects and plans under CEQA. The air quality impacts of the proposed NHPH are analyzed at a project level. The methodology below describes the approach employed for the proposed NHPH.

In general, implementation of the proposed NHPH would result in two types of air quality impacts. First, the NHPH would result in air pollution through construction activity. Second, the NHPH would generate operational air pollutants, due to increased vehicle travel and new stationary sources (e.g., laboratory fume hoods, cooling tower, and emergency generators). This section describes the methodology used to evaluate project impacts related to consistency with the Clean Air Plan, emissions of criteria pollutants, and local health risks and hazards. Each of these types of direct impacts are in turn separated into impacts from criteria air pollutant emissions, which are generally regional in nature, and impacts associated with exposure to TACs and $PM_{2.5}$, which is a localized health risk.

Thresholds for Evaluating Criteria Air Pollutant Impacts

As described above under Regulatory Framework, the SFBAAB experiences low concentrations of most pollutants when compared to federal or State standards and is designated as either in attainment or unclassified for most criteria pollutants, with the exception of ozone, $PM_{2.5}$, and PM_{10}, for which these pollutants are designated as non-attainment for either the State or federal standards.

By definition, regional air pollution is largely a cumulative impact in that no single project is sufficient in size to, by itself, result in non-attainment of air quality standards. Instead, a project's individual emissions are considered to contribute to the existing, cumulative air quality conditions. If a project's contribution to cumulative air quality conditions is considerable, then the project's impact on air quality would be considered significant (BAAQMD, 2017a).

Table 4.2-6 presents criteria air pollutant significance thresholds provided by BAAQMD for project-level analysis, followed by a discussion of each threshold. Projects that would result in criteria pollutant emissions below these significance thresholds would not result in a cumulatively considerable net increase in criteria air pollutants within the SFBAAB.

TABLE 4.2-6
CRITERIA AIR POLLUTANT THRESHOLDS

Pollutant	Construction Thresholds Average Daily Emissions (pounds per day)	Operational Thresholds	
		Average Daily Emissions (pounds per day)	Maximum Annual Emissions (tons per year)
ROG	54	54	10
NOx	54	54	10
PM_{10}	82 (exhaust)	82	15
$PM_{2.5}$	54 (exhaust)	54	10
Fugitive Dust[a]	Construction Dust Ordinance or other Best Management Practices	Not applicable	

NOTE:
[a] Fugitive dust is a specific subset of non-exhaust generated particulate emissions that are generated by material process activity such as rock crushing or result from open transport, storage, and transfer of raw, intermediate, and waste aggregate materials, and nonindustrial sources such as unpaved roads and parking lots, paved streets and highways, heavy construction activities, and agricultural tilling.

SOURCE: BAAQMD, CEQA Air Quality Guidelines. June 2017.

The potential for a project to result in cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or State ambient air quality standard is based on the State and federal Clean Air Acts emissions limits for stationary sources. To ensure that new stationary sources do not cause or contribute to a violation of an air quality standard, BAAQMD Regulation 2, Rule 2 requires that any new source that emits criteria air pollutants above a specified emissions limit must offset those emissions. For ozone precursors ROG and NO_X, the offset emissions level is an annual average of 10 tons per year [or 54 pounds (lbs.) per day] (BAAQMD, 2017a). These levels represent emissions below which new sources are not anticipated to contribute to an air quality violation or result in a considerable net increase in criteria air pollutants that could result in increased health effects.

The federal New Source Review (NSR) program was created under the federal Clean Air Act to ensure that stationary sources of air pollution are constructed in a manner that is consistent with attainment of federal health-based ambient air quality standards. For PM_{10} and $PM_{2.5}$, the emissions limit under NSR is 15 tons per year (82 lbs. per day) and 10 tons per year (54 lbs. per day), respectively. These emissions limits represent levels at which a source is not expected to have a significant impact on air quality (BAAQMD, 2017a).

Although the regulations specified above apply to new or modified stationary sources, land use development projects generate ROG, NO_X, PM_{10}, and $PM_{2.5}$ emissions as a result of increases in vehicle trips, energy use, architectural coating, and construction activities. Therefore, the identified thresholds can be applied to the construction and operational phases of land use projects. Those projects that would result in emissions below these thresholds would not be considered to contribute to an existing or projected air quality violation or result in a considerable net increase in ozone precursors or particulate matter. Due to the temporary nature of construction activities, only the average daily thresholds are applicable to construction phase emissions.

Fugitive dust emissions are typically generated during construction phases. Studies have shown that the application of best management practices (BMPs) at construction sites substantially control fugitive dust (WRAP, 2006) and individual measures have been shown to reduce fugitive dust by anywhere from 30 percent to 90 percent (BAAQMD, 2009). BAAQMD has identified a number of BMPs to control fugitive dust emissions from construction activities (BAAQMD, 2017a). This analysis assumes that UCSF would implement all BAAQMD BMPs for individual construction projects, which is the basis for determining the significance of air quality impacts due to fugitive dust emissions.

Approach to Estimating Construction-Phase Criteria Pollutant Emissions

Construction emissions from the demolition and construction activities associated with the proposed NHPH were estimated using the CalEEMod (version 2020.4.0). For each year of construction (2023 through 2032), the highest average daily emissions were calculated and compared to the BAAQMD thresholds.

Approach to Estimating Operational Criteria Pollutant Emissions

Operational emissions for the NHPH were estimated using the CalEEMod (version 2020.4.0). The model inputs include project-specific net new vehicle trips as estimated in Section 4.15, *Transportation*.

Approach to Analyzing Other Criteria Pollutant Impacts

Regional concentrations of CO in the Bay Area have not exceeded the State standards in the past 13 years and SO_2 concentrations have never exceeded the standards. The primary source of CO emissions from development projects is vehicle traffic. Construction-related SO_2 emissions represent a negligible portion of the total basin-wide emissions and construction-related CO emissions represent less than 5 percent of the Bay Area total basin-wide CO emissions. As discussed previously, the Bay Area is in attainment for both CO and SO_2. Furthermore, BAAQMD has demonstrated, based on modeling, that in order to exceed the California ambient air quality standard of 9.0 ppm (8-hour

average) or 20.0 ppm (1-hour average) for CO, project traffic in addition to existing traffic would need to exceed 44,000 vehicles per hour at affected intersections (or 24,000 vehicles per hour where vertical and/or horizontal mixing is limited). The transportation analysis indicates that the intersection in the project area with the greatest volumes would be Stanyan Street and John F Kennedy (JFK) Drive with hourly volumes of 5,722 in year 2050 with the project, which is less than 24,000. Therefore, given the Bay Area's attainment status and the limited CO and SO_2 emissions that could result from the project, the project would not result in a cumulatively considerable net increase in CO or SO_2, and quantitative analysis of these pollutants is not required.

Thresholds for Evaluating TAC Impacts

In addition to criteria air pollutants, individual projects may emit TACs during construction and operation. Consequently, a HRA was conducted to provide quantitative estimates of health risks from exposures to TACs.

CEQA provides the lead agency with discretion in selecting significance thresholds for the purposes of assessing impacts. For the analysis of health risk and localized impacts, UCSF uses quantitative significance thresholds adopted by BAAQMD. These thresholds are based on substantial evidence identified in Appendix D of the 2017 BAAQMD CEQA Guidelines and its 2009 Justification Report. These thresholds were applied for the analysis of health risk and localized impacts in the Final EIR for the *2014 UCSF Long Range Development Plan* as well as in the Final EIR for the UCSF Comprehensive Parnassus Heights Plan and are also applied in this document. Specifically, if a proposed project would result in increased cancer risks exceeding 10 in one million, or a hazard index exceeding 1.0, or a localized $PM_{2.5}$ concentration exceeding 0.3 $\mu g/m^3$ then it would be considered to result in a significant impact with regard to exposure of sensitive receptors to substantial pollutant concentrations. The 0.3 $\mu g/m^3$ $PM_{2.5}$ concentration and the excess cancer risk of 10.0 per million persons exposed are the levels below which BAAQMD considers new sources not to make a considerable contribution to cumulative health risks (BAAQMD, 2017a).

As described by BAAQMD, USEPA considers a cancer risk of 100 per one million or less to be within the "acceptable" range of cancer risk. A cumulative cancer risk of 100 in one million is also used by the City of San Francisco for projects within its jurisdiction to determine the location of APEZ's. Therefore, a cumulatively considerable increase in cancer risk from all sources would occur if the total of all risks exceeds 100 in one million.

Approach to Estimating TAC Health Risk Impacts

A three-step process was used to calculated the human health risk associated with the construction and operations of the NHPH. The first step involved calculating TAC emissions from all new sources. Emissions from construction sources associated with the NHPH were calculated using CARB's CalEEMod software program to estimate average annual diesel exhaust emissions (as reported as exhaust of PM_{10}) during construction. Idling emissions associated with heavy-duty trucks (haul trucks, concrete trucks, material delivery trucks, etc.) were estimated based on the anticipated number of truck trips and idling emission factors for heavy-duty vehicles from EMFAC2021 for on-road emissions. These emissions were modeled outside of CalEEMod because the model does not accurately account for the anticipated idling activity at the campus site, which is needed for the HRA.

Operational emissions associated with the proposed emergency diesel generators associated with the project were calculated using Tier 4 engine emission factors to estimate the annual average DPM (as reported as exhaust PM_{10}) based on an anticipated permit limit of 50 hours per year of testing for engine reliability (BAAQMD, 2018). Building fume hood TAC emissions were calculated using methodologies documented in a memorandum to UCSF dated December 3, 2018 that was commissioned for the approach to analysis in the UCSF Mission Bay HRA (Atmospheric Dynamics, Inc., 2018). Increases in Central Utility Plant (CUP) emissions were based on UCSF's BAAQMD emissions report from their most recent reporting cycle (BAAQMD, 2019b) and supplemented with emission calculation methodologies utilized for UCSF Mission Bay HRA (Atmospheric Dynamics, Inc., 2019). Emissions at the loading docks from delivery truck idling, including vehicles with truck refrigeration units (TRUs), were estimated based on the anticipated number of truck trips and idling emission factors from EMFAC2021 for on-road emissions and emission factors from OFFROAD2017 for TRUs. Particulate emissions from the proposed New Hospital cooling towers were estimated utilizing BAAQMD Permit Handbook and source specific data received from UCSF (BAAQMD, 2018). Detailed calculations, including all assumptions and discussion of approach to analysis, can be found in **Appendix AIR**.

The second step involved using the AERMOD (version 21112) dispersion model to convert emissions to maximum annual TAC concentrations for the cancer risk, chronic risk and $PM_{2.5}$ exposure, and also maximum 1-hour TAC concentrations for the acute risk analysis. Modeled sensitive receptor locations include residential areas, day care facilities, and schools (for children under 16 years of age). A 20-meter receptor grid co-located with the Citywide-HRA grid was modeled using a receptor height of 1.8 meters (breathing height). Please refer to Appendix AIR for further detail on dispersion modeling methodology.

In accordance with OEHHA *Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments,* the last step was accomplished by applying the highest estimated concentrations of TAC at the receptors analyzed to the established cancer potency factors and acceptable reference concentrations for non-cancer health effects. Increased cancer risks were calculated using the modeled TAC concentrations and OEHHA-recommended methodologies for both a child exposure (starting at 3rd trimester) as well as daycare and school exposure. The cancer risk calculations were based on applying the OEHHA-recommended age-sensitivity factors and breathing rates, as well as fraction of time at home and an exposure duration of 30 years. Age-sensitivity factors reflect the greater sensitivity of infants and small children to cancer causing air pollutants. Because health risk is a localized impact, two exposure scenarios were considered because the MEI for the construction HRA varied from the MEI for the operational HRA. The first scenario evaluated the construction impacts, and the second scenario evaluated the operational impacts for 30 years of exposure. The full HRA calculations are in Appendix AIR.

Non-CEQA Impacts of the Environment on the Project

In the *California Building Industry Association v. Bay Area Air Quality Management District* case decided in 2015,[9] the California Supreme Court held that CEQA does not generally require

[9] *California Building Industry Association v. Bay Area Air Quality Management District,* 62 Cal.4th 369. Opinion Filed December 17, 2015.

lead agencies to consider how existing environmental conditions might impact a project's users or residents, except where the proposed project would exacerbate an existing environmental condition. Accordingly, the identified significance criteria related to exposure of the project's sensitive receptors to substantial pollutant concentrations are valid only to the extent that the proposed project would in some way exacerbate air quality conditions.

Future New Hospital patients would represent new sensitive receptors that would be located on the project site and would potentially be exposed to TACs. However, the proposed New Hospital would be constructed with high-efficiency particulate air (HEPA) filtration system (CMC, 2016). HEPA filtration systems are extremely effective at capturing and removing airborne particles, microorganisms and other contaminants from a facility's indoor air. The nearest sources of TACs to the New Hospital are the campus's Central Utility Plan and emergency backup generator. Patients inside of the New Hospital will be protected from TAC emissions with the hospital's air filtration system. Therefore, the potential TAC exposure to sensitive receptors in the New Hospital would be less than significant and are not further considered below.

Approach to Analysis of Cumulative Impacts

The contribution of a project's individual air emissions to regional air quality impacts is by its nature, a cumulative effect. Emissions from past, present and future projects in the vicinity also have or will contribute to adverse regional air quality impacts on a cumulative basis. No single project by itself would be sufficient in size to result in nonattainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulative air quality conditions (BAAQMD, 2009). As described above, the project-level thresholds for criteria air pollutants are based on levels at which new sources are not anticipated to contribute to an air quality violation, cause a significant human health risk, or result in a considerable net increase in criteria air pollutants. Therefore, if a project's emissions are below the project-level thresholds, the project would not be considered to result in a considerable contribution to cumulative regional air quality impacts.

As discussed above, cumulative health risks are analyzed in accordance with BAAQMD's threshold and guidance. As described above, BAAQMD considers a cancer risk of 100 per one million or less to be within the "acceptable" range of cancer risk.

Approach to Analysis of Consistency with Air Quality Plan

The applicable air quality plan is the BAAQMD's *2017 Clean Air Plan*, which identifies measures to reduce emissions and ambient concentrations of air pollutants; safeguard public health by reducing exposure to air pollutants that pose the greatest health risk, with an emphasis on protecting the communities most heavily affected by air pollution; and reduce GHG emissions. Consistency with the Clean Air Plan can be determined if the project supports the goals of the plan, includes applicable control measures from the plan and would not disrupt or hinder implementation of any plan control measures. Consistency with the Clean Air Plan is the basis for determining whether the proposed project would conflict with or obstruct implementation of an applicable air quality plan.

BAAQMD guidance states that lead agencies should consider three questions in assessing consistency with the *2017 Clean Air Plan*: (1) Would the project support the primary goals of the Clean Air Plan? (2) Does the project include applicable control measures from the Clean Air Plan? and (3) Does the project disrupt or hinder implementation of control measures identified in the Clean Air Plan?

To meet the primary goals, the *2017 Clean Air Plan* recommends specific control measures and actions. The *2017 Clean Air Plan* includes 85 control measures aimed at reducing air pollution in the Air Basin. A tabular comparison of applicable control measures in the *2017 Clean Air Plan* and existing implementation mechanisms or elements of the NHPH was completed to determine whether the proposed NHPH would meet the primary goals of the *2017 Clean Air Plan* and whether construction and operation of the NHPH would include all applicable control measures.

Impact Analysis

Due to the combined effects of the construction of the proposed New Hospital and related improvements, the NHPH project components are considered together in the construction impact analysis presented below. Similarly, where applicable, the operation of proposed New Hospital and related improvements are considered together in the operational impact analysis presented herein.

Impact AIR-1: Construction activities associated with the NHPH would result in a cumulatively considerable net increase in emissions of a criteria pollutant for which the project region is non-attainment under an applicable federal or State ambient air quality standard. (*Less than Significant with Mitigation*)

NHPH

As discussed above, the SFBAAB is a non-attainment area for ozone, PM_{10} and $PM_{2.5}$under federal and State air quality standards. The analysis below focuses on the potential for demolition and construction activities for the NHPH to result in a cumulatively considerable net increase in construction-phase emissions of ROG and NOx (ozone precursors) as well as PM_{10} and $PM_{2.5}$. Project-related emissions of these pollutants would be considered cumulatively considerable if the estimated daily emissions from construction activities would exceed emission thresholds set forth by BAAQMD.

Construction of the proposed NHPH would generate construction emissions from a variety of sources, including off-road construction equipment and on-road worker, vendor, and hauling vehicles.

As discussed in Chapter 3, *Project Description*, the proposed New Hospital would be approximately 900,000 gross square feet (gsf), and consist of 15 stories plus rooftop mechanical equipment and a full basement. The height of the building above ground level would be approximately 269 feet to the roof level, and approximately 294 feet to top of rooftop perimeter screening. The New Hospital building would consist of a 5 story podium, above which a 10-story tower would rise.

The NHPH would also include other components including the renovation of Moffitt and Long Hospitals, the widening of Medical Center Way, the diesel fuel tanks and medical gas tanks replacement, proposed vegetation management and slope stabilization improvements, and Parnassus Avenue pedestrian bridge and tunnel. These additional improvements would also generate incremental construction-related emissions. Any improvements that would be constructed outside the campus site boundary, such as the proposed Parnassus Avenue bridge and tunnel, may involve the cooperation of the City of San Francisco and, as public works projects, would be subject to the City of San Francisco's Clean Construction Ordinance.

Emissions associated with construction-related activities for the NHPH were calculated using CalEEMod. Default modeling inputs were adjusted to assume construction phasing lengths and off-road equipment inventory, and usage percentages provided by UCSF. UCSF also provided an estimate of the number of construction workers and haul truck trips associated with excavation and concrete deliveries. CalEEMod default assumptions were assumed for vendor trips other than concrete deliveries. All model inputs and outputs are presented in Appendix AIR.

Table 4.2-7 presents the estimated average annual daily unmitigated NHPH construction emissions and compares them to significance thresholds developed by BAAQMD for criteria pollutants of concern and their precursors. Average daily emissions are averaged over all the construction days for each year of construction. As can be seen from Table 4.2-7, the NHPH construction-related emissions would be less than the significance thresholds for all years of analysis. Daily construction emissions of ROG, NOx, and $PM_{2.5}$ would be less than the 54 pound per day threshold, and emissions of PM_{10} would be less than the 82 pound per day threshold, in all years of construction.

TABLE 4.2-7
ESTIMATED NHPH DAILY CONSTRUCTION EMISSIONS WITHOUT MITIGATION

Year	ROG	NO_X	PM_{10}	$PM_{2.5}$
2022	1.0	5.4	0.2	0.2
2023	1.3	5.7	0.2	0.2
2024	1.7	17.6	0.4	0.3
2025	1.0	9.8	0.2	0.2
2026	6.4	26.2	0.4	0.3
2027	10.2	19.8	0.3	0.3
2028	6.9	8.5	0.1	0.1
2029	0.2	0.7	<0.1	<0.1
2030	0.5	14.0	0.1	0.1
2031	0.5	13.7	0.1	0.1
2032	0.5	13.6	0.1	0.1
Significance Threshold	54	54	82	54
Significant (Yes or No)?	No	No	No	No

NOTES:

[a] Demolition of the LPPI to make room for the New Hospital was previously considered in the 2014 LRDP FEIR and is not part of the proposed NHPH.

SOURCE: ESA, 2021 (see Appendix AIR)

Additionally, BAAQMD's approach to analysis of construction-related particulate emissions impacts (other than exhaust PM) is to emphasize implementation of effective and comprehensive dust control measures rather than detailed quantification of emissions. BAAQMD considers construction-related fugitive dust impacts of projects to be less than significant if a suite of recommended dust-control measures is implemented. Therefore, to mitigate the potential for significant construction-related fugitive dust impacts, BAAQMD-identified BMPs for control of fugitive dust, listed below as **NHPH Mitigation Measure AIR-1**, would be implemented, which would reduce construction-related fugitive dust impacts to less than significant levels.

NHPH Mitigation Measure AIR-1: Best Management Practices for Controlling Particulate Emissions during Construction

The following BAAQMD Best Management Practices for particulate emissions control will be required for all construction activities related to the NHPH (BAAQMD, 2017a). These measures will reduce particulate emissions primarily during soil movement, grading and demolition activities but also during vehicle and equipment movement on unpaved project sites.

- All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.
- All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
- All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
- All vehicle speeds on unpaved roads shall be limited to 15 mph.
- All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.
- Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, § 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.
- All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.
- The construction contractor shall post a publicly visible sign on the project site(s) with the telephone number and person to contact at UCSF regarding dust complaints. This person shall respond and take corrective action within 48 hours. BAAQMD's telephone number shall also be visible to ensure compliance with applicable regulations.

Significance after Mitigation: Less than Significant. Implementation of NHPH Mitigation Measure AIR-1 would ensure that dust control measures implemented during

construction of the NHPH would be consistent with the guidance of BAAQMD to reduce fugitive dust-related impacts to a level that would be less than significant with mitigation.

Impact AIR-2: Operation of the NHPH would not result in a cumulatively considerable net increase in emissions of a criteria pollutant for which the project region is non-attainment under an applicable federal or State ambient air quality standard. (*Less than Significant*)

NHPH

As discussed above, the SFBAAB is a non-attainment area for ozone, PM_{10} and $PM_{2.5}$ under federal and/or State air quality standards. The analysis below focuses on the potential for operational activities of the NHPH to result in a cumulatively considerable net increase in operational emissions of ROG and NOx (ozone precursors) as well as PM_{10} and $PM_{2.5}$. Project-related emissions of these pollutants would be considered cumulatively considerable if the estimated daily emissions from the project's operational activities would exceed emission thresholds set forth by BAAQMD.

Operation of the proposed NHPH would result in an increase in criteria air pollutant and precursor emissions, including ROG, NO_X, PM_{10} and $PM_{2.5}$ from a variety of emissions sources, including onsite area sources (e.g., increased natural gas combustion at the CUP for space and water heating in the New Hospital, landscape maintenance, use of consumer products such as cleaning products, etc.) and mobile on-road sources. Operational emissions of criteria pollutants from the NHPH, for purposes of this analysis, were estimated using the CalEEMod version 2020.4.0 emissions inventory model.

Increased vehicle emissions from additional hospital visitors and staff, would be one of the major sources of operational emissions. The net increase in VMT that would occur with operation of the NHPH that was used in this analysis to estimate vehicle-related emissions was derived from the transportation analysis in Section 4.15, *Transportation*. Project operations are projected to generate approximately 53,600 additional daily VMT. In addition to exhaust emissions, vehicles would also generate PM_{10} and $PM_{2.5}$ emissions from entrained road dust and tire and brake wear.

NHPH emissions from other sources would include natural gas combustion from increased CUP operations, maintenance operation of new backup generators, operation of landscape maintenance equipment, and maintenance application of paint and other architectural coatings.

The energy and area source emissions from the operation of the NHPH were estimated using the CalEEMod model. Increased emissions associated with increased operation of the CUP were calculated based on the increased natural gas demand for the CUP predicted by UCSF.

Table 4.2-8 presents estimated operational criteria pollutant and precursor emissions from the proposed NHPH. As shown in Table 4.2-8, emissions of ROG, NO_X, PM_{10} and $PM_{2.5}$ would all be less than the BAAQMD thresholds of significance. As a result, the criteria pollutant impact associated with operation of the NHPH would be less than significant with respect to net

increases of criteria pollutants and precursors for which the air basin is a non-attainment area. The impact would be less than significant.

Mitigation: None required.

TABLE 4.2-8
OPERATIONAL CRITERIA POLLUTANT EMISSIONS OF THE NHPH (2030)

Air Pollutant	Estimated Emissions (pounds per day)			
	ROG	NO_X	PM_{10}	$PM_{2.5}$
Area Sources[a]	21.8	<0.01	<0.01	<0.01
Mobile Source Emissions[a]	18.3	16.8	39.8	10.8
Natural gas combustion (CUP)[a]	1.9	3.0	5.3	4.9
Emergency Generators	0.4	1.4	0.1	0.1
Total	**42.4**	**21.2**	**45.1**	**15.8**
Significance Threshold	54	54	82	54
Significant Impact?	No	No	No	No

NOTES:
[a] Mobile sources are motor vehicles and trucks. Area sources include landscape maintenance (equipment used for these activities such as gasoline-powered lawnmowers and blowers), maintenance application of paints and other interior and exterior surface coatings, and increased use of consumer products that result in emissions of ROG. Natural gas combustion is for the CUP.

SOURCE: ESA, 2021 (see Appendix AIR).

Impact AIR-3: Construction activities for the NHPH could expose sensitive receptors to substantial pollutant concentrations and exceed the LRDP EIR standard of significance by exposing receptors to toxic air contaminant emissions that (1) result in a cancer risk greater than 10 cancer cases per 1 million people; or (2) for acute or chronic effects, result in concentrations of toxic air contaminant emissions with a Hazard Index of 1.0 or greater. (*Less than Significant with Mitigation*)

NHPH

Increased Cancer Risk from NHPH Construction

For purposes of this analysis, incremental cancer risk associated with the construction emissions of the NHPH were estimated. All off-road equipment is assumed to be diesel powered, except for the tower crane which would be electrically powered, and forklifts which would be powered by natural gas.

Table 4.2-9 presents the unmitigated HRA results for construction of the proposed NHPH. Based on OEHHA recommendations, the BAAQMD recommends estimating cancer risk to residential receptors based on a 30-year exposure duration (BAAQMD, 2016). The results represent a 30-year exposure which begins at the start of NHPH construction, although exposure from construction DPM would only last through the 10 years of construction. As shown in the table,

construction emissions from the NHPH would result in an excess cancer risk at the MEI off-site residential receptor that would exceed the 10 in one-million excess cancer risk threshold.

TABLE 4.2-9
UNMITIGATED PROJECT HEALTH RISK ESTIMATED, NHPH CONSTRUCTION

Receptor Type[a]	Cancer Risk	Chronic Hazard Index[b,c]	$PM_{2.5}$ Concentration ($\mu g/m^3$)[c]
Off-Campus Residence			
Project Construction[d]	**20.1**	0.01	0.06
Significance Threshold	10	1.0	0.3
Significant (Yes or No)?	**Yes**	No	No
On-Campus Residence			
Project Construction[d]	1.7	<0.01	0.01
Significance Threshold	10	1.0	0.3
Significant (Yes or No)?	No	No	No
On-Campus Daycare			
Project Construction[d]	0.6	<0.01	<0.01
Significance Threshold	10	1.0	0.3
Significant (Yes or No)?	No	No	No
Off-Campus School			
Project Construction[d]	0.2	<0.01	0.01
Significance Threshold	10	1.0	0.3
Significant (Yes or No)?	No	No	No

NOTES:

[a] MEI for each receptor type are:
offsite residents = Residence on the south side of Parnassus Avenue east of the New Hospital site
onsite residents = UCSF Third Avenue housing
daycare = UCSF Lucia Child Care Center
school = Haight Ashbury Community Nursery School

[b] Construction risk is from DPM exposure. There is no published DPM REL for acute risk.

[c] Hazard Impact and $PM_{2.5}$annual concentration represent worst year of exposure not a summation.

[d] Exposure durations:
residents = duration of construction, ~10 years
daycare = attendance years at location, ~5 years
school = attendance years at location, ~4 years

SOURCE: ESA, 2021 (see Appendix AIR)

Thus, the increased cancer risk due to construction activities associated with the NHPH would be potentially above the BAAQMD threshold of 10 in one-million, and as a result, the human health impact would be potentially significant.

DPM from combustion of diesel in construction equipment is the source of the elevated cancer risk due to project construction. **NHPH Mitigation Measure AIR-3** is identified to require the use of clean construction equipment during NHPH construction. Implementation of NHPH Mitigation Measure AIR-3 would reduce DPM emissions generated by the NHPH construction activities.

Table 4.2-10 presents the mitigated human health risk to existing receptors from construction activities for the NHPH. As shown in the table, with implementation of NHPH Mitigation Measure AIR-3, the maximum increased cancer risk at the MEI offsite resident receptor would be below the 10 in one-million excess cancer risk threshold. The increased risk at all other receptors would remain below the 10 in one-million excess cancer risk threshold. Thus, the cancer risk impact due to construction activities associated with the NHPH would be less than significant after mitigation.

TABLE 4.2-10
MITIGATED PROJECT HEALTH RISK ESTIMATED, NHPH CONSTRUCTION

Receptor Type[a]	Cancer Risk	Chronic Hazard Index[b,c]	$PM_{2.5}$ Concentration ($\mu g/m^3$)[c]
Off-Campus Residence			
Project Construction[d]	5.6	0.01	0.03
Significance Threshold	10	1.0	0.3
Significant (Yes or No)?	No	No	No
On-Campus Residence			
Project Construction[d]	0.5	<0.01	<0.01
Significance Threshold	10	1.0	0.3
Significant (Yes or No)?	No	No	No
On-Campus Daycare			
Project Construction[d]	0.1	<0.01	<0.01
Significance Threshold	10	1.0	0.3
Significant (Yes or No)?	No	No	No
Off-Campus School			
Project Construction[d]	0.1	<0.01	<0.01
Significance Threshold	10	1.0	0.3
Significant (Yes or No)?	No	No	No

NOTES:

[a] MEI for each receptor type are:
offsite residents = Residence on the south side of Parnassus Avenue east of the campus site
onsite residents = UCSF Third Avenue housing
daycare = UCSF Lucia Child Development Center
school = Haight Ashbury Community Nursery School

[b] Construction risk is from DPM exposure. There is no published DPM REL for acute risk.

[c] Hazard Impact and $PM_{2.5}$ annual concentration represent worst year of exposure not a summation.

[d] Exposure durations:
residents = duration of construction, ~10 years
daycare = attendance years at location, ~5 years
school = attendance years at location, ~4 years

SOURCE: ESA, 2021 (see Appendix AIR)

NHPH Mitigation Measure AIR-3: Clean Construction Equipment for NHPH Construction

The construction contractor(s) shall develop a plan demonstrating that the off-road equipment used on-site to construct the NHPH would achieve a fleet-wide average 70 percent reduction in PM_{10} exhaust emissions, compared to uncontrolled aggregate

statewide emission rates for similar equipment. One feasible plan to achieve this reduction would include the following:

- All mobile diesel-powered off-road equipment larger than 25 horsepower and operating on the project site for more than two days continuously shall be equipped with engines meeting USEPA NOx and PM_{10} emissions standards for Tier 4 final engines or equivalent[10]; and
- Use of electrically-powered construction equipment to the degree available and feasible.

Significance after Mitigation: Less than Significant. Implementation of NHPH Mitigation Measure AIR-3, which requires the use of clean construction equipment, would reduce the maximum excess cancer risk for a 30-year lifetime exposure for the MEI to below the BAAQMD threshold of 10 in one-million, and therefore, the impact would be less than significant.

Non-Cancer Health Hazard at Existing Receptors from Construction of the NHPH

For purposes of this analysis, non-cancer health hazards associated with construction of the NHPH were estimated.

Both acute (short-term) and chronic (long-term) adverse health impacts unrelated to cancer are analyzed based on a hazard index (HI), which is defined as the ratio of the predicted TAC concentrations from NHPH construction activities to a published reference exposure level (REL) that could cause adverse health effects. The RELs are published by OEHHA based on epidemiological research. The ratio (referred to as the Hazard Quotient [HQ]) of each non-carcinogenic substance that affects a certain organ system is added to produce an overall HI for that organ system. The construction emissions from the NHPH are for the largest part respirable, therefore, non-inhalation pathways were not considered. The impact is considered to be significant if the overall HI is greater than 1.0.

The chronic reference exposure level for DPM was established by the California OEHHA as 5 $\mu g/m^3$ (OEHHA, 2019). Thus, the construction-related annual concentration of DPM cannot exceed 5.0 $\mu g/m^3$; resulting in a chronic acute HI of greater than 1.0 (i.e., DPM annual concentration/5.0 $\mu g/m^3$). There is no acute REL for DPM.

As shown in Table 4.2-9, the unmitigated chronic HI from NHPH construction for all receptor types would be 0.01 or less, while as shown in Table 4.2-10, the chronic HI would also be 0.01 or less with implementation of NHPH Mitigation Measure AIR-1. Accordingly, the NHPH impact related to chronic health risk from construction emissions would be less than significant.

Because construction only considers the risk from DPM emissions and because there is no acute REL for DPM, only the chronic risk from DPM is analyzed.

Mitigation: None required.

[10] An equivalent method for particulate emissions may include Level 3 Verified Diesel Emissions Control Strategies of the CARB for particulate matter (filtration).

$PM_{2.5}$ Concentrations Associated with Construction of the NHPH

For purposes of this analysis, health effects related to $PM_{2.5}$ concentrations associated with construction of the NHPH were estimated.

Dispersion modeling was used to estimate project-related concentrations of $PM_{2.5}$ at the sensitive receptors. The BAAQMD Air Quality Guidelines requires inclusion only of $PM_{2.5}$ exhaust emissions for the analysis of construction exposure because the fugitive dust emissions are addressed under BAAQMD dust control measures which are required by law to be implemented during project construction. The unmitigated annual $PM_{2.5}$ concentrations for each receptor type are reported in Table 4.2-9. The unmitigated annual $PM_{2.5}$ concentrations from construction activities would be 0.06 $\mu g/m^3$ at the off-campus resident sensitive receptor. Thus, the annual $PM_{2.5}$ concentrations due to construction of the NHPH would be below the BAAQMD threshold of 0.3 $\mu g/m^3$ and the impact would be less than significant. While this impact is not significant, with implementation of NHPH Mitigation Measure AIR-3, the annual $PM_{2.5}$ concentrations from construction activities would be further reduced to 0.03 $\mu g/m^3$ (see Table 4.2-10).

Mitigation: None required.

Impact AIR-4: Operations under the NHPH would not expose sensitive receptors to substantial pollutant concentrations or exceed the LRDP EIR standard of significance by exposing receptors to toxic air contaminant emissions that (1) result in a cancer risk greater than 10 cancer cases per 1 million people; or (2) for acute or chronic effects, result in concentrations of toxic air contaminant emissions with a Hazard Index of 1.0 or greater. (*Less than Significant*)

NHPH

The following assessment focuses on potential incremental cancer risk, non-cancer health hazard, and $PM_{2.5}$ concentrations associated with operation of the proposed NHPH.

Increased Cancer Risk from Operation of the NHPH

For purposes of this analysis, potential incremental cancer risk associated with operation of the NHPH was estimated.

Emissions calculations and air dispersion modeling was completed for the New Hospital building's fume hoods, cooling tower and emergency diesel generators, the increase in natural gas combustion at the CUP, and loading dock emissions associated with increased deliveries. The full chemical inventory and calculated risk by each source is detailed in Appendix AIR. A summary of the risk results from operation of the NHPH is presented in **Table 4.2-11**. The estimated excess cancer risk for a 30-year lifetime exposure from operation of the NHPH would be 8.6 per million, which is below the 10 in one-million excess cancer risk threshold. Thus, the impact associated with this increased cancer risk from operation of the NHPH would be less than significant.

TABLE 4.2-11
ESTIMATED OPERATIONAL HEALTH IMPACTS OF THE NHPH

Receptor Type	Cancer Risk	Chronic Hazard Index	Acute Hazard Index	$PM_{2.5}$ Concentration (µg/m3)[d]
Off-Campus Residence				
Project Operations	8.6	0.01	0.02	0.14
Significance Threshold	10	1.0	1.0	0.3
Significant (Yes or No)?	No	No	No	No
On-Campus Residence				
Project Operations	1.9	<0.01	0.01	0.01
Significance Threshold	10	1.0	1.0	0.3
Significant (Yes or No)?	No	No	No	No
On-Campus Daycare				
Project Operations[e]	0.28	<0.01	0.01	0.01
Significance Threshold	10	1.0	1.0	0.26
Significant (Yes or No)?	No	No	No	No
Off-Campus School				
Project Operations[e]	0.03	<0.01	<0.01	0.03
Significance Threshold	10	1.0	1.0	0.3
Significant (Yes or No)?	No	No	No	No

NOTES:

[a] Cancer risk MEI for each receptor type are:
offsite residents = Residences at Hill Point Avenue and Parnassus Avenue
onsite residents = UCSF Third Avenue housing
daycare = UCSF Kirkham Child Care Center
school = Haight Ashbury Community Nursery School

[b] Chronic Hazard Index MEI for each receptor type are:
offsite residents = Residences along Parnassus Ave., east of the campus site
onsite residents = UCSF Third Avenue housing
daycare = Kirkham Child Care Center
school = Haight Ashbury Community Nursery School

[c] Acute Hazard Index MEI for each receptor type are:
offsite residents = Residences along Edgewood Ave., east of the campus site
onsite residents = UCSF Third Avenue housing
daycare = UCSF Kirkham Child Care Center
school = Haight Ashbury Community Nursery School

[d] $PM_{2.5}$exposed MEI for each receptor type are:
offsite residents = Residences along Parnassus Ave., east of the campus site
onsite residents = UCSF Third Avenue housing
daycare = UCSF Kirkham Child Care Center
school = Haight Ashbury Community Nursery School

SOURCE: ESA, 2021 (see Appendix AIR)

Non-Cancer Health Hazard at Existing Receptors from Operation of the NHPH

Operational emissions from the NHPH are for the largest part respirable, therefore non-inhalation pathways were not considered. The impact would be considered to be significant if the overall HI is greater than 1.0.

Maintenance testing of the proposed emergency diesel generators and the exhaust from delivery trucks, including TRUs, at the proposed loading docks would produce DPM emissions which would have the potential to increase chronic health risk. The chronic risk from these sources'

DPM emissions is included in the chronic HI. For the New Hospital fume hoods, and increased operation of the CUP, the chronic and acute health risk from each TAC is individually assessed and can be found in Appendix AIR.

The maximum operational chronic HI, as presented in Table 4.2-11, would be 0.01. As the calculated HI from the operational emissions of the NHPH is below the project-level chronic HI threshold of 1, the non-cancer chronic health hazard impact would be less than significant.

In addition, the acute HI from operations, presented in Table 4.2-11, would be 0.02, and the non-cancer acute health hazard impact would be less than significant.

$PM_{2.5}$ Concentrations Associated with Operation of the NHPH

For the analysis of operational $PM_{2.5}$ emissions, sources other than combustion exhaust (i.e., particulate from New Hospital building fume hoods, and fugitive particles from the New Hospital cooling towers) were analyzed, and $PM_{2.5}$ concentrations associated with operation of the NHPH were estimated. The maximum annual average concentrations of $PM_{2.5}$ from operation of the NHPH were estimated to be 0.14 ug/m^3 or less for sensitive receptors (Table 4.2-11). Thus, the annual $PM_{2.5}$ concentration due to the operation of the NHPH would be below the BAAQMD threshold of 0.3 µg/$m^{3,}$ and the impact would be less than significant.

Mitigation: None required.

Impact AIR-5: The NHPH could conflict with or obstruct implementation of the *2017 Clean Air Plan*. (*Less than Significant*)

The most recently adopted air quality plan in the SFBAAB is the *2017 Clean Air Plan* whose primary goals are to protect public health and to protect the climate (BAAQMD, 2017b). The plan includes a wide range of proposed control measures to reduce combustion-related activities, decrease fossil fuel combustion, improve energy efficiency, and decrease emissions of potent GHGs.

BAAQMD guidance states that lead agencies should consider three questions in assessing consistency with the *2017 Clean Air Plan*: (1) Would the project support the primary goals of the Clean Air Plan? (2) Does the project include applicable control measures from the Clean Air Plan? and (3) Does the project disrupt or hinder implementation of control measures identified in the Clean Air Plan? The proposed NHPH is evaluated relative to each of these questions below.

Support the Primary Goals of the Clean Air Plan

The first of these questions is whether the proposed project would support the primary goals of the *2017 Clean Air Plan*, which include:

- Attainment of air quality standards;
- Reducing population exposure and protecting public health in the Bay Area; and
- Reducing GHG emissions and protecting the climate.

To meet these primary goals, the plan recommends specific control measures and actions. These control measures are grouped into various categories and include stationary and area source measures, mobile source measures, transportation control measures, land use measures, and energy and climate measures. The *2017 Clean Air Plan* recognizes that to a great extent, community design dictates individual travel mode, and that a key long-term control strategy to reduce emissions of criteria pollutants, air toxics, and GHG emissions from motor vehicles is to channel future Bay Area growth into urban communities where goods and services are close at hand, and people have a range of viable transportation options. To this end, the *2017 Clean Air Plan* includes 85 control measures aimed at reducing air pollution in the air basin.

With development of the NHPH, UCSF would continue to employ its aggressive Transportation Demand Management (TDM) program that includes an extensive shuttle system, among other alternative transportation opportunities and would serve to support the primary goals of the CAP. Based on UCSF's 2018 employee commute survey, approximately 80 percent of the campus faculty, staff and students commute by means other than driving alone. Key features of UCSF's existing TDM program include the following:

- 60 shuttles serving 17 locations, with over 2.3 million passengers per year
- 33 vanpools that travel as far as Sacramento and operate using the Green Road Safety System, which improves fuel consumption and safety
- 62 reserved carpool stalls at various sites
- Marin Commute Club buses with about 55 daily riders who live in Marin and Sonoma Counties to the north of San Francisco
- 18 City CarShare vehicles with dedicated parking spaces, along with 1,500 UCSF members who can use these vehicles by scheduling their use on-line
- 18 electric-vehicle charging stations at Parnassus Heights, Mount Zion, and Mission Bay campus sites, with plans for another 20 at Mission Bay in the Owens Street Garage and 10 at other locations
- Over 1,900 UCSF users of the ZimRide online carpool matching program
- 972 bicycle parking spaces with another 100 planned at Mission Bay, as well as bike racks on shuttles, a cyclist shower program that allows bicyclists to use UCSF showers at a discount, and other bicycle-related benefits
- More than 400 off-street motorcycle parking stalls in garages and surface parking lots
- An "emergency ride home" program to encourage use of alternative modes of transportation
- Clipper Card (public transit pass) sales at easily accessible locations, including through UCSF's website
- Close to 1,800 UCSF employees that participate in a pretax transit program, which saved UCSF employees over $700,000 on public transit commute costs in 2013

The Parnassus Heights campus site's infill location and proximity to transit reduces the distance that workers, students, patients, and visitors would drive in motor vehicles.

The proposed NHPH's impact with respect to GHGs is discussed in Section 4.7, *Greenhouse Gas Emissions*. As stated in that discussion, the proposed NHPH would be compliant with UCSF's Greenhouse Gas Reduction Strategy. Thus, the NHPH would not result in any significant impacts associated with an increase in GHGs or conflict with measures adopted for the purpose of reducing such emissions.

Applicable Control Measures from the Clean Air Plan

To meet the primary goals, the *2017 Clean Air Plan* recommends 85 specific control measures and actions. These control measures are grouped into various categories and include stationary- and area-source measures, mobile-source measures, transportation control measures, land use measures, and energy and climate measures.

The measures most applicable to the proposed NHPH are transportation control measures which are identified in **Table 4.2-12**, along with the existing or proposed mechanisms that UCSF has in place to implement these measures. As discussed in Section 4.7, *Greenhouse Gas Emissions*, UCSF currently implements a number of programs and practices to promote sustainability at the campus, including TDM, energy supply and efficiency, water supply and conservation, and solid waste reduction and recycling. With development of the proposed NHPH, UCSF would continue to implement, and update as needed, these sustainability programs and practices.

The high availability of viable transportation options would ensure that employees, patients and visitors could bicycle, walk, and ride transit to and from the campus site instead of taking trips via private automobile. These features ensure that the NHPH would reduce growth in automobile trips and vehicle miles traveled (VMT) compared to other hospital facilities. As the analysis under Impact TRANS-2, in Section 4.14, *Transportation*, shows, the average VMT per employee at the Parnassus Heights campus site is well below the regional average VMT per employee, and even with the implementation of the NHPH, the campus site VMT per employee would remain substantially below the regional average.

The proposed NHPH would operate under UCSF's sustainability measures that would serve to implement control measures of the *2017 Clean Air Plan*, including the land use/local impact measures and energy/climate measures of the plan. The NHPH would comply with the applicable *University of California Policy on Sustainable Practices* and would pursue a minimum level of LEED Gold Certification. The NHPH would be subject to a number of sustainability requirements, including the California CalGreen Code, and the UC Policy, which requires new construction meet 20 percent better energy performance than Title 24 (and strives to achieve 30 percent), and requires new laboratory buildings meet Labs21 Environmental Performance Criteria.[11] This would be achieved through incorporation of a variety of design features and implementation of practices during construction and operation to provide energy and water conservation and efficiency, encourage alternative transportation, promote a healthy indoor environment, minimize waste, and maximize recycling opportunities.

[11] Labs21 Environmental Performance Criteria is a rating system specifically designed for laboratory facilities that is based on the LEED Green Building Rating System.

TABLE 4.2-12
NHPH CONSISTENCY WITH APPLICABLE CONTROL MEASURES OF THE 2017 CLEAN AIR PLAN

Control Measure	Existing or Proposed Implementation Mechanism	Consistency of Proposed NHPH with Measure
TR1 – Clean Air Teleworking Initiative	UCSF provides remote computer access available for most employees.	Generally not applicable to a regional hospital.
TR2 – Trip Reduction Programs	UCSF implements its Transportation Demand Management (TDM) program.	Yes, with implementation of existing TDM program
TR3 – Local and Regional Bus Service	Transit services within study area include UCSF Shuttle and Muni bus service directly to campus.	Yes
TR4 – Local and Regional Rail Service	Muni light rail station located on Irving Street in close proximity of the NHPH.	Yes
TR5 – Transit Efficiency and Use	UCSF shuttles are free, and City of San Francisco Muni offers Clipper card capability.	Yes
TR7 – Safe Routes to Schools and Safe Routes to Transit	UCSF TDM Program includes bicycle parking motorcycle and car-share parking that are designed to serve local area student and visitor trips.	Yes
TR8 - Ridesharing	UCSF TDM Program includes a carpool matching program and reserved stalls for carpools.	Yes
TR9 – Bicycle and Pedestrian Access and Facilities	The NHPH proposes a pedestrian overcrossing and tunnel on Parnassus Avenue that would increase pedestrian access and safety.	Yes
TR10 – Land Use Strategies	The proposed NHPH would implement sustainable design strategies consistent with the regional goals and targets expressed in the *Plan Bay Area Sustainable Communities Strategy.*	Yes
TR13 - Parking Policies	UCSF TDM Program includes parking permits and meters at all campus parking structures and lots. Anyone driving a vehicle to the campus must pay for parking.	Yes
TR14 – Cars and Light Trucks	In 2018, UCSF added 15 new all-electric, zero-emission transit vehicles to the intercampus shuttle fleet that serves UCSF employees, faculty, students, patients and guests. The long-term goal is for the fleet to be all electric.	Yes
TR15 – Public Outreach and Education	UCSF TDM Program includes webpage with resources for all modes of transportation along with educational resources; personalized commute planning service; and new employee orientation to transportation resources.	Yes
EN1 – Decarbonize Electricity Production	UCSF has committed to the UC Carbon Neutrality 2025 Initiative to achieve net zero GHG emissions from its electrical demand.	Yes
EN2 – Decrease Electricity Demand	UCSF requires new construction meet 20 percent better energy performance than Title 24 which will decrease energy demand.	Yes
BL1 – Green Buildings	UCSF has committed to all new building meeting Leadership in Energy and Environmental Design (LEED) and system requirements for the proposed New Hospital are to be a Gold rating. Building plans will also conform to CALgreen standards with respect to energy conservation.	Yes
BL2 – Decarbonize Buildings	Implemented through the UC Carbon Neutrality 2025 Initiative to achieve net zero GHG emissions from its electrical demand.	Yes
BL3 – Market Based Solutions	UCSF has several programs to promote energy efficiency and conservation on campus. UCSF implements several energy-saving programs for building retrofits, including the renovations to Long and Moffitt Hospitals.	Yes

TABLE 4.2-12 (CONTINUED)
NHPH CONSISTENCY WITH APPLICABLE CONTROL MEASURES OF THE 2017 CLEAN AIR PLAN

Control Measure	Existing or Proposed Implementation Mechanism	Consistency of Proposed NHPH with Measure
BL4 – Urban Heat Island	NHPH site is already largely developed with buildings, parking and roadways. There would be no substantial change in urban heat island effect due to the NHPH.	N/A
NW2 – Urban Tree Planting	The NHPH has been designed based on campus design principles that address planting of shade trees. Trees are included in the landscaping associated with the NHPH.	Yes
WA3 – Green Waste Diversion; and WA4 – Recycling and Waste Reduction	UCSF implements a Waste Reduction and Recycling Program that serves all academic, student housing and dining, and faculty and staff housing. UCSF achieved a 78 percent waste diversion rate in 2018. The NHPH would be subject to the waste reduction program,	Yes

NOTE: N/A = Not Applicable to proposed NHPH

This would be achieved through incorporation of a variety of design features and implementation of practices during construction and operation to provide energy and water conservation and efficiency, encourage alternative transportation, promote a healthy indoor environment, minimize waste, and maximize recycling opportunities.

With elements identified as part of the proposed NHPH, the UCSF Greenhouse Gas Reduction Program, UCSF TDM Program, the proposed NHPH would be consistent with applicable control measures in the *2017 Clean Air Plan*.

Disruption or Hindrance of Clean Air Plan Control Measures

Examples of a project that could cause the disruption or delay of Clean Air Plan control measures are projects that would preclude the extension of a transit line or bike path or projects that propose excessive parking beyond the local jurisdiction's parking requirements. The proposed NHPH would maintain the existing character of the campus site, which includes hospitals, medical research facilities, instructional space, and residential uses within a dense, walkable urban area near a concentration of local transit service. It would not preclude the extension of a transit line or a bike path or any other transit improvement. Thus, the NHPH would not disrupt or hinder implementation of control measures identified in the Clean Air Plan.

In summary, the proposed NHPH would not conflict with, or obstruct implementation of the *2017 Clean Air Plan*, and the impact would be less than significant.

Mitigation: None required.

Cumulative Impacts

The following analysis addresses the potential cumulative air quality impacts associated with the proposed NHPH. Impact AIR-5, above, addresses potential impacts with respect to consistency with the BAAQMD *2017 Clean Air Plan*. Because the *2017 Clean Air Plan* focuses on reducing population exposure to air pollutants throughout the region, the assessment in Impact AIR-5 is a cumulative analysis as it assesses consistency with a region-wide air quality plan. Therefore, a separate cumulative assessment of consistency with the *2017 Clean Air Plan* is not required.

Impact C-AIR-1: Construction and operation of the NHPH, combined with cumulative development in the project area, would result in a cumulatively considerable net increase of a criteria pollutant for which the project region is non-attainment under an applicable federal or State ambient air quality standard. (*Less than Significant with Mitigation*)

BAAQMD developed thresholds of significance for the evaluation of the impact of a project's construction and operational emissions, by identifying emission levels below which a project's individual emissions would not be considered large enough to affect or interfere in the District's ability to meet its air quality planning goals which are to attain and maintain air quality within the air basin that meets the national and state air quality standards. If a project exceeds the identified project significance thresholds, then its emissions of the pollutant would be considered cumulatively considerable.

As noted earlier, the air basin is designated a non-attainment area with respect to ROG, NOX, PM_{10} and $PM_{2.5}$, and is an attainment/maintenance area for the remaining criteria pollutants. The analysis in Impact AIR-1 demonstrates that the NHPH's construction emissions would not exceed emission thresholds for ROG, NO_X, PM_{10} or $PM_{2.5}$, and the NHPH would not result in a cumulatively considerable net increase in emissions of a criteria pollutant for which the air basin is non-attainment. NHPH Mitigation Measure AIR-1 would address potential PM impacts related to fugitive dust. Therefore, its cumulative impact would be less than significant with mitigation.

With respect to the NHPH's operational emissions, the analysis under Impact AIR-2 (Table 4.2-8) shows that operational emissions under the NHPH would not exceed applicable emission thresholds for ROG, NO_X, PM_{10} or $PM_{2.5}$. Therefore, operations of the NHPH would not result in a cumulatively considerable net increase in emissions of a criteria pollutant for which the air basin is non-attainment, and the cumulative impact would be less than significant.

Mitigation: Implement NHPH Mitigation Measure AIR-1.

Significance after Mitigation: Less than Significant.

Impact C-AIR-2: Implementation of the NHPH could contribute considerably to cumulative emissions of TACs and $PM_{2.5}$ that could expose sensitive receptors to substantial pollutant concentrations or health risks. *(Less than Significant with Mitigation*)

Construction

The geographic scope of analysis for cumulative construction health risk and hazard impacts encompasses sensitive receptors within approximately 1,000 feet of the project construction site. BAAQMD describes this 1,000-foot distance as an appropriate zone of influence for assessment of health risk and hazard impacts. Beyond 1,000 feet, the contributions from other projects would be expected to be minimal. Section 4.0, *Introduction to Environmental Analysis*, presents the list of reasonably foreseeable future projects in the vicinity that could contribute to cumulative construction TAC impacts.

There is one reasonably foreseeable off-campus cumulative construction project in the project vicinity: the seismic retrofit of 350 Parnassus Avenue which would occur in 2022, prior to start of construction of the NHPH. Similarly, the planned demolition of the on-campus LPPI and its support buildings, located on the site of the New Hospital, would occur under a separate project in 2022, prior to the commencement of NHPH construction work. Cumulative emissions of TACs and $PM_{2.5}$ would be generated from construction associated with the planned CPHP Initial Phase projects and other Initial Phase improvements within the campus site. The only notable contemporaneous cumulative construction projects within the 1,000-foot zone of influence for cumulative construction health risk impacts would be the planned Irving Street Arrival, which would be under construction beginning in 2022 through the end of 2023; and the planned Research and Academic building (RAB) which would undergo construction work beginning in 2022 through the end of 2025. As such, there is the potential for overlapping construction of the NHPH with these cumulative projects.

Construction activities for the RAB would be located approximately 800 feet from the closest activities for construction of the New Hospital. Receptors potentially affected by the cumulative project demolition and construction activities in 2022 through 2025 would be the existing residences on Irving Street between Arguello Boulevard and 2nd Avenue. The planned Irving Street Arrival construction activities would occur across the Parnassus Avenue from the NHPH site. Irving Street residential receptors would be 450 feet away from construction activities of the New Hospital.

Based on a construction HRA prepared for the Irving Street Arrival and RAB projects, the maximum mitigated excess cancer risk would be approximately 1.1 in one million from construction activities for the Irving Street Arrival and the maximum mitigated excess cancer risk from construction activities for the RAB would be approximately 2.9 in one million. These increased cancer risks, while individually less than significant, would further contribute to the less than significant NHPH mitigated construction excess cancer risk of 5.6 in one million identified in Impact AIR-3, above. Resultant construction-related cumulative excess cancer risk of 9.6 in one million (1.1 in one million for the Irving Street Arrival plus 2.9 in a million for RAB and 5.6 in a million for NHPH) would be well below the cumulative threshold of 100 in one million. While the MEI may vary for each of these calculated risk levels and therefore technically may not lend themselves to a direct summation, the summed risk is likely conservative and

therefore indicates a value substantially below the cumulative threshold of 100 in one million. The NHPH's cumulative construction-related human health risk impact would be less than significant with implementation of **NHPH Mitigation Measure AIR-3**.

Operation

As stated in Section 4.2.1 *Environmental Setting*, the most recent citywide modeling results indicate that the Parnassus Heights campus site and its surrounding area are not located within an APEZ, or a health vulnerable zip code. The nearest APEZ to the campus site is along Lincoln Way, west of 5th Avenue.

Health risks from operations at the Parnassus Heights campus site under the 2014 LRDP were estimated in the 2014 LRDP Final EIR (UCSF, 2014) to be approximately 10 in one million incremental cancer cases at the most impacted on-site receptor. This risk estimate includes operation of cumulative sources inclusive of stationary sources such as operation of UCSF's CUP as well as from fume hood emissions and from high-volume roadways in the area (Parnassus Avenue). Health risks from operations at the planned RAB under the CPHP were estimated in the CPHP Final EIR (UCSF, 2021) to be approximately 0.26 in one million incremental cancer cases at the most impacted on-site receptor. When added to the projected increased cancer risks from the NHPH project-level analysis presented in Table 4.2-11 of 8.6 in one million, resultant increased operational cancer risk of 18.86 in one million (10 in one million plus 0.26 in a million for RAB and 8.6 in a million for NHPH) would be well below the cumulative threshold of 100 in one million. While the MEI may vary for each of these calculated risk levels and therefore technically may not lend themselves to a direct summation, the summed risk is conservative and therefore indicates a value substantially below the cumulative threshold of 100 in one million. It should also be noted that the approximately 10 in one million incremental cancer risk estimated in the 2014 LRDP Final EIR and used in this impact analysis likely overstates the less than significant cumulative TAC emission risk for two reasons. First, as noted in the 2014 LRDP Final EIR, 4.46 in one million of that risk is based upon an 1989 calculation of risks from fume hoods at the Parnassus Heights campus site, and this risk is likely markedly lower in 2020 because of the substantial reduction in chemical use due to microchemistry techniques implemented and improved ventilation systems. Second, some of the risk carried forward from the 2014 LRDP Final EIR is related to 2014 LRDP projects that have not been implemented and are now part of the NHPH.

As described by BAAQMD, USEPA considers a cancer risk of 100 per one million or less to be within the "acceptable" range of cumulative cancer risk. Because the cumulative increase in cancer risk from all operational sources would be well below 100 in one million, the NHPH's cumulative impact to local health risk and hazards would be less than significant.

Under the Community Air Risk Evaluation (CARE) program, BAAQMD identified communities in the Bay Area subject to high TAC emissions, with sensitive populations that could be affected by them. The most recent CARE retrospective document (BAAQMD, 2020a) indicates that there are no cumulatively impacted communities within five miles of the campus site.

Although TAC emissions from construction activities for the New Hospital would not occur simultaneously with operational emissions from the full development under the CPHP, as a

conservative analysis, they may be combined to demonstrate the level of cumulative impact if they were to occur at the same time at the MEI. Because the project-level construction health risk impact (an excess cancer risk of 5.6 in one million) would be less than significant after mitigation as described in Impact AIR-3, and the resultant increased operational cancer risk from cumulative operations would be 18.9 in one million, the total increased cancer risk from cumulative combination of operational and construction-related emissions would be 24.5 in one million which is below the 100 in one million threshold. Additionally, given that there are no impacted CARE communities in the campus site vicinity, the NHPH's cumulative impact to local health risk and hazards would be less than significant.

Mitigation: Implement NHPH Mitigation Measures AIR-3.

Significance after Mitigation: Less than Significant.

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4.3 Biological Resources

This section assesses the potential for construction and operation of the proposed New Hospital and related improvements to result in significant impacts on biological resources. The section includes a description of the existing environmental setting as it relates to biological resources; provides a regulatory framework that discusses applicable University plans and policies, and federal, State, and local laws and regulations; identifies criteria used to determine impact significance; and discusses potential impacts, and regulatory mechanisms and/or feasible mitigation measures, as necessary, to reduce significant impacts.

For purposes of providing distinction between the various components of this project, references made in this EIR to "New Hospital" relate only to the New Hospital portion of the overall project, whereas references made to "NHPH" relate to the overall project, including the New Hospital and its related improvements.

4.3.1 Environmental Setting

The site of the New Hospital and related improvements is located within the Parnassus Height campus site in the City of San Francisco between the Pacific Ocean and the Bay. Elevations on the campus site generally range from about 300 feet above sea level (asl) in the north to a high of approximately 900 feet (on Mount Sutro) in the south. Elevations on the New Hospital site range from approximately 400 feet asl on Parnassus Avenue along the north side of the site, ascending to approximately 430 feet asl along the south side of the site in the vicinity of Long Hospital. The temperate climate of this area features relatively mild, wet winters and warm, dry summers. The high diversity of vegetation and wildlife found in the region is a result of soil, topographic, and microclimate variations that combine to create unique species and biological communities. A long history of human use has altered the natural environment of San Francisco and reduced the extent of natural communities and habitat.

Vegetation Communities and Wildlife Habitats

The Parnassus Heights campus site occupies about 107 acres of land on and at the base of Mount Sutro in the Inner Sunset mixed-use neighborhood. About 46 acres of the campus site are developed with campus facilities, and 61 acres in the central and southern portions of the campus site are not developed, and are designated and preserved as the Mount Sutro Open Space Reserve (Reserve). The proposed New Hospital and related improvements are generally located in the vicinity of Parnassus Avenue and Medical Center Way. The majority of the New Hospital site is developed, with the Langley Porter Psychiatric Institute (LPPI), several support structures and parking, and contains only ornamental vegetation. Similarly, the site for the proposed renovations of Moffitt and Long Hospitals is built out with these two buildings. The sites of certain other related improvements are located within the Parnassus Avenue right-of-way, along Medical Center Way and/or within the adjacent Reserve. The vegetation communities and wildlife habitats in the NHPH site vicinity are described below.

Urban

Urban areas include buildings, roadways, utilities and other built features. Wildlife species utilizing urban areas are typically well-adapted to the presence of humans and their activities. Urban wildlife species expected at the hospital site include common raven (*Corvus corax*), northern mockingbird (*Mimus polyglottos*), raccoon (*Procyon lotor*), Virginia opossum (*Didelphis virgiana*), and non-native species such as Norway rat (*Rattus norvegicus*) and feral cats. Other species which utilize urban areas in San Francisco include red-tailed hawk (*Buteo jamaicensis*), which prey on rodents, and Cooper's hawk (*Accipiter cooperii*) and peregrine falcon (*Falco peregrinus anatum*), which prey almost exclusively on small-to-medium-sized birds. Bats may also colonize abandoned and disused buildings.

Landscaped

Landscaped areas support a variety of ornamental trees, shrubs and maintained non-native vegetation. Landscaped areas in an otherwise urban environment can provide cover, foraging, and nesting habitat for a variety of bird species as well as reptiles and small mammals, especially those tolerant of disturbance and human presence. Birds which may be found in landscaped vegetation include American robin (*Turdus migratorius*), house finch (*Carpodacus mexicanus*), dark-eyed junco (*Junco hyemalis*), western scrub jay (*Aphelocoma californica*), mourning dove (*Zenaida macroura*), and Anna's hummingbird (*Calypte anna*), as well as non-native birds such as house sparrow (*Passer domesticus*) and European starling (*Sturnus vulgaris*). Reptiles using this type of habitat, particularly in areas bordering natural lands, may include western terrestrial garter snake (*Thamnophis elegans*) and western fence lizard (*Sceloporus occidentalis*). Other wildlife present in these landscaped areas include striped skunk (*Mephitis mephitis*), raccoon, Virginia opossum, roosting bats as well as Botta's pocket gopher (*Thomomys bottae*) and other small rodents.

Reserve

Forest habitat occurs throughout the Reserve. Dominant tree species are non-native blue gum eucalyptus (*Eucalyptus globulus*) and Monterey cypress (*Cupressus macrocarpa*), which is native to California, but not to San Francisco. Coast live oak (*Quercus agrifolia*) and redwood (*Sequoia sempervirens*) trees, which are native to San Francisco, are also present. Understory vegetation in the Reserve includes nasturtium (*Nasturtium* sp.), poison oak (*Toxicodendron diversilobum*), English ivy (*Hedera helix*), Himalayan blackberry (*Rubus armeniacus*), non-native grasses, native toyon (*Heteromeles arbutifolia*), and coyote brush (*Baccharis pilularis*).

Several avian species are common to eucalyptus and cypress forest, including native species such as American robin, chestnut-backed chickadee (*Poecile rufescens*), pygmy nuthatch (*Sitta pygmaea*), Anna's hummingbird, and California towhee (*Pipilo crissalis*). The non-native eastern gray squirrel (*Sciurus carolinensis*) is also prevalent. Special-status species that could be present in these areas include overwintering monarch butterfly (*Danaus plexippus*) populations, special-status and common bats, and nesting raptors such as red-shouldered hawk (*Buteo lineatus*) and red-tailed hawk. Coyotes (*Canis latrans*) have been sighted in Golden Gate Park and could appear in the Reserve.

UCSF is in the process of implementing the Mount Sutro Open Space Reserve Vegetation Management Plan, a 20-year plan to achieve short- and long-term goals to improve ecosystem health, regenerate the forest, maintain and ensure public access to the Reserve, and minimize fire risk. In addition, independent of the Vegetation Management Plan, UCSF staffs two certified arborists and conducts ongoing maintenance throughout the Reserve, including management of overgrown vegetation, removal of invasive sprouts, and tree pruning.

Sensitive Natural Communities, Including Wetlands

The California Natural Diversity Database (CNDDB) reports no sensitive natural community occurrences on the campus site, including the site of the NHPH (CDFW, 2021). Furthermore, no potentially jurisdictional wetlands or daylighted surface waters are located on the campus site, including the NHPH site. See also discussion of *Wetlands and Other Waters of the United States*, in Section 4.3.2 below.

Wildlife Movement Corridors

Wildlife movement corridors link habitat areas and mitigate the effects of fragmentation by allowing animals to move between remaining habitats, in turn allowing depleted populations to be replenished and promoting genetic exchange between separate populations. Due to urban development of the San Francisco Peninsula, remaining wildlife habitat is largely limited to disconnected small parks and open space areas. These areas sustain corridors for flying animals, including butterflies, bats, and birds, but are difficult for mammals, reptiles and amphibians to reach, due to rugged terrain, urbanization, vehicular traffic, changes in vegetation, or areas of human disturbance.

The San Francisco Peninsula is an important migratory stopover for birds along the Pacific Flyway—one of the four major migratory routes in North America. Raptors, songbirds, shorebirds and waterfowl stop in San Francisco, including Golden Gate Park, Lake Merced, the Presidio, and the Reserve during their fall and spring migrations. The Reserve has recorded 99 different migratory bird species.[1] Numerous areas on the Parnassus Heights campus site offer suitable and attractive habitat for birds and butterflies to forage and rest along their migration route. While San Francisco's location on the Pacific Flyway enhances the importance of the City's open spaces to migratory birds, and Mount Sutro hosts many species of migratory birds, these areas are disconnected and do not constitute a wildlife movement corridor.

Special-Status Species

For the purpose of this EIR, special-status species include:

- Plant and wildlife species listed as rare, threatened, or endangered under the federal or State endangered species acts;
- Species that are candidates for listing under either federal or State law;

[1] eBird, 202, Mt. Sutro OSP Sightings, https//ebird.org/hotspot/L1011743.

- Species designated by the USFWS as species of concern or by the CDFW as species of special concern;[2]
- Species designated as "fully protected" by the State (there are about 35, most of which are also listed as either endangered or threatened);
- Raptors (birds of prey), which are specifically protected by California Fish and Game Code Section 3503.5, thus prohibiting the take, possession, or killing of raptors and owls, their nests, and their eggs;[3] and
- Species, such as candidate species, that may be considered rare or endangered pursuant to Section 15380(b) of the CEQA Guidelines.

A comprehensive list of the special-status plant and wildlife species that may occur or have the potential to occur within the campus site was developed based on data obtained from the CNDDB, the California Native Plant Society (CNPS) Electronic Inventory, and the USFWS and other biological literature pertaining to the bioregion. Potential for occurrence was determined to be low, moderate, or high based on habitat suitability, previous special-status species record locations, and current site conditions. These species lists are provided in **Table BIO-1** in **Appendix BIO**. Special-status plants and wildlife recorded within 1 mile of the campus site are shown in **Figure BIO-1** and **Figure BIO-2**, respectively, in **Appendix BIO**.

Special-Status Plants

Table BIO-1 in Appendix BIO presents special-status plant species that occur in the regional vicinity (i.e., the San Francisco North 7.5-minute USGS quadrangle and the seven surrounding quadrangles), and their potential to occur on the campus site. Most special-status plant species are considered to have a low potential to occur due to the developed and disturbed nature of the majority of the NHPH site. The Reserve mostly lacks native plants and native vegetation communities, and other areas in the vicinity of the hospitals are primarily landscaped.

Prior to development of San Francisco, Mount Sutro supported coastal prairie, valley and foothill grasslands, coastal dunes, and coastal scrub, but these communities are no longer present. Coastal triquetrella, a California Rare Plant Rank 1B.2 moss which occurs on shaded substrate, including gravel, in coastal bluff or coastal scrub communities, is the only special-status plant with a moderate potential to occur on the Parnassus Heights campus site. Coastal triquetrella has been documented on Tank Hill approximately 0.25-mile east of the campus, and in open spaces near the Douglas Playground, approximately 1 mile southeast of the campus (CDFW, 2021). It is most likely to occur along roadsides abutting the Reserve in gravelly areas.

[2] A California species of special concern is one that: has been extirpated from the state; meets the State definition of threatened or endangered but has not been formally listed; is undergoing or has experienced serious population declines or range restrictions that put it at risk of becoming threatened or endangered; and/or has naturally small populations susceptible to high risk from any factor that could lead to declines that would qualify it for threatened or endangered status.

[3] The inclusion of birds protected by Fish and Game Code Section 3503.5 is in recognition of the fact that these birds are substantially less common in California than most other birds, having lost much of their habitat to development, and that the populations of these species are therefore substantially more vulnerable to further loss of habitat and to interference with nesting and breeding than most other birds. It is noted that a number of raptors and owls are already specifically listed as threatened or endangered by State and federal wildlife authorities.

Special-Status Wildlife

Table BIO-1 in Appendix BIO presents special-status wildlife species known to occur in the region (i.e., San Francisco North and seven surrounding quadrangles), and their potential to occur on the campus site. Of the special-status wildlife listed in Table BIO-1, only species classified as having a moderate or high potential for occurrence at the NHPH site were considered in the impact analysis. Species addressed in detail include the following:

- Monarch butterfly
- Peregrine falcon and other nesting birds
- Hoary bat, western red bat, and other roosting bats

Aside from breeding birds and roosting bats, special-status wildlife species are not likely to occur within the campus site, most of which is highly fragmented and paved or dominated by non-native ornamental or ruderal species, which provide poor habitat for most wildlife. However, monarch butterflies (*Danaus plexippus*) have been known to overwinter in eucalyptus groves of San Francisco and western red bat has been documented in Golden Gate Park foliage. These species with moderate potential to occur are described below.

Monarch butterfly. This insect is a federal candidate endangered species and a California special animal. The butterfly's overwintering sites near the coast are protected in California because they are considered vulnerable due to their restricted range and relatively limited distribution in California. This species migrates along the Pacific Coast, and often overwinters in wind-protected groves of trees, such as eucalyptus and Monterey cypress, between October and March. CNDDB has documented this species overwintering in the Presidio, Golden Gate Park, Fort Mason, and Telegraph Hill (CDFW, 2021); and they have been recorded on Twin Peaks. However, there are no records of monarchs wintering within the Reserve.

Peregrine falcon and other migratory nesting birds. As a result of recovery efforts, peregrine falcon has been de-listed both in California and nationally. It remains a California Fully Protected species. It is known to nest on structures in downtown San Francisco and may nest on tall buildings on the campus site, and forage for pigeons and other birds. Several other raptors are known to nest in San Francisco and likely to nest in the Reserve, including red-tailed hawk, red-shouldered hawk, American kestrel (*Falco sparverius*), Cooper's hawk and great horned owl (*Bubo virginianus*), as well as other migratory special-status and common birds. The federal Migratory Bird Treaty Act (MBTA) and California Fish and Game Code protect raptors and native migratory birds and breeding birds (see Section 4.3.2, below).

As discussed above, the San Francisco Peninsula is an important migratory stopover for birds along the Pacific Flyway—one of the four major migratory routes in North America. Raptors, songbirds, shorebirds and waterfowl stop in San Francisco, including Golden Gate Park, Lake Merced, the Presidio and the Reserve on the Parnassus Heights campus site during their fall and spring migrations. Trees on the Reserve offer suitable and attractive habitat for birds, including special-status birds, to forage and rest along this migration route.

Hoary bat, western red bat, and other roosting bats. Western red bat, a Western Bat Working Group (WBWG) high priority species, has been recorded in Strybing Arboretum of Golden Gate Park, where it roosts in trees. Hoary bat, a WBWG medium priority species, has also been recorded in Strybing Arboretum, within 1 mile of the Parnassus Heights campus site, and Townsend's big-eared bat has been recorded at Twin Peaks (CDFW, 2021). These and other bat species may roost in tree foliage, under exfoliating bark of trees, in tree cavities, or under roof eaves or inside disused building areas within the city. The western red bat and hoary bat have a moderate potential to occur in forest edge habitat of the Reserve within the campus site.

Designated Critical Habitat

The USFWS designates critical habitat for certain species listed by the agency as threatened or endangered. "Critical habitat" is defined in Section 3(5)(A) of the federal Endangered Species Act (ESA) as those lands within a listed species' current range that contain the physical or biological features considered essential to the species' conservation, as well as areas outside the species' current range that are determined to be essential to its conservation. The Parnassus Heights campus site is not located within designated critical habitat for any federally listed species.

4.3.2 Regulatory Framework

Federal

Federal Endangered Species Act

The federal Endangered Species Act (ESA) protects the fish and wildlife species, and their habitats that have been identified by the USFWS or National Marine Fisheries Service (NMFS) as threatened or endangered. The term "endangered" refers to species, subspecies, or distinct population segments that are in danger of extinction through all or a significant portion of their range. The term "threatened" refers to species, subspecies, or distinct population segments that are likely to become endangered in the near future.

The ESA is administered by the USFWS and NMFS. In general, the NMFS is responsible for the protection of ESA-listed marine species and anadromous fishes, whereas listed, proposed, and candidate wildlife, plant species, and fish species are under USFWS jurisdiction. "Take"[4] of listed species can be authorized through either the Section 7 consultation process (for actions by federal agencies) or the Section 10 permit process (for actions by non-federal agencies). Federal agency actions include activities located on federal land or that are conducted by a federal agency, funded by a federal agency, or authorized by a federal agency (including issuance of federal permits and licenses).

Under Section 7 of the ESA, the federal agency conducting, funding, or permitting an action (the federal lead agency) must consult the USFWS and/or NMFS, as appropriate, to ensure that the proposed action will not jeopardize endangered or threatened species or destroy or adversely modify designated critical habitat. If a proposed project "may affect" a listed species or designated

[4] The federal ESA defines the term "take" as "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct."

critical habitat, the lead agency is required to prepare a biological assessment evaluating the nature and severity of the expected effect. In response, the USFWS issues a biological opinion determining whether the proposed action (1) may either jeopardize the continued existence of one or more listed species (jeopardy finding) or result in the destruction or adverse modification of critical habitat (adverse modification finding), or (2) will not jeopardize the continued existence of any listed species (no jeopardy finding) or will not result in adverse modification of critical habitat (no adverse modification finding).

Critical Habitat

Under the ESA, the Secretary of the Interior (or the Secretary of Commerce, as appropriate) formally designates critical habitat for certain federally listed species and publishes these designations in the Federal Register. Critical habitat is not automatically designated for all federally listed species; so many listed species have no formally designated critical habitat.

Critical habitat is defined as the specific areas that are essential to the conservation of a federally listed species, and that may require special management consideration or protection. Critical habitat is determined using the best available scientific information about the physical and biological needs of the species. These needs, or primary constituent elements, include: space for individual and population growth and for normal behavior; food, water, light, air, minerals, or other nutritional or physiological needs; cover or shelter; sites for breeding, reproduction, and rearing of offspring; and habitat that is protected from disturbance or is representative of the historical geographic and ecological distribution of a species. There is no federally designated critical habitat on the campus site.

Federal Migratory Bird Treaty Act

The federal MBTA (United States Code, Title 16, Section 703, Supplement I, 1989) prohibits taking, killing, possessing, or trading in migratory birds, except in accordance with regulations prescribed by the Secretary of the Interior. This act encompasses whole birds, parts of birds, and bird nests and eggs. The MBTA protects active nests of all species of birds that are included in the "List of Migratory Birds" published in the Federal Register in 1995.

Wetlands and Other Waters of the United States

Wetlands are ecologically complex habitats that support a variety of both plant and animal life. The federal government defines and regulates wetlands and other waters in Section 404 of the Clean Water Act as "areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support (and do support, under normal circumstances) a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 CFR 328.3[b] and 40 CFR 230.3).

Under normal circumstances, the federal definition of wetlands requires the presence of three identification parameters: wetland hydrology, hydric soils, and hydrophytic vegetation. Examples of wetlands include freshwater marsh, seasonal wetlands, and vernal pool complexes that have a hydrologic link to other waters of the United States. Other waters of the U.S. include unvegetated waters of streams, lakes and ponds.

State

California Endangered Species Act

Under the California Endangered Species Act (CESA), the CDFW has the responsibility for maintaining a list of threatened and endangered species (California Fish and Game Code, Section 2070). The CDFW also maintains a list of "candidate species," which are species formally noticed as being under review for addition to either the list of endangered species or the list of threatened species. In addition, the CDFW maintains lists of "species of special concern," which serve as watch lists.

The CESA prohibits the take of plant and animal species designated by the Fish and Game Commission as either threatened or endangered in the State of California. "Take" in the context of the CESA means to hunt, pursue, kill, or capture a listed species, as well as any other actions that may result in adverse impacts when attempting to take individuals of a listed species. The take prohibitions also apply to candidates for listing under the CESA. However, Section 2081 of the CESA allows the CDFW to authorize exceptions to the State's take prohibition for educational, scientific, or management purposes.

Pursuant to the requirements of the CESA, an agency reviewing a proposed project within its jurisdiction must determine whether any State-listed endangered or threatened species could be present on the project area and determine whether the proposed project could have a potentially significant impact on such species. In addition, the CDFW encourages informal consultation on any proposed project that could affect a candidate species.

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act Section 13260 of the California Water Code requires "any person discharging waste, or proposing to discharge waste, in any region that could affect the waters of the state to file a report of discharge (an application for waste discharge requirements)." Under the Porter-Cologne Water Quality Control Act definition, the term "waters of the state" is defined as "any surface water or groundwater, including saline waters, within the boundaries of the state." Although all waters of the United States that are within the borders of California are also waters of the state, the converse is not true—in California, waters of the United States represent a subset of waters of the state. Therefore, the State of California through each of nine Regional Water Quality Control Boards retains authority to regulate discharges of waste into any waters of the State, regardless of whether the U.S. Army Corps of Engineers has concurrent jurisdiction under Clean Water Act Section 404.

California Native Plant Protection Act

State listing of plant species began in 1977 with the passage of the California Native Plant Protection Act (NPPA), which directed the CDFW to carry out the legislature's intent to "preserve, protect, and enhance endangered plants in this state." The NPPA gave the California Fish and Game Commission the power to designate native plants as endangered or rare and to require permits for collecting, transporting, or selling such plants. The CESA expanded on the original NPPA and enhanced legal protection for plants. The CESA established threatened and

endangered species categories and grandfathered all rare animals—but not rare plants—into the act as threatened species. Thus, three listing categories for plants are employed in California: rare, threatened, and endangered.

Sensitive Natural Communities

Sensitive natural communities are identified as such by the CDFW's Natural Heritage Division and include those that are naturally rare and those whose extent has been greatly diminished through changes in land use. The CNDDB tracks 135 such natural communities in the same way that it tracks occurrences of special-status species: information is maintained on each site in terms of its location, extent, habitat quality, level of disturbance, and current protection measures. The CDFW is mandated to seek the long-term perpetuation of the areas in which these communities occur. While there is no statewide law that requires protection of all sensitive natural communities, CEQA requires consideration of the potential impacts of a project on biological resources of statewide or regional significance, including special-status species, wetlands, and wildlife corridors and nursery sites.

California Fish and Game Code

Under Section 3503 of the California Fish and Game Code, it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by the code or any regulation made pursuant thereto. Section 3503.5 of the code prohibits take, possession, or destruction of any birds in the orders Falconiformes (hawks) or Strigiformes (owls), or of their nests and eggs. Code Sections 3511 (birds), 4700 (mammals), 5050 (reptiles and amphibians), and 5515 (fish) allow the designation of a species as fully protected. This is a greater level of protection than is afforded by CESA. Except for take related to scientific research, all take of fully protected species is prohibited**.**

UCSF

UCSF 2014 LRDP

The 2014 LRDP identified campus-wide objectives and objectives specific to the Parnassus Heights campus. The following UCSF 2014 LRDP objectives relate to biological resources:

Campus Site-Specific Objectives

Parnassus Heights

F. Preserve the Mount Sutro Open Space Reserve as permanent open space, and serve as the steward of the Reserve by maintaining and expanding the trail system and by ensuring the safety of visitors and neighboring structures.

Open Space

- Maintain the designation of the Mount Sutro Open Space Reserve as permanent open space, including adjustment to the Reserve boundary while maintaining a minimum of 61 acres.
- Continue to manage the Mount Sutro Open Space Reserve, and create new/restored trails.

The UCSF 2014 LRDP also included *Community Planning Principles*, which were produced in collaboration with the UCSF Community Advisory Group:

Community Planning Principles

Land Use

LU9. Preserve the Mount Sutro Open Space Reserve as permanent open space.

UCSF Mount Sutro Open Space Reserve Vegetation Management Plan

In 2015, UCSF began a process to develop a management plan to ensure the long-term health and sustainability of the Reserve. The UCSF Mount Sutro Open Space Reserve Vegetation Management Plan was completed in March 2018 and approved by the UCSF Chancellor in April 2018.

The purpose of the Vegetation Management Plan is to provide a management framework for protecting, enhancing, and restoring vegetation in the Reserve. To achieve a healthy and stable ecosystem, the Vegetation Management Plan outlines strategies for increasing the biodiversity of vegetation, conserving existing native vegetation, improving the regeneration and recruitment of tall tree species, managing insect and disease pressure on blue gum eucalyptus, and improving structural diversity. The Vegetation Management Plan continues the University's programs of tree risk assessment and hazard tree removal, creation and management of defensible space, maintaining trail access, and conservation and stewardship of native plants.

The Vegetation Management Plan identifies three phases of forest treatment. During the first few years, forest treatments will focus on the areas of the Reserve in greatest need of treatment, including 1) removing dead, dying, unhealthy and structurally unsound trees, 2) controlling low-growing vines and shrubs that would compete with desired vegetation, 3) preventing sprouts from decayed stumps, and 4) planting new trees. In the second phase, the density of certain areas in the forest will be reduced in order to meet the desired number of trees per acre by clearing dead, dying, unhealthy and structurally unsound trees; and other forest areas would be replanted. The third phase includes extending the treatment to remaining areas of the forest, along with monitoring of the status of vegetation and wildlife in the Reserve to evaluate the results of the treatments (UCSF, 2018a).

City of San Francisco

UCSF is not subject to local land use regulation whenever using land under its control in furtherance of its educational mission. However, it is UCSF policy to be generally consistent with applicable local plans, policies and regulations to the extent feasible. City plans and regulations that are relevant to the biological resources impacts analysis are summarized below.

San Francisco Public Works Code

The San Francisco's Urban Forestry Ordinance (Article 16 of the Public Works Code) protects San Francisco's street trees, significant trees, and landmark trees regardless of species. The ordinance protects the following three categories of trees, which are defined as follows:

A **street tree** is "any tree growing within the public right-of-way, including unimproved public streets and sidewalks, and any tree growing on land under the jurisdiction of the Department [of Public Works]" as defined in Section 802 of the ordinance. Section 806b requires entities (other than the Department of Public Works) to obtain a permit from the department prior to removing any street trees.

A **significant tree** is defined in Section 810A of the ordinance as any tree: (1) located on property under the jurisdiction of the Department of Public Works or on privately owned property with any portion of its trunk within 10 feet of the public right-of-way, and (2) that satisfies at least one of the following criteria: (a) a diameter at breast height in excess of 12 inches, (b) a height in excess of 20 feet, or (c) a canopy in excess of 15 feet. Any entity other than the Department of Public Works must obtain a permit to remove significant trees according to the process described in Section 806b.

A **landmark tree** is any tree that: (1) has been nominated as such by a member of the public, a landowner, the San Francisco Planning Commission, the Board of Supervisors, or the Historic Preservation Commission, (2) the Urban Forestry Council (within the San Francisco Department of the Environment) has subsequently recommended as a landmark tree, and (3) is designated a landmark tree by ordinance approved by the Board of Supervisors. According to Section 810 of the ordinance, nominated trees undergoing review are protected according to the same standards as designated landmark trees until the review process is completed.

Permits are required for planting or removing street trees and significant trees, and protection measures are required for these trees if construction work would occur within the trees' dripline. Landmark trees are protected from alteration or removal.

Standards for Bird-Safe Buildings

The San Francisco Planning Department adopted *Standards for Bird-Safe Buildings* in 2011, adding Planning Code Section 139 (San Francisco Planning Department, 2011). These standards guide the use and types of glass and façade treatments, wind generators and grates, and lighting treatments. The standards impose requirements for bird-safe glazing and lighting in structures or at sites that represent a hazard to birds and provide information on educational and voluntary programs related to bird hazards. The standards define two types of bird hazards. "Location-related hazards" are buildings located inside of, or within a clear flight path of less than 300 feet from, an Urban Bird Refuge.[5] Such buildings require treatment when new buildings are constructed; additions are made to existing buildings; or existing buildings replace 50 percent or more of the glazing within the "bird collision zone."[6] The standards require implementation of the following treatments for façades facing, or located within, an Urban Bird Refuge:

- No more than 10 percent untreated glazing is allowed on building façades within the bird collision zone.
- Lighting must be shielded, and no uplighting is permitted. No event searchlights are permitted.

[5] An Urban Bird Refuge is defined in the Standards for Bird-Safe Buildings as: any area of open space two acres or larger that is dominated by vegetation, including vegetated landscaping, forest, meadows, grassland, water features, or wetlands; open water; and some green rooftops.

[6] The "bird collision zone" is that portion of the building that begins at grade and extends upward for 60 feet.

- Sites are not permitted to use horizontal access windmills or vertical access wind generators that do not appear solid.

"Feature-related hazards" include building- or structure-related features that are considered potential "bird traps" regardless of location (e.g., glass courtyards, transparent building corners, or clear glass walls on rooftops or balconies). Structures that include these elements must treat 100 percent of these elements in the building with bird-safe glazing.

4.3.3 Impacts and Mitigation Measures

Significance Criteria

Would implementation of the NHPH:

a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

c) Have a substantial adverse effect on State or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

e) Conflict with any local policies or ordinances protecting biological resources?

f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

g) Exceed the LRDP EIR standard of significance by damaging or removing heritage or landmark trees or native oak trees of a diameter specified in a local ordinance?

Criteria Not Analyzed

As stated in the Initial Study, there would no impact related to the following topics for the reasons described:

- ***Adversely affect any riparian habitat or other sensitive natural community, or State or federally protected wetlands.*** As noted in the Initial Study and in this section, no riparian habitat, sensitive natural communities, or wetlands or waters of the U.S., or the State are present on or adjacent to those portions of the campus site where the New Hospital and other improvements under the NHPH would be constructed. There would be no impact from the NHPH project related to this topic.

- ***Conflict with adopted conservation plan.*** No habitat conservation plans or natural community conservation plans cover the campus site. There would be no impact from the NHPH related to this topic.

- ***Conflict with local policies or ordinances protecting biological resources, including for heritage or landmark trees.*** As discussed in the Initial Study, UCSF is not subject to City policies and regulations on university-controlled property used in furtherance of the University's educational mission. However, under the NHPH, UCSF will avoid removal of trees that would be considered significant or protected to the maximum extent feasible. In addition, trees within the public right-of-way that would be removed during the course of off-site construction under the NHPH would conform to the City's ordinance governing tree protection. Thus, the NHPH impact related to this topic would be less than significant.

Approach to Analysis

Impacts on biological resources are evaluated based on the likelihood that special-status plant and wildlife species or their habitats, and wildlife corridors are present within the campus site (as described in Section 4.3.1, *Environmental Setting*), and the likely effects that construction, operation, and maintenance activities might have on these resources. Special-status resources that have no or low potential to occur on the campus site (as presented in Table BIO-1 in Appendix BIO) are not considered in the impact analysis.

Impact Analysis

Impact BIO-1: Implementation of the NHPH would not have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service. (*Less than Significant with Mitigation*)

New Hospital

A list of the special-status plant and wildlife species that have the potential to occur within the San Francisco North and seven surrounding quadrangles, was developed from the California Natural Diversity Database (CNDDB), the California Native Plant Society (CNPS) Electronic Inventory, the U.S Fish and Wildlife Service (USFWS) and pertinent biological literature (see Table BIO-1 in Appendix BIO). Most of the species identified from the region are associated with specific habitat types, such as dunes, valley foothill grasslands, chaparral, coastal prairie, coastal bluff scrub, marshes and swamps, which are not present on the campus site. Those species that could occur and could be affected are discussed below.

Special-Status Plant Species. The proposed New Hospital footprint, and related construction, would occur within a developed area of the campus site which has only ornamental vegetation and no special-status plant species, and would not encroach within the Reserve. Consequently, no impact to special-status plants is anticipated from construction or operation of the New Hospital.

Please see discussion under Related Improvements, below, for the potential for other NHPH components to impact special-status plant species, including the coastal triquetrella.

Special-Status Wildlife Species. The site of the proposed New Hospital contains urban and landscaped areas that support wildlife species that are typically well-adapted to the presence of humans and their activities. All existing buildings within the New Hospital site would be removed prior to, and separately, from the NHPH project (see Impact C-BIO-1 for additional detail). However, the New Hospital construction would occur over several years, and construction activities would generate noise and related effects that could impact wildlife in the vicinity of the project site, including in the Reserve.

As discussed in Section 4.3.1 above, most special-status wildlife species known to occur in the San Francisco region are not likely to occur in the New Hospital site vicinity because the campus core is highly developed and lacks habitat for most wildlife. Even though the nearby Reserve is a more natural area, it also lacks the habitats necessary to support many of the special-status wildlife species known from the San Francisco region. The special-status wildlife species with a moderate potential to occur in the site vicinity include monarch butterfly, peregrine falcon and other nesting birds, and roosting bats.

Mature stands of eucalyptus within the Reserve and in the vicinity of New Hospital construction provide suitable roosting conditions for wintering monarch butterflies. While there are no records of overwintering monarchs within the Reserve, the species is known to overwinter in other areas nearby. If monarchs were overwintering in the Reserve, they could be disturbed by demolition and construction activity adjacent to eucalyptus trees. Disturbing active monarch roosts during the wintering season (October 1 – February 28) would be considered a significant impact. Implementation of **NHPH Mitigation Measure BIO-1a: Protection of Monarch Butterflies**, which is included below, would require a preconstruction survey for the presence of overwintering monarch butterfly aggregations and establishment of buffers if aggregations are observed. Implementation of this measure would reduce this impact to a less-than-significant level.

Peregrine falcon may nest on tall buildings on, and in the vicinity of, the campus site, and other raptors may nest in tall trees in the Reserve. Smaller birds may nest in trees or shrubs on the campus site, though they are unlikely to nest in busy areas with frequent human and vehicular traffic. Construction equipment associated with clearing, excavation, grading and new Hospital building construction could generate elevated sound levels could cause adult birds to abandon nests. Project construction activities could result in potentially significant impacts to nesting birds, including special-status birds. **NHPH Mitigation Measure BIO-1b: Protection of Nesting Birds**, which is included below**,** would require preconstruction nesting bird surveys and avoidance of active nests. Implementation of this measure would reduce the impact on migratory bird species to a less-than-significant level.

Western red bat, hoary bat and other bat species may potentially occur in forest edge habitat of the Reserve. Suitable roosting habitat for these bats includes tree foliage, underneath the exfoliating bark of trees, and in tree cavities. Other bat species may roost in nearby disused buildings on the campus site. Construction activities could directly impact roosting bats, and elevated sound levels from heavy construction equipment could cause adult bats to abandon maternity roosts. As such, New Hospital construction activities could result in potentially significant impacts to roosting bats, including special-status bats. Implementation of **NHPH Mitigation Measure BIO-1c: Protection**

of Roosting Bats, which is included below, would require pre-construction and pre-demolition roosting bat surveys, followed by bat-safe removal if suitable bat habitat is identified in a tree or structure to be removed. Implementation of this measure would reduce the impact on bat species to a less-than-significant level.

In addition, **NHPH Mitigation Measure BIO-1d: Worker Education** will be implemented to inform all construction workers prior to start of construction about the special-status species that could be encountered onsite, and the avoidance measures to be undertaken if a species is found.

NHPH Mitigation Measure BIO-1a: Protection of Monarch Butterflies

- Prior to demolition activities, a qualified biologist familiar with monarch butterfly behavior and habitat shall conduct a preconstruction survey for the presence of overwintering monarch butterfly aggregations. The survey shall be conducted in December or January during the period when overwintering aggregations appear. Should an overwintering aggregation be identified in trees within 200 feet of the proposed work sites within or adjacent to the Reserve, a 200-foot buffer shall be established around the occupied trees until the aggregation has dispersed, and construction within the buffer zone shall be avoided for the duration of the overwintering period.

NHPH Mitigation Measure BIO-1b: Protection of Nesting Birds

- Tree and vegetation removal or pruning associated with project construction and commencement of outdoor project construction activities shall be avoided from February 1 through August 31, the primary local bird nesting season, to the extent feasible. If tree and vegetation removal or pruning associated with project construction is proposed during the nesting period, within seven days prior to the proposed start of construction activities a qualified biologist shall conduct a nesting bird survey of all potential habitat at the construction site and within 250 feet of the perimeter of the construction site.

- If any active nests are detected during the pre-construction survey, the qualified biologist shall recommend a work-exclusion buffer zone that shall be designated around the active nest to allow for both the successful fledging of the birds and initiation of work on some portions of the project site. A qualified biologist shall monitor any occupied nest located within a protective buffer zone in order to determine if the designated buffer zone is effective and when the buffer zone is no longer needed. If the buffer zone is determined to be ineffective, its size shall be increased until it is effective, as determined by the qualified biologist, or work within one-quarter mile of the nest shall cease until the young have fledged and are independent of the nest.

NHPH Mitigation Measure BIO-1c: Protection of Roosting Bats

- Prior to project construction, a qualified bat biologist shall conduct a pre-construction survey for roosting bats in trees to be removed or pruned and structures to be demolished within the work area and within a 50-foot radius of the work area. If no roosting bats are found, no further action is required. If active bat roosts are found within 50 feet of the work area, these roosts shall be flagged and avoided with a suitable buffer, determined in coordination with CDFW.

- If a non-maternal roost of bats is found in a tree or structure to be removed or demolished as part of project construction, the individuals shall be safely evicted, under the direction of a qualified bat biologist, by opening the roosting area to allow airflow through the cavity. Removal or demolition should occur no sooner than at least two nights after the initial minor site modification (to alter airflow). This action allows bats to leave during darkness, thus increasing their chance of finding new roosts with a minimum of disturbance. Departure of the bats from the construction area shall be confirmed with a follow-up survey by a qualified bat biologist prior to start of construction.

- If active maternity roosts are found in trees or structures that will be removed or demolished as part of project construction, tree removal or demolition of that tree or structure shall commence and be completed before maternity roosting colonies form (generally before March 1), or shall not commence until after young are flying (generally after July 31). Active maternity roosts shall not be disturbed between March 1 and July 31.

NHPH Mitigation Measure BIO-1d: Worker Education

- A qualified biologist shall provide training to all construction workers prior to starting work on plan components. The training shall cover special-status species with potential to be found onsite, avoidance measures to be undertaken if a species is found, and best management practices for site housekeeping.

Significance after Mitigation: Less than Significant.

Related Improvements

Renovation of Moffitt and Long Hospitals

Special-Status Plant Species. The renovation of Moffitt and Long Hospitals would occur within a developed area of the campus site which has only ornamental vegetation and no special-status plant species. Consequently, no impact to special-status plants is anticipated from these proposed renovation activities.

Special-Status Wildlife Species. Similar to the New Hospital construction, exterior construction activities associated with the renovation of Moffitt and Long Hospitals would generate construction noise and related effects that could impact special-status wildlife species. Implementation of NHPH Mitigation Measures BIO-1a through BIO-1d would ensure those impacts would be mitigated to a less-than-significant level.

Mitigation: Implement NHPH Mitigation Measures BIO-1a through BIO-1d.

Significance after Mitigation: Less than Significant.

Widening of Medical Center Way

Special-Status Plant Species. The widening of Medical Center Way would occur within a developed area of the campus site which has no special-status plant species. The additional width for the widening would occur on the west side of the roadway, and no construction would occur

within the adjacent Reserve. Consequently, no impact to special-status plants is anticipated from this proposed improvement.

Special-Status Wildlife Species. Similar to the New Hospital construction, construction activities associated with the widening of Medical Center Way would generate construction noise and related effects that could impact special-status wildlife species. Implementation of NHPH Mitigation Measures BIO-1a through BIO-1d would ensure those impacts would be mitigated to a less-than-significant level.

Mitigation: Implement NHPH Mitigation Measures BIO-1a through BIO-1d.

Significance after Mitigation: Less than Significant.

Replacement of Diesel Fuel Tanks

Special-Status Plant Species. The site of the proposed diesel tanks replacement project is within a developed area of the campus site which has only ornamental vegetation and no special-status plant species. Consequently, no impact to special-status plants is anticipated from this proposed improvement.

Special-Status Wildlife Species. Construction activities associated with the proposed diesel tanks replacement project would generate construction noise and related effects that could impact special-status wildlife species. Implementation of NHPH Mitigation Measures BIO-1a through BIO-1d would ensure those impacts would be mitigated to a less-than-significant level.

Mitigation: Implement NHPH Mitigation Measures BIO-1a through BIO-1d.

Significance after Mitigation: Less than Significant.

Replacement of Medical Gas Tanks

Special-Status Plant Species. The potential for rare plant species to be impacted on the campus site, including in the Reserve, is low because of widespread development and alteration of vegetation communities over time. Communities that would support rare plants, such as coastal prairie, valley and foothill grasslands, coastal dunes, and coastal scrub, are no longer present. However, coastal triquetrella, a special-status moss, may occur in open gravel areas along roadsides and hillsides east of Medical Center Way.

The site for the proposed medical tanks replacement project would occur within the Reserve. As such, the proposed medical tanks replacement project could potentially disturb or remove coastal triquetrella that may be present in the area of disturbance. Damage or removal of coastal triquetrella due to construction would represent a potentially significant impact.

Implementation of **NHPH Mitigation Measure BIO-1e: Botanical Surveys**, set forth below, would require surveys for coastal triquetrella and avoidance of any identified plants. Implementation of this measure would reduce the impact on this species to a less-than-significant level.

Special-Status Wildlife Species. Construction activities associated with the proposed medical gas tanks replacement would generate construction noise and related effects that could impact special-status wildlife species. Implementation of NHPH Mitigation Measures BIO-1a through BIO-1d would ensure those impacts would be mitigated to a less than significant level.

NHPH Mitigation Measure BIO-1e: Botanical Surveys

- Within suitable habitat for special-status plant species (open gravel areas along roadsides and hillsides for coastal triquetrella), a qualified biologist approved by CDFW shall conduct a focused survey for all species with potential to be present prior to ground disturbance. If no special-status plants are observed, no further action is required.
- If special-status plant species, including coastal triquetrella are observed, the plants will be avoided with a suitable buffer, determined in coordination with CDFW. The buffer zone shall be clearly demarcated using exclusion fencing. If establishing an avoidance buffer is not feasible, individual plants shall be transplanted to an area with suitable physical and biological conditions outside of the work area and monitored and adaptively managed for five years.

Mitigation: Implement NHPH Mitigation Measures BIO-1a through BIO-1d.

Significance after Mitigation: Less than Significant.

Vegetation Management and Slope Stabilization Improvements

Special-Status Plant Species. The proposed vegetation management activities and slope stabilization improvements would occur on the hillside within the Reserve. As such, these proposed activities and improvements could potentially disturb or remove special-status plants found along the margins of the Reserve. Damage or removal of coastal triquetrella due to construction would represent a potentially significant impact.

Implementation of **NHPH Mitigation Measure BIO-1e**: **Botanical Surveys** would require surveys for coastal triquetrella and avoidance of any identified plants. Implementation of this measure would reduce the impact on this species to a less-than-significant level.

Special-Status Wildlife Species. The proposed vegetation management activities and construction activities associated with the slope stabilization improvements would generate construction noise and related effects that could impact special-status wildlife species. Implementation of NHPH Mitigation Measures BIO-1a through BIO-1d would ensure those impacts would be mitigated to a less-than-significant level.

Mitigation: Implement NHPH Mitigation Measures BIO-1a through BIO-1e.

Significance after Mitigation: Less than Significant.

Parnassus Avenue Pedestrian Bridge and Tunnel

Special-Status Plant Species. The site of the proposed Parnassus Avenue pedestrian bridge and tunnel is located within developed areas on the campus site and off-campus within the City right-

of-way which have only ornamental vegetation and no special-status plant species are present. Consequently, no impact to special-status plants is anticipated from this project improvement.

Special-Status Wildlife Species. Construction activities associated with the proposed Parnassus Avenue pedestrian bridge and tunnel would generate construction noise and related effects that could impact special-status wildlife species. Implementation of NHPH Mitigation Measures BIO-1a through BIO-1d would ensure those impacts would be mitigated to a less than significant level.

Mitigation: Implement NHPH Mitigation Measures BIO-1a through BIO-1d.

Significance after Mitigation: Less than Significant.

Impact BIO-2: Implementation of the NHPH would not interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites. (*Less than Significant with Mitigation*)

New Hospital

The Parnassus Heights campus site, including the New Hospital site, is located in the middle of San Francisco. Although the nearby Reserve is an undeveloped area, it does not provide contiguous habitat for any mammal, reptile or amphibian species because of the presence of developed and disturbed lands on all sides. Thus, no established corridors are present on the campus site for these terrestrial wildlife species. Migratory birds utilizing the Pacific Flyway do, however, use the natural habitat of the Reserve as an important stopover, along with other parklands in San Francisco, including Golden Gate Park and Buena Vista Park, which serve a similar function.

The proposed New Hospital would be built within a developed portion of the campus core and adjacent to other existing tall buildings, including Moffitt and Long Hospitals on the campus site. However, the proposed New Hospital would be notably taller and larger than other campus site buildings, and would be located closer to the Reserve than the existing buildings on the New Hospital site. Bird flights close to man-made structures risk collisions with such structures. Approximately 100 million to 1 billion birds die in North America as a result of building collisions each year (Seewagen, 2017). Daytime collisions occur most often when birds fail to recognize window glass because it reflects clouds and sky. Lighting in high-rise buildings also affects birds during their movement and reproduction. Indirect effects of light disturbance on migratory birds include delayed arrival at breeding or wintering grounds, and reduced energy stores necessary for migration, winter survival, or subsequent reproduction (Gauthreaux and Belser, 2006).

The proposed New Hospital would increase the likelihood of migratory and resident birds striking windows of the proposed building during flight, causing injury or mortality. In addition, potential construction night lighting, and building night lighting associated with operation of the New Hospital could attract migratory birds and increase the likelihood of strike injuries or mortality.

The proposed New Hospital landscaping, including the proposed exterior terrace on the sixth floor of the New Hospital, could attract birds to its trees and may also increase the likelihood of bird collisions with the structure.

As discussed in Chapter 3, *Project Description*, UCSF would coordinate with a qualified ornithologist to incorporate design features into the New Hospital that would minimize the potential for bird strikes. Building architectural features and operational strategies under consideration include, but are not limited to, use of fritted and frosted glazing; use of building architectural features to minimize reflectively and visually interrupt glazed facades; minimize exterior lighting, and use of controls to reduce internal lighting emitted from patient rooms; implementation of a food waste management strategy to ensure appropriate handling of food waste in all proposed outdoor public areas to minimize the risk of attracting birds to the vicinity; and following LEED Pilot Credit #55, Bird Collision Deterrence guidance to further minimize potential adverse impacts to birds. Further, UCSF proposes to implement a three-year post-construction monitoring plan to monitor the effectiveness of the building and site design and practices in preventing bird collisions. UCSF would also comply with the allowed backlight, uplight, and glare (BUG) ratings for exterior lighting, which would serve to minimize the potential for bird strikes from exterior night lighting. Nonetheless, the potential exists for the addition of a 15-story building in close proximity to "islands" of bird habitat such as Golden Gate Park and Mount Sutro to increase the number of bird strikes on the campus site, compared to current conditions.

In 2011, the San Francisco Planning Department adopted *Standards for Bird-Safe Buildings* (see Section 4.3.2 above). While UCSF is not subject to local land use regulations whenever using property under its control in furtherance of its educational mission, to address the potentially significant impact of bird strikes during NHPH construction and operation, UCSF will implement mitigation that is generally consistent with the City's *Standards for Bird-Safe Buildings*. UCSF will implement **NHPH Mitigation Measures BIO-2a: Prevention of Harm to Migrating Birds during Construction,** and **BIO-2b: Bird-Safe Building Treatments**, which are set forth below. Implementation of these measures would reduce the potential adverse effect on resident and migrating birds to a less-than-significant level by reducing injuries associated with night lighting during construction and operation of the new facilities, and requiring design features be incorporated into new structures that would make buildings more visible to birds.

NHPH Mitigation Measure BIO-2a: Prevention of Harm to Migrating Birds During Construction

The construction contractor shall ensure that construction areas requiring lights shall include the following measures to the extent feasible:

- Construction-related lighting shall be fully shielded and focused down to ensure no significant illumination passes beyond the immediate work area. Lighting shall be positioned around the perimeter of the work area positioned toward activity and not surrounding habitat of the Reserve.
- Yellow or orange light shall be used where possible.

- Construction personnel shall reduce the amount of lighting to the minimum necessary to safely accomplish the work.
- Night construction near suitable habitat for nesting and migratory birds and bats (i.e. the Reserve forest and understory vegetation) shall be avoided during nesting season (February 15 – August 15). If night construction near these areas cannot be avoided, light shall not be allowed to shine directly into suitable habitat.

NHPH Mitigation Measure BIO-2b: Bird-Safe Building Treatments

UCSF staff shall confirm that building plans include the required building design measures prior to the start of construction:

- Avoid installation of lighting in areas where not required for public safety.
- Examine and adopt alternatives to bright, all-night, floor-wide lighting when interior lights would be visible from the exterior or when exterior lights must be left on at night, including:
  - Installing motion-sensitive lighting
  - Installing task lighting
  - Installing programmable timers
  - Installing fixtures that use lower-wattage, sodium, and yellow-red spectrum lighting (if compatible with personnel safety requirements)
- Where exterior lights are to be left on at night, install fully shielded lights to contain and direct light away from the sky.
- Employ glazing options such as use of either fritted glass, Dichroic glass, etched glass, translucent glass, or glass that reflects ultraviolet light in appropriate portions of the building façade.
- Minimize light and glare resulting from the new building through the use of landscaping materials and choice of primary façade materials. Project design shall not include reflective metal walls and mirrored glass walls as primary building materials for facades.

Significance after Mitigation: Less than Significant.

Related Improvements

Renovation of Moffitt and Long Hospitals

The proposed renovation of Moffitt and Long Hospitals would involve certain modest exterior modifications, including a small increase in size [4,500 gross square feet (gsf) for Moffitt Hospital, and up to 5,000 gsf for Long Hospital], and could involve night lighting during construction. These improvements and activities could pose an increased hazard for bird strikes. As discussed for the New Hospital, this impact from the renovation of Moffitt and Long Hospitals would be mitigated to a less-than-significant level by implementation of NHPH Mitigation Measures BIO-2a and BIO-2b.

Mitigation: Implement NHPH Mitigation Measures BIO-2a and BIO-2b.

Significance after Mitigation: Less than Significant.

Widening of Medical Center Way

The widening of Medical Center Way would occur in proximity to the Reserve, and could involve night lighting during construction. It is also expected that new street lighting would be provided on Medical Center Way. Implementation of NHPH Mitigation Measures BIO-2a and BIO-2b would ensure the impact would be mitigated to a less-than-significant level.

Mitigation: Implement NHPH Mitigation Measures BIO-2a and BIO-2b.

Significance after Mitigation: Less than Significant.

Replacement of Diesel Fuel Tanks

The replacement of the diesel fuel tanks would involve the replacement and expansion of diesel fuel tanks in proximity to the Reserve. It is expected that the diesel fuel tanks would require installation of nighttime security lighting. The potential for nightlighting during construction, if it were to occur, and permanent lighting could pose an increased hazard for bird strikes. As discussed for the New Hospital, this impact would be mitigated to a less- than- significant level by implementation of NHPH Mitigation Measures BIO-2a and BIO-2b.

Mitigation: Implement NHPH Mitigation Measures BIO-2a and BIO-2b.

Significance after Mitigation: Less than Significant.

Replacement of Medical Gas Tanks

The replacement of the medical gas tanks would involve the placement of medical gas tanks within the edge of the Reserve. It is expected that the medical gas tanks would require installation of nighttime security lighting. The potential for nightlighting during construction, if it were to occur, and permanent lighting could pose an increased hazard for bird strikes. These improvements and activities could pose an increased hazard for bird strikes. As discussed for the New Hospital, this impact would be mitigated to a less- than- significant level by implementation of NHPH Mitigation Measures BIO-2a and BIO-2b.

Mitigation: Implement NHPH Mitigation Measures BIO-2a and BIO-2b.

Significance after Mitigation: Less than Significant.

Vegetation Management and Slope Stabilization Improvements

The proposed vegetation management activities and slope stabilization improvements would occur on the hillside within the Reserve. No permanent structural development or new lighting is proposed with these improvements. It is not anticipated that any of these activities would occur at night. No significant impacts associated with potential increases in bird strikes are associated with these improvements.

Mitigation: None required.

Parnassus Avenue Pedestrian Bridge and Tunnel

The proposed tunnel would have no impact on migrating or resident birds. The proposed Parnassus Avenue pedestrian bridge could impact migrating and resident birds by providing an obstruction to flight, although its location on a busy urban street suggests that few migrating birds would use this route. Nonetheless, implementation of NHPH Mitigation Measures BIO-2a and BIO-2b would ensure potential impacts from the proposed pedestrian bridge would be mitigated to a less-than-significant level.

Mitigation: Implement NHPH Mitigation Measures BIO-2a and BIO-2b.

Significance after Mitigation: Less than Significant.

Cumulative Impacts

Impact C-BIO-1: Implementation of the NHPH would not result in cumulatively considerable impacts on biological resources, in combination with past, present and reasonably foreseeable future projects in the vicinity of the NHPH site. (*Less than Significant with Mitigation*)

The Parnassus Heights campus site is located in an urban setting surrounded by a mix of institutional, residential, neighborhood commercial and open space uses. As such, cumulative building projects in this portion of San Francisco are limited to the densification or rebuilding of existing structures. Cumulative projects occurring outside the campus site are typically in developed areas that lack sensitive biological resources, and therefore, do not have considerable cumulative effects on biological resources. With regard to projects on the campus site, the primary cumulative projects considered in this analysis include future projects on the campus site identified in the 2014 LRDP as amended, including the development program planned in the CPHP, and development projects at the campus site that were previously approved under the 2014 LRDP, but not yet implemented. In the NHPH vicinity, this includes demolition of the LPPI and supporting structures (located on the site of the New Hospital), demolition of the Surge building, and construction of the planned Irving Street Arrival, Research and Academic Building, and various other improvements. In addition, the Mount Sutro Open Space Vegetation Management Plan (UCSF, 2018a) is currently being implemented, involving phased removal of trees and understory and re-planting within the Reserve.

With respect to the new construction and demolition of buildings previously authorized under the 2014 LRDP, biological impacts associated with those projects would be mitigated to a less-than-significant level with the implementation of mitigation measures adopted by the University at the time of 2014 LRDP approval, including the approval of Amendment No. 7. With respect to the Mount Sutro Open Space Vegetation Management Plan, implementation of this plan will impact special-status species, including migratory birds and bats, within the Reserve by disturbance, as well as direct removal of habitat. However, these impacts would be mitigated to a less-than-significant level with the implementation of mitigation measures in the Mount Sutro Open Space Vegetation Management Plan Final EIR that were adopted at the time of project approval.

Furthermore, the Vegetation Management Plan's phased implementation was designed to minimize the extent of loss of habitat for species in the Reserve.

As discussed above, the NHPH would result in minimal direct impacts on sensitive biological resources within the Reserve, and would mitigate all indirect impacts to special-status species, both inside and outside of the Reserve, with **NHPH Mitigation Measures BIO-1a** through **BIO-1e**, and **NHPH Mitigation Measures BIO-2a** and **BIO-2b**. Therefore, with mitigation, the development of the New Hospital and related improvements would not result in a cumulatively considerable contribution to impacts on biological resources. Thus, the project's cumulative impacts on biological resources would be less than significant.

> **Mitigation:** Implement NHPH Mitigation Measures BIO-1a through BIO-1e, and BIO-2a and BIO-2b.
>
> **Significance after Mitigation:** Less than Significant.

4.3.4 References

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4.4 Cultural Resources

This section assesses the potential for construction and operation of the New Hospital and related improvements at the east end of UCSF's Parnassus Heights campus core, collectively known as the New Hospital at Parnassus Heights project (NHPH), to result in significant impacts on historical resources. Historical resources include buildings, structures, objects, and historic districts. Residences, cabins, barns, industrial buildings, and bridges are examples of historical resources.

The section includes a description of the existing environmental setting as it relates to historical resources, and provides a regulatory framework that discusses applicable federal, State, and local laws and regulations, identifies criteria used to determine impact significance, discusses potential impacts, and identifies feasible mitigation measures, as necessary, to reduce potential significant impacts to historical resources.

Other cultural resources issues, including pre-historic and historic-era archaeological resources, human remains, and tribal cultural resources, are addressed in the Initial Study; please see **Appendix A** (Sections 5.5 and 5.18).

For purposes of providing distinction between the various components of this project, references made in this EIR to "New Hospital" relate only to the New Hospital portion of the overall project, whereas references made to "NHPH" relate to the overall project, including the New Hospital and its related improvements.

4.4.1 Environmental Setting

Historical Background

Initial European exploration of the San Francisco Peninsula began in 1769 and lasted until 1810. During this period, a number of Spanish expeditions penetrated the territory occupied by the Ohlone. Between 1769 and 1776, forays led by Portola, Ortega, Fages, Fages and Crespi, Anza (two expeditions), Rivera, and Moraga were carried out. Favorable reports led to the founding of seven missions in the region between 1770 and 1797.

In the spring of 1776, the site of San Francisco was chosen by Juan Batista Anza for the establishment of a mission and military post. Later that same year, the Mission San Francisco de Asís (also known as Mission Dolores) and Presidio de San Francisco were officially dedicated and Jose Joaquin Moraga (Anza's lieutenant) took formal possession in the name of King Carlos III.

The Spanish annexation and colonization of Alta California, as manifested in the religious-military mission system, produced profound changes in the cultures of the indigenous population. The missions resettled and concentrated the aboriginal hunter-gatherer population into agricultural communities. The concentration of population, coupled with the indigenous people's lack of immunity to European diseases, caused the tribes to be decimated by common diseases which were generally not fatal to Europeans. It has been estimated that the Ohlone population declined from 10,000 or more in 1770 to less than 2,000 in 1832.

Mexico established jurisdiction over Alta California in April of 1822. During the Mexican Period (1822–1848), control over this remote area by the central and local Mexican authorities was never strong. California became part of the United States as a consequence of the U.S. victory over Mexico in the Mexican War. The territory was formally ceded in the treaty of Guadalupe Hidalgo in 1848, and was admitted as a state in 1850.

Prior to the discovery of gold at Sutter's Mill on January 24, 1848, development in San Francisco consisted of the Spanish/Mexican facilities (i.e., the Presidio and Mission) and a small settlement known as Yerba Buena situated on the shores of the cove by the same name. The inhabitants of Yerba Buena were predominantly non-Spanish, English-speaking immigrants (e.g., U.S. or British citizens). Sometime before the Gold Rush, the inhabitants of Yerba Buena officially changed the name of their settlement to San Francisco. Following the discovery of gold, San Francisco transformed quickly from an isolated hamlet into a bustling center of commerce. After the discovery of gold, the population of San Francisco grew from 375 people in 1847 to 2,000 by February 1849, and by the end of 1849, there may have been as many as 20,000 people living in the City (CCSF, 2011).

University of California San Francisco, Parnassus Heights

UCSF is historically associated with the Toland Medical College, founded in downtown San Francisco in 1863. In 1873, the Toland Medical College was acquired by and became affiliated with the University of California. The original UCSF campus at Parnassus Heights was established through a combination of factors, including the appropriation of $250,000 by the state legislature in 1895 to construct three buildings to house the "Affiliated Colleges" of Dentistry, Medicine, and Pharmacy. Also, in 1895, Adolph Sutro, the former mayor of San Francisco, presented the University with a gift of its first 13 acres. The cornerstone for the Affiliated Colleges at the Parnassus Heights campus site was laid on March 27, 1897, and the campus opened in October 1898.

UC Hall (extant), originally known as UC Hospital when it was completed in 1917, was the first hospital building constructed on the campus site. Construction of additional medical facilities, academic buildings, and other support functions continued throughout the first half of the 20th century, occurring primarily along the south side of Parnassus Avenue and eventually extending from 3rd Avenue east to Hillway Avenue. Post-World War II growth continued to be concentrated in areas south of Parnassus Avenue, including Moffitt Hospital and the Medical Sciences Building (1955, both extant), as well as areas north of Parnassus Avenue to Irving Street.

In the period from the 1960s to 1980s, the University refurbished a number of the aging buildings including UC Hall and the Clinical Sciences Building (extant) which was originally completed in 1933. Other buildings were demolished in this period, including the old Medical School Building – completed in 1898 and located in what is now Saunders Court between the Medical Sciences Building and the School of Nursing.

New buildings constructed during this period include the University House (extant), which opened in 1965 to be used as the Chancellor's Residence, and two glass towers (extant) behind the Medical Science and Clinical Sciences buildings called Health Science East and West, which

were completed in 1966. The School of Nursing building (extant) was competed in 1972, and the Ambulatory Care Center building (extant, today known as Medical Building 1 or ACC) on the opposite side of Parnassus Avenue was completed in 1973. Numerous new buildings were also added in the 1980s, including the new School of Dentistry/Dental Clinics building (1980, extant), the modernized Moffitt Hospital project (1980, extant), the new Long Hospital (1983, extant), and the Koret Center (1986, extant).

Mount Sutro Open Space Reserve

The 61-acre Mount Sutro Open Space Reserve (Reserve) primarily occupies the central and southern portion of the campus site, with a portion that extends north to Parnassus Avenue along the east side of the campus site. The Reserve was designated an Open Space Reserve in 1976. The potential historical significance of the Reserve as a cultural landscape was evaluated as part of the UCSF *Mount Sutro Management Project EIR* (UCSF, 2013; Bradley, Denise and Knapp & VerPlanck Preservation Architects, 2013).

The following is an excerpt from the *Final Mount Sutro Open Space Reserve Cultural Landscape Evaluation Report* (Revised 2013) included in the UCSF *Mount Sutro Management EIR*:

> Adolph Sutro became a wealthy man after selling his stock in the company that had designed and constructed the massive Sutro Tunnel that drained and ventilated the flooded shafts of the Comstock Lode silver mines in Nevada. He used part of this fortune to invest in real estate in San Francisco. Although he purchased a significant amount of downtown property, Sutro focused his purchases in the city's largely undeveloped Outside Lands. Sutro's largest single acquisition was his $520,000 purchase of the 1,200-acre San Miguel Rancho parcel. This parcel ran from the present-day UCSF Parnassus Heights [c]ampus south along Stanyan Street, up over Twin Peaks along an imaginary line due south (aligning roughly with present-day Genesee Avenue) to the Ocean View district, then east to Junípero Serra Boulevard, and north to Laguna Honda. The property contained all four peaks of the San Miguel Hills—Mount Sutro, Twin Peaks, and Mount Davidson…
>
> The establishment of the forest at Mount Sutro was a part of Sutro's larger forest planting efforts on the 1,200-acre San Miguel Rancho parcel—in what came to be known as Sutro Forest—that began in 1886. The origins of this particular interest and of his decision to undertake this effort were undoubtedly influenced by late nineteenth-century afforestation practices that viewed planting trees as a way to address concerns over a diminishing resource and as a way to improve the land. During the 1860s, tree planting had come to be viewed as a patriotic duty throughout the country, and Sutro, along with Joaquin Miller, organized California's first Arbor Day on November 26, 1886. At this time various largescale, tree-planting efforts were underway throughout San Francisco (although Sutro's efforts for Sutro Forest, which included tree-planting at Mount Sutro, would be the largest).

Identified Historical Resources

An inventory of identified historical resources on the Parnassus Heights campus site is included in **Table 4.4-1**. Of the 71 individual buildings on the campus site, 25 are considered historical resources for the purposes of CEQA. In addition, two cultural landscapes (the Reserve and Saunders Court) are considered historical resources.

TABLE 4.4-1
INVENTORY OF HISTORICAL RESOURCES ON UCSF PARNASSUS HEIGHTS CAMPUS SITE

Building Name	Year Built (Source)	Eligibility (Source)	2020 DPR Update/ Eligibility (Source)
Millberry Union Complex	1955 (Carey & Co., 2011)	NR[a] and CR[b] (Carey & Co., 2011)	NR and CR (ESA, 2020)
UC Hall	1917 (Carey & Co., 2003)	CR (Carey & Co., 2003)	
School of Dentistry/Dental Clinics	1979 (Carey & Co., 2011)	NR and CR with Criteria Consideration G (Carey & Co., 2011)	
Clinical Sciences	1933 (Page & Turnbull, 2005)	CR (Page & Turnbull, 2005)	
Saunders Court (cultural landscape)	1967 (Carey & Co., 2011)	Not age eligible; may become eligible for NR and CR (Carey & Co., 2011)	NR and CR (ESA, 2020)
Mount Sutro Open Space Reserve (cultural landscape)	1886 (Knapp & VerPlanck, 2013)	CR (Knapp & VerPlanck, 2013)	
Health Sciences Instruction and Research (HSIR) West	1966 (Carey & Co., 2011), 1964 (UCSF, 2019)	Not age eligible; may become eligible for NR and CR (Carey & Co., 2011)	NR and CR (ESA, 2020)
HSIR East	1966 (Carey & Co., 2011), 1964 (UCSF, 2019)	Not age eligible; may become eligible for NR and CR (Carey & Co., 2011)	NR and CR (ESA, 2020)
Medical Sciences	1954 (Carey & Co., 2011)	NR and CR (Carey & Co., 2011)	
Langley Porter Psychiatric Institute (LPPI)	1943 (Graves, 2019a), 1941 (UCSF, 2019)	NR and CR (Graves, 2019a)	
Potential Third Avenue Historic District		NR and CR (Carey & Co., 2011)	
1320 Third Avenue	1911 (Carey & Co., 2011), 1912 (UCSF, 2019)	Contributor	
1326 Third Avenue	1911 (Carey & Co., 2011), 1912 (UCSF, 2019)	Contributor	
1332 Third Avenue	1911 (Carey & Co., 2011), 1915 (UCSF, 2019)	Contributor	
1338 Third Avenue	1910 (Carey & Co., 2011), 1913 (UCSF, 2019)	Contributor	
1344 Third Avenue	1910 (Carey & Co., 2011), 1912 (UCSF, 2019)	Contributor	
1350 Third Avenue	1911 (Carey & Co., 2011), 1912 (UCSF, 2019)	Contributor	
1356 Third Avenue	1911 (Carey & Co., 2011)	Contributor	
1362 Third Avenue	1909 (Carey & Co., 2011)	Contributor	
1422-24 Fifth Avenue	1922 (Carey & Co., 2011), 1915 (UCSF, 2019)	NR and CR (Carey & Co., 2011)	
1432-34 Fifth Avenue	1910 (Carey & Co., 2011), 1911 (UCSF, 2019)	NR and CR (Carey & Co., 2011)	
1468 Fifth Avenue	1948 (Carey & Co., 2011), 1920 (UCSF, 2019)	NR and CR (Carey & Co., 2011)	

TABLE 4.4-1 (CONTINUED)
INVENTORY OF HISTORICAL RESOURCES ON UCSF PARNASSUS HEIGHTS CAMPUS SITE

Building Name	Year Built (Source)	Eligibility (Source)	2020 DPR Update/ Eligibility (Source)
Faculty Alumni House (745 Parnassus Avenue)	1915 (Carey & Co., 2011)	NR and CR (Carey & Co., 2011)	
Surge	1966 (Carey & Co., 2011)	Not age eligible; may become eligible for NR and CR (Carey & Co., 2011)	
University House (Chancellor's residence)	1966 (Carey & Co., 2011)	NR and CR (Carey & Co., 2011)	
Aldea San Miguel Housing Complex			
Aldea San Miguel 8 (105 Behr Avenue)	1960 (Carey & Co., 2011)	NR and CR (Carey & Co., 2011)	
Aldea San Miguel 12 (165 Johnstone Drive)	1960 (Carey & Co., 2011)	NR and CR (Carey & Co., 2011)	
Aldea San Miguel 10 (175 Johnstone Drive)	1960 (Carey & Co., 2011)	NR and CR (Carey & Co., 2011)	

NOTES:
[a] National Register of Historic Places
[b] California Register of Historical Resources

4.4.2 Regulatory Framework

Federal

Historical and archaeological resources are considered through the National Historic Preservation Act (NHPA) of 1966, as amended (54 U.S.C. 306108), and its implementing regulations. Before an "undertaking" (e.g., federal funding or issuance of a federal permit) is implemented, Section 106 of the NHPA requires federal agencies to consider the effects of the undertaking on historic properties (i.e., properties listed in or eligible for listing in the national register) and to afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on any undertaking that would adversely affect properties eligible for listing in the National Register of Historic Places (National Register). Under the NHPA, a property is considered significant if it meets the National Register listing criteria A through D, at 36 Code of Federal Regulations 60.4, as follows:

> The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and that:
>
> a) Are associated with events that have made a significant contribution to the broad patterns of our history, or
>
> b) Are associated with the lives of persons significant in our past, or
>
> c) Embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction, or

d) Have yielded, or may be likely to yield, information important in prehistory or history.

For a resource to be eligible for the National Register, it must also retain enough integrity to be recognizable as a historic property and to convey its significance. Resources that are less than 50 years old are generally not considered eligible for the National Register.

Federal review of the effects of undertakings on significant cultural resources is carried out under Section 106 of the NHPA and is often referred to as "Section 106 review." This process is the responsibility of the federal lead agency. Section 106 review typically involves a four-step procedure, which is described in detail in the implementing regulations of the NHPA (36 Code of Federal Regulations 800):

- Define the Area of Potential Effects in which an undertaking could directly or indirectly affect historic properties;
- Identify historic properties in consultation with the State Historic Preservation Office and interested parties;
- Assess the significance of effects of the undertaking on historic properties; and
- Consult with the State Historic Preservation Officer, other agencies, and interested parties to develop an agreement that addresses the treatment of historic properties and notify the Advisory Council on Historic Preservation and proceed with the project according to the conditions of the agreement.

State

The State of California implements the NHPA of 1966, as amended, through its statewide comprehensive cultural resource surveys and preservation programs. The California Office of Historic Preservation, as an office of the California Department of Parks and Recreation, implements the policies of the preservation act on a statewide level. The Office of Historic Preservation also maintains the California Historical Resources Inventory. The State Historic Preservation Officer is an appointed official who implements historic preservation programs within the state's jurisdictions.

CEQA and the California Register of Historical Resources

The California Register is "an authoritative listing and guide to be used by state and local agencies, private groups, and citizens in identifying the existing historical resources of the state and to indicate which resources deserve to be protected, to the extent prudent and feasible, from substantial adverse change" (PRC Section 5024.1[a]). Certain resources are determined by the statute to be automatically included in the California Register, including those formally determined eligible for or listed in the National Register (PRC 5024.1[d][1]). These resources are termed "historical resources."

Based on Section 15064.5(a) of the CEQA Guidelines, historical resources include, but are not limited to, any object, building, structure, site, area, place, record, or manuscript that is historically or archaeologically significant or that is significant in the architectural, engineering,

scientific, economic, agricultural, educational, social, political, military, or cultural annals of California. Generally, a resource is considered by a lead agency to be "historically significant" if the resource meets the criteria for listing in the California Register (PRC Section 5024.1), or qualifies as a "unique historical resource" (PRC Section 21083.2).

To be eligible for the California Register, a cultural resource must meet one or more of the following criteria:

1. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
2. Is associated with the lives of persons important in our past;
3. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
4. Has yielded, or may be likely to yield, information important in prehistory or history.

For a resource to be eligible for the California Register, it must also retain enough integrity of location, design, setting, materials, workmanship, feeling, and association to be recognizable as a historical resource and to convey its significance. Resources that are less than 45 years old are generally not considered eligible for the California Register.

Impact assessment under CEQA considers only historically significant cultural resources; that is, resources that meet CEQA criteria for eligibility to the California Register (historical resources) or qualify as unique archaeological resources, as detailed below. Impacts on resources that do not meet these criteria are not considered in impact assessment under CEQA. Similarly, for projects with federal involvement, only resources that meet the criteria of eligibility for the National Register receive further consideration in impact analysis.

CEQA considers archaeological resources as an intrinsic part of the physical environment and thus requires that, for any project, the potential of the project to adversely affect archaeological resources be analyzed (CEQA Section 21083.2). For a project that may have an adverse effect on a significant archaeological resource, CEQA requires preparation of an environmental impact report (CEQA Section 21083.2 and CEQA Guidelines Section 15065). CEQA recognizes two different categories of significant archaeological resources: "unique" archaeological resource (CEQA Section 21083.2) and an archaeological resource that qualifies as a "historical resource" under CEQA (CEQA Section 21084.1 and CEQA Guidelines Section 15064.5).

UCSF

UCSF 2014 LRDP

The UCSF 2014 LRDP (amended January 2021) identified campus-wide objectives and objectives specific to the Parnassus Heights campus site. The following UCSF 2014 LRDP objectives relate to cultural resources:

Parnassus Heights

Site-Specific Objectives

F. Preserve the Mount Sutro Open Space Reserve as permanent open space, and serve as the steward of the Reserve by maintaining and expanding the trail system and by ensuring the safety of visitors and neighboring structures.

Open Space

- Maintain the designation of the Mount Sutro Open Space Reserve as permanent open space, including adjustment to the Reserve boundary while maintaining a minimum of 61 acres.
- Continue to manage the Mount Sutro Open Space Reserve, and create new/restored trails.

Regents' Resolution Regarding the Parnassus Heights Campus Site

- Reaffirm the designation of the Mount Sutro Open Space Reserve as permanent open space with a minimum size of 61 acres, however in order to accommodate the New Hospital the boundary of the Reserve is proposed to be modified to remove an approximately 0.15-acre area east of Medical Center Way into which the New Hospital may extend, and in exchange add an approximately 0.4-acre area within the Surge/Woods parking area to the Reserve, so that the Reserve will continue to contain a minimum of 61 acres.

The UCSF 2014 LRDP also included *Community Planning Principles*, which were produced in collaboration with the UCSF Community Advisory Group:

Community Planning Principles

Building and Public Realm Design

BD3 Consider adaptive reuse of building structures.

BD8. Respect historically significant resources whenever possible.

Land Use

LU9. Preserve the Mount Sutro Open Space Reserve as permanent open space.

UCSF Mount Sutro Open Space Reserve Vegetation Management Plan

In 2015, UCSF began a process to develop a management plan to ensure the long-term health and sustainability of the Reserve. The UCSF Mount Sutro Open Space Reserve Vegetation Management Plan was completed in March 2018 and approved by the UCSF Chancellor in April 2018.

The purpose of the Vegetation Management Plan is to provide a management framework for protecting, enhancing, and restoring vegetation in the Reserve. To achieve a healthy and stable ecosystem, the Vegetation Management Plan outlines strategies for increasing the biodiversity of vegetation, conserving existing native vegetation, improving the regeneration and recruitment of tall tree species, managing insect and disease pressure on blue gum eucalyptus, and improving

structural diversity. The Vegetation Management Plan continues the University's programs of tree risk assessment and hazard tree removal, creation and management of defensible space, maintaining trail access, and conservation and stewardship of native plants.

The Vegetation Management Plan identifies three phases of forest treatment. During the first few years, forest treatments will focus on the areas of the Reserve in greatest need of treatment, including 1) removing dead, dying, unhealthy and structurally unsound trees, 2) controlling low-growing vines and shrubs that would compete with desired vegetation, 3) preventing sprouts from decayed stumps, and 4) planting new trees. In the second phase, the density of certain areas in the forest will be reduced in order to meet the desired number of trees per acre by clearing dead, dying, unhealthy and structurally unsound trees; and other forest areas would be replanted. The third phase includes extending the treatment to remaining areas of the forest, along with monitoring of the status of vegetation and wildlife in the Reserve to evaluate the results of the treatments (UCSF, 2018).

City of San Francisco

UCSF is not subject to local land use regulation whenever using land under its control in furtherance of its educational mission. However, it is UCSF policy to be generally consistent with applicable local plans, policies and regulations to the extent feasible.

San Francisco City Landmarks

San Francisco City Landmarks are buildings, properties, structures, sites, districts, and objects that possess special character or special historical, architectural or aesthetic interest or value and that are an important part of the City's historical and architectural heritage. City Landmarks are important to San Francisco's history and are significant and unique examples of the past. Adopted in 1967 as Article 10 of the City Planning Code, City Landmarks are protected from inappropriate alterations and demolitions, with all significant alterations reviewed by the San Francisco Historic Preservation Commission. There are currently approximately 290 landmark sites and 14 historic districts in San Francisco subject to Article 10. On November 25, 2020, the City of San Francisco approved Ordinance 241-20 amending the Planning Code to designate the Zakheim murals located in Toland Hall auditorium in UCSF's UC Hall as a City Landmark.

4.4.3 Impacts and Mitigation Measures

Significance Criteria

Would implementation of the NHPH:

a) Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5;

b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5; or

c) Disturb any human remains, including those interred outside of formal cemeteries.

d) Cause a substantial adverse change in the significance of a tribal cultural resource, defined in PRC Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

   i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in PRC Section 5020.1(k), or

   ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of PRC Section 5024.1. In applying the criteria set forth in subdivision (c) of PRC Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

Criteria Not Analyzed

As explained in the Initial Study, no additional analysis was required related to the following topics for the reasons described below:

- ***Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5.***
- ***Disturb any human remains, including those interred outside of formal cemeteries.***
- ***Cause a substantial adverse change in the significance of a tribal cultural resource.***

Previous studies and archival research conducted for the Parnassus Heights campus site have not identified any archaeological resources, human remains, or tribal cultural resources, and given the highly disturbed nature of the project site from extensive use and prior development, there is a very low potential to inadvertently uncover unknown resources under the NHPH. With implementation of NHPH Mitigation Measure CUL-V.b: Inadvertent Discovery of Archaeological Resources and Tribal Cultural Resources; and NHPH Mitigation Measure CUL-V.c: Inadvertent Discovery of Human Remains, the proposed NHPH would have a less-than-significant impact on previously unknown archaeological resources, human remains or tribal cultural resources.

Approach to Analysis

Potential impacts on historical resources are assessed by identifying any activities (either during construction or operations) that could affect resources that have been identified as historical resources for the purposes of CEQA. Once a resource has been identified as a CEQA historical resource, it then must be determined whether the project would "cause a substantial adverse change in the significance" of the resource (CEQA Guidelines Section 15064.5[b]). A substantial adverse change in the significance of an historical resource means "physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired" (CEQA Guidelines Section 15064[b][1]). A historical resource is considered materially impaired through the demolition or alteration of the resource's physical characteristics that convey its historical significance and that justify its inclusion in the California Register (CEQA Guidelines Section 15064.5[b][2][A]).

Impact Analysis

Impact CUL-1: Implementation of the NHPH would not result in a substantial adverse change in the significance of known historical resources. (*Less than Significant*)

New Hospital

A number of buildings occupy the footprint of the proposed New Hospital, including the Langley Porter Psychiatric Institute (LPPI) which was determined to be eligible for listing in the National Register and the California Register. These buildings would be demolished and removed prior to the initiation of NHPH construction. Furthermore, as discussed in Chapter 3, *Project Description*, the demolition and removal of these buildings is being completed separately from, and therefore not associated with, the NHPH project; see also Impact C-CUL-1, below.

There are no other historical resources on the New Hospital site, or in the New Hospital site vicinity (e.g., Reserve), that would be directly impacted by the construction or operation of the New Hospital. As such, the proposed New Hospital would not result in a substantial adverse change in the significance of known historical resources.

Related Improvements

Renovation of Moffitt and Long Hospitals

The NHPH would involve interior renovations, and certain exterior modifications to the Moffitt and Long Hospitals (including creating openings in Moffitt and Long Hospitals to connect the New Hospital, and the addition of an exit stair tower on the northwest side of Moffitt Hospital). Neither Moffitt or Long Hospitals are eligible for listing on the National Register or California Register. There are no other historical resources in the vicinity of Moffitt and Long Hospitals, including the adjacent Medical Sciences Building, or the nearby Health Sciences Instruction and Research (HSIR) East building, Millberry Union complex or Reserve, that would be directly impacted by the renovation or continued operation of Moffitt and Long Hospitals. As such, the proposed renovation of Moffitt and Long Hospitals under the NHPH would not result in a substantial adverse change in the significance of known historical resources.

Widening of Medical Center Way

There are no historical resources within the site of the proposed widening of Medical Center Way that would be directly impacted by the widening project. The widening project would also not encroach into or impact the adjacent Reserve. As such, the proposed widening of Medical Center Way would not result in a substantial adverse change in the significance of known historical resources.

Replacement of Diesel Fuel Tanks

The two potential sites for the proposed replacement of diesel fuel tanks are located along Medical Center Way behind the Parnassus Services Building and Central Utility Plant (CUP). There are no historical resources on the sites for the diesel fuel tanks that would be directly impacted by the construction or operation of these facilities. The diesel fuel tanks replacement project would also not encroach into or impact the nearby Reserve. As such, the proposed

replacement of the diesel fuel tanks under the NHPH would not result in a substantial adverse change in the significance of known historical resources.

Medical Gas Tanks Replacement

The proposed medical gas tanks replacement site is located along Medical Center Way east of the CUP. The installation of the medical gas tanks would result in a minor encroachment into the Reserve.

As discussed in the *Environmental Setting*, the 61-acre Reserve was evaluated as a cultural landscape in 2013, and was determined to be a historical resource for the purposes of CEQA, and eligible for inclusion in the California Register. Its eligibility was based on its association with Adolph Sutro and his development of the Sutro Forest (the period of this significance is 1886-98) as well as for its association with the history of San Francisco and the informal development of this naturalistic landscape as a recreational area and green space for the City (the period of this significance is 1886 – present (UCSF, 2013).

The character-defining features of the Reserve that convey its historical significance include: (1) the presence of a forest that covers the overwhelming majority of the land area and whose dominant species is eucalyptus, (2) the presence of the Historic and Fairy Gates trails as part of a consciously laid out trail system and the presence of informal or social trails which have developed over time related to land use activities and to provide connections into Mount Sutro from the surrounding neighborhoods, and (3) the natural topographic characteristics of the site, including the steep terrain, the rock outcrops, Stanyan Canyon, and the summit (UCSF, 2013).

This Reserve hillside is dominated by non-native blue gum eucalyptus and Monterey cypress trees, and understory vegetation. The Campus Trailhead, which provides trail access into the Reserve from Medical Center Way (near the UCSF CUP) is in the vicinity of the medical gas tanks replacement site. In addition, two public trails and a stairway extend through the Reserve in the site vicinity connecting trailheads and the Surge parking lot.

Given the minor encroachment by the proposed medical gas tanks replacement project into the Reserve, it would not change the eucalyptus dominant forest such that the forest would no longer contribute to the California Register-eligibility of this cultural landscape, or substantially change the characteristic topographic features that contribute to its eligibility. Furthermore, the proposed medical gas tank replacement project would not alter, remove or prevent access to Reserve trails and trailheads. Consequently, this project would not impact the historical significance of the cultural landscape as it relates to its trail system.

Under the NHPH, the area previously removed from the Reserve under 2014 LRDP Amendment #7 to accommodate the New Hospital footprint is now proposed to be returned to the Reserve. In addition, the area between the Surge and Woods parking lots that was added to the Reserve under 2014 LRDP Amendment #7 would remain as Reserve land. These changes would result in a net increase to Reserve land and would maintain the Reserve at a minimum of 61 acres.

Given these factors, proposed medical gas tanks replacement project under the NHPH would not result in a substantial adverse change in the significance of this historical resource.

Vegetation Management and Slope Stabilization Improvements

Under the NHPH, proposed vegetation management activities would occur on the hillside within the Reserve east of Medical Center Way to reduce the potential for fire hazards. These activities would be implemented consistent with UCSF's Mount Sutro Open Space Reserve Vegetation Management Plan. The implementation vegetation management and creation of defensible space would not change the eucalyptus dominant forest such that the forest would no longer contribute to the California Register-eligibility of this cultural landscape, or change the characteristic topographic features that contribute to its eligibility. Furthermore, the proposed vegetation management activities would not alter, remove or prevent access to Reserve trails and trailheads, and consequently, this project would not impact the historical significance of the cultural landscape as it relates to its trail system. Given these factors, the proposed vegetation management activities under the NHPH would not result in a substantial adverse change in the significance of this historical resource.

The specific stabilization technique(s) that may be implemented on the hillside within the Reserve east of Medical Center Way are being determined, and would be dependent in part on the medical gas tanks replacement option that is selected, and the extent of the tree and vegetation clearance required to comply with defensible space regulations. However, given that such improvements would serve to minimize the risk of landslides within the Reserve, and also minimize associated detrimental effects on geology, soils and biological resources within the Reserve, it is expected that such slope stabilization improvements would, on balance, not impact the historical significance of the cultural landscape as it relates to its character-defining features.

Parnassus Avenue Pedestrian Bridge and Tunnel

The proposed Parnassus Avenue pedestrian bridge would connect the proposed New Hospital with the planned Irving Street Arrival. The proposed tunnel would extend between the New Hospital and Medical Building 1. None of these buildings are eligible for listing on the National Register or California Register. As such, the improvement would not result in a substantial adverse change in the significance of known historical resources.

Summary

The only historical resource that could be impacted by the NHPH is the Reserve. As discussed above, there would be no significant changes to the character-defining features of the Reserve due to the NHPH. The Reserve would continue to include a forest that covers the overwhelming majority of the land area, proposed NHPH vegetation management activities would be consistent with the UCSF's Mount Sutro Open Space Reserve Vegetation Management Plan, no trails or trailheads would be modified or removed, and the topography of the Reserve would be retained. As such, the NHPH would have a less-than-significant impact on historical resources.

Mitigation: None required.

Cumulative Impacts

Impact C-CUL-1: Implementation of the NHPH would not result in a cumulatively considerable impact to known historical resources, in combination with past, present and reasonably foreseeable future projects in the vicinity of the Parnassus Heights campus site. (*Less than Significant*)

Implementation of the proposed NHPH would not result in significant impacts to historical resources at the Parnassus Heights campus site. As discussed above, only one resource at the campus site that qualifies as a CEQA historical resource would be affected by the proposed NHPH. As indicated in Table 4.4-1 in the Environmental Setting, there are 25 individual buildings on the campus site that are considered historical resources for the purposes of CEQA. Additionally, two cultural landscapes are considered historical resources: Saunders Court and the Reserve. The demolition and/or alteration of many of these historical resources were evaluated in previous UCSF environmental documents.

Demolition of the Surge building was previously evaluated in the 2014 LRDP Final EIR and determined to be a significant impact to historical resources. In addition, the planned demolition of LPPI – located on the site of the proposed New Hospital and eligible for listing in the National Register and the California Register in 2020 – would be a significant impact to historical resources. Also, the partial or total demolition of UC Hall[1] (including the Zakheim murals), Millberry Union, School of Dentistry, and Aldea Housing Buildings 8, 10, and 12; as well as potential alteration to the Reserve, Saunders Court, HSIR East, HSIR West, and Medical Sciences Building would be a significant impact to historical resources. Lastly, the demolition of several additional residential buildings in the Aldea Housing complex that may become eligible for listing in the National Register or California Register by full buildout of the CPHP would be considered a significant impact.

Despite mitigation, the alteration or demolition of these resources would combine with known or reasonably foreseeable demolition or alteration projects on the campus site and its vicinity to result in cumulatively considerable impacts.

The result of all past, present and reasonably foreseeable future projects would result in a cumulatively considerable impact on historical resources. However, implementation of the proposed NHPH would result in a contribution that would not be considerable to the previously identified significant cumulative impacts to historical resources. Therefore, impacts on historic architectural resources as a result of the implementation of the NHPH are considered less than significant.

Mitigation: None required.

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[1] UC Hall is the oldest extant building on the campus site and the oldest hospital built for use by the UC's School of Medicine. It is the only remaining building on the campus site designed and built in the Beaux-Arts style of architecture.

4.4.4 References

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4.5 Energy

Section 21100(b) of the California Public Resources Code (PRC) directs all State Agencies, Boards, and Commissions to assess the environmental impacts of projects for which they are a Lead Agency under CEQA to determine whether a project could result in significant effect on the environment, including effects from the wasteful, inefficient, and unnecessary consumption of energy, and to identify mitigation measures to minimize any such significant effects.

This section discusses the existing energy-related profiles of the state and the Parnassus Heights campus site. The current regulatory and policy frameworks that govern the production and consumption of energy resources and aim to increase energy efficiency while reducing reliance on fossil fuels are also described. The construction and operation of the NHPH is then assessed for its potential to result in significant energy impacts based on the California energy profile (i.e., mix of energy resources and consumption characteristics), the regional energy production and transmission profile of Pacific Gas & Electric Company (PG&E; the regional purveyor of natural gas and electricity throughout the Bay Area and much of central and northern California) as well as the local energy profile of the Parnassus Heights campus site, and the section examines the proposed NHPH's energy usage characteristics to determine whether the NHPH could result in any significant energy-related environmental impacts during its construction or operation activities. The analysis identifies feasible mitigation measures for significant adverse impacts. The section also includes an analysis of cumulative energy impacts.

For purposes of providing distinction between the various components of this project, references made in this EIR to "New Hospital" relate only to the New Hospital portion of the overall project, whereas references made to "NHPH" relate to the overall project, including the New Hospital and its related improvements.

4.5.1 Environmental Setting

State Setting

Energy Profile

Total energy usage in California was 7,802 trillion British Thermal Units (Btu) in 2019, which equates to an average of 198 million Btu per capita. These figures place California 2nd among the nation's 50 states in total energy use and 50th in per capita consumption. Of California's total energy usage, the breakdown by sector is roughly 39 percent transportation, 23 percent industrial, 19 percent commercial, and 19 percent residential. Electricity and natural gas in California are primarily consumed by stationary users such as residences and commercial and industrial facilities, whereas petroleum-based fuel consumption is generally accounted for by transportation-related energy use (EIA, 2021a).

California relies on a regional power system composed of a diverse mix of natural gas, renewable, hydroelectric, and nuclear generation sources. Approximately 72 percent of the electrical power needed to meet California's demand is produced in the state; the balance, approximately 28 percent,

is imported from the Pacific Northwest and the Southwest. In 2019, California's in-state electricity generation was derived from natural gas (43 percent); large hydroelectric resources (17 percent); nuclear sources (8 percent); renewable resources that include geothermal, biomass, small hydroelectric resources, wind, and solar (32 percent); coal (less than 1 percent); and petroleum coke/waste heat (less than 1 percent) (CEC, 2021a).

Electricity

In 2019, total system electric generation for California was 277,704 gigawatt-hours (GWh), down 2.7 percent from 2018's total generation of 285,488 GWh. Electricity from non-CO_2 emitting electric generation categories (i.e., nuclear, large hydroelectric, and renewable generation) accounted for 57 percent of total in-state generation for 2019, compared to 55 percent in 2018. However, California's in-state generation increased by three percent (5,633 GWh) to 200,475 GWh. This increase was due, in part, to increased generation from hydroelectric power plants, up 11,049 GWh (50 percent) from 2018. Net imports decreased by 15 percent to 77,229 GWh, down 13,416 GWh from 90,647 GWh in 2018 (CEC, 2021a).

The overall decline observed in California's total electric system generation for 2019 is consistent with energy demand trends. In recent years, electricity demand has been flat or slightly declining as energy efficiency programs have resulted in end-use energy savings and as customers install behind-the-meter solar photovoltaic (PV) systems that directly displace utility-supplied generation. In 2018 (the most recent year for which this specific data are available), behind-the-meter solar generation[1] was estimated to be 13,582 GWh, a 20 percent increase from 2017. The strong growth in solar PV has had a measurable impact on utility-served load and, consequently, on total system electric generation (CEC, 2019a).

Increasingly, electricity is used in multiple transportation modes, including light-duty vehicles, transit buses, and light and heavy rail. In California, its use is forecast to emerge in battery-electric medium-duty trucks, battery-electric buses, catenary-electric port drayage trucks, and high-speed rail. The California Energy Commission (CEC) forecasts the statewide electricity demand for the transportation sector will increase from a 2017 level of 2,000 GWh annually to between approximately 12,000 and 18,000 GWh per year by 2030, depending on technology development and market penetration of the various vehicle types (CEC, 2018a).

Natural Gas

Californians consumed about 13,158 million therms of natural gas in 2019, which is equal to 1,315,000,000 million Btu (MMBtu) (CEC, 2021b). The natural gas market is evolving and service options expanding, but its use falls mainly into the following four sectors: residential, commercial, industrial, and electric power generation. In addition, natural gas is a viable alternative to petroleum fuels for use in cars, trucks, and buses. Nearly 45 percent of the natural gas burned in California is used for electricity generation, and most of the remainder is consumed in the residential

[1] Behind-the-meter solar generation refers to on-site solar generation facilities that are designed for a single building or facility. Since the power is generated and used on-site, it is not connected to the regional power grid, and thus referred to as "behind the meter."

(21 percent), industrial (25 percent), and commercial (9 percent) sectors. California depends on out-of-state imports for nearly 90 percent of its natural gas supply (CEC, 2021c).

Transportation Fuels

The energy consumed by the transportation sector accounts for roughly 39 percent of California's total energy consumption (EIA, 2021b). Gasoline and diesel, both derived from petroleum (also known as crude oil), are the two most common fuels used for vehicular travel. According to the U.S. Energy Information Administration, the state relies on petroleum-based fuels for 98 percent of its transportation needs (EIA, 2021c). Gasoline accounted for about 56 percent of California's total transportation sector energy consumption, 58 percent of California's total transportation sector petroleum consumption, and 6 percent of total U.S. energy transportation sector consumption (EIA, 2021c). California is the largest consumer of gasoline in the U.S. Approximately 31 percent of California's crude oil is obtained from within the state, about 11 percent comes from Alaska, and the remaining 58 percent comes from foreign lands (CEC, 2019b).

In 2019, gasoline sales in California amounted to approximately 15.4 billion gallons, and diesel fuel sales amounted to approximately 3.7 billion gallons (CEC, 2020). The CEC forecasts demand for gasoline in California will range from 12.3 billion to 12.7 billion gallons in 2030, with most of the demand generated by light-duty vehicles. While the models show an increase in light-duty vehicles along population and income growth over the forecast horizon, total gasoline consumption is expected to decline, primarily due to increasing fuel economy (stemming from federal and state regulations) and gasoline displacement from the increasing market penetration of zero emission vehicles (ZEVs). For diesel, demand is forecast to increase modestly by 2030, following the growth of California's economy, but would be tempered by an increase in fleet fuel economy and market penetration of alternative fuels, most prominently by natural gas in the medium- and heavy-duty vehicle sectors (CEC, 2018a).

California's oil fields comprise the fifth-largest petroleum-producing area in the U.S., behind federal offshore production, Texas, Alaska, and North Dakota (EIA, 2021d). Crude oil is moved from area to area within California through a network of pipelines that carry it from both onshore and offshore oil wells to the refineries that are in the San Francisco Bay Area, the Los Angeles area, and the Central Valley. Currently, 14 petroleum refineries operate in California, processing approximately two million barrels of crude oil per day (CEC, 2021d).

Other transportation fuel sources used in California include alternative fuels, such as methanol and denatured ethanol (alcohol mixtures that contain no less than 70 percent alcohol), natural gas (compressed or liquefied), liquefied petroleum gas, hydrogen, and fuels derived from biological materials (i.e., biogas).

Regional Setting

Electricity and Natural Gas

The nine-county Bay Area, including the Parnassus Heights campus site, is served by PG&E, an investor-owned utility company that provides electricity and natural gas supplies and services throughout a 70,000-square-mile service area that extends from Eureka in the north, to Bakersfield

in the south, and from the Pacific Ocean on the west to the Sierra Nevada on the east. Operating characteristics of PG&E's electricity and natural gas supply and distribution systems are provided below.

Electric Utility Operations

PG&E provides "bundled" services (i.e., electricity generation, transmission, and distribution services) to most of the six million customers in its service territory, including residential, commercial, industrial, and agricultural consumers. Customers also can obtain unbundled electricity that is transmitted and distributed by PG&E, but is generated and provided by alternative providers such as Electric Service Providers registered with California Public Utilities Commission (CPUC) that are non-utility entities that offer electric service to customers within the service territory of an electric utility; or municipalities, or community choice aggregators as allowed under Assembly Bill 117 (2002), as well as from self-generation distributed resources, such as rooftop solar installations. In San Francisco alone, electricity consumption in 2019 was 5,604 GWh (CEC, 2021e).

In recent years, PG&E has continued to make improvements to its electric transmission and distribution systems to accommodate the integration of new renewable energy resources, distributed generation resources, and energy storage facilities, and to help create a platform for the development of new Smart Grid technologies that help with load balancing and ensuring reliable electricity delivery to end customers. In December 2014, the CPUC issued Decision D.14-12-079 that permits the California investor-owned electric utilities to own electric vehicle (EV) retail charging equipment in their respective service territories to help meet the state's goal of reducing greenhouse gas (GHG) emissions by promoting cleaner transportation. On February 9, 2015, PG&E filed an application to request that the CPUC approve their proposal to develop, maintain, and operate an EV-charging infrastructure in its service territory. In 2016, the CPUC established a three-year electric vehicle (EV) program of $130 million to deploy up to 7,500 charging stations. Further deployment of light duty EV infrastructure was considered and approved in a second phase of the program with a total PG&E budget of over $236 million per CPUC Decision D.18-05-040 (EPIC, 2018).

Electricity used at the Parnassus Heights campus is generated onsite at the CUP cogeneration system and procured and provided by the UC Regents as a registered Electric Service Provider. UCSF purchases electricity from the UC Regents through the Direct Access Program. This program is referred to as the UC Clean Power Program and contributes to achieving carbon neutrality in indirect emissions through the purchase of carbon-free electricity. As of 2019, the UC Clean Power Program became 100 percent carbon neutral. UCSF has committed that by 2025, all of its purchased electricity will be carbon-free.

As an Electric Service Provider, UC Regents is required to maintain physical generating capacity adequate to meet the demand of its customers for electricity ("load"), including peak demand, to be delivered to locations and at times as may be necessary to provide reliable electric service. UC Regents is required to dispatch or schedule all the electricity resources within its portfolio in the most cost-effective way. UC Regents obtains its electricity supplies from power plants throughout California and is delivered through high-voltage transmission lines that form the PG&E power grid.

Renewable and Carbon-free Energy Resources

As described above, UCSF purchases electricity from the UC Regents through the Direct Access Program, also referred to as the UC Clean Power Program. As of 2019, the UC Clean Power Program became 100 percent carbon neutral through the purchase of carbon-free electricity. UCSF has committed that by 2025, all of its purchased electricity will be carbon-free. The UC Office of the President recently announced the construction of a new biogas plant and a utility-scale solar array, a collection of multiple solar panels that generate renewable electricity. The renewable projects will power UC campuses. Solar energy will be used to supplement campus electricity and the biogas will fuel a portion of UC's own utility plants that produce campus electricity, heating and cooling. Taken together, the projects will supply UC campuses with energy equivalent to the amount used by 15,000 California homes (UC Office of the President, 2020).

Electricity Transmission

Transmission lines are high voltage power lines that transmit electricity between electric substations. PG&E owns approximately 19,200 circuit miles of interconnected transmission lines operating at voltages ranging from 60 kilovolts (kV) to 500 kV. PG&E also operates approximately 92 electric transmission substations with a capacity of approximately 64,700 megavolt amperes (MVA). PG&E's electric transmission system is interconnected with electric power systems in the Western Electricity Coordinating Council, which includes many western states, Alberta and British Columbia, and parts of Mexico (Reuters, 2020).

PG&E periodically upgrades substations and reconductors transmission lines to improve maintenance and system flexibility, reliability, and safety, and undertakes various new transmission projects to upgrade and expand the capacity of its transmission system to secure access to renewable generation resources and replace aging or obsolete equipment and improve system reliability (PG&E, 2020b).

Electricity Distribution

Distribution power lines are lower voltage power lines that transmit electricity from electric substations to end user, such as residential and other land use developments. PG&E's electricity distribution network consists of approximately 107,200 circuit miles of distribution lines (of which approximately 20 percent are underground and approximately 80 percent are overhead), approximately 19,200 circuit miles of high voltage electric transmission lines, 59 transmission switching substations, and 605 distribution substations, with a capacity of approximately 31,800 MVA (PG&E, 2018).

These distribution substations serve as the central hubs for PG&E's electric distribution network. Emanating from each substation are primary and secondary distribution lines connected to local transformers and switching equipment that link distribution lines and provide delivery to end-users. In some cases, PG&E sells electricity from its distribution facilities to entities, such as municipal and other utilities, that resell the electricity. PG&E also operates electric distribution control center facilities in Concord, Rocklin, and Fresno, California (PG&E, 2018).

Natural Gas Operations

PG&E provides natural gas transmission services to "core" customers and to "non-core" customers (i.e., industrial, large commercial, and natural gas-fired electric generation facilities such as the Parnassus Central Utility Plant) that are connected to its gas system in its service territory. Core customers can purchase natural gas procurement service (i.e., natural gas supply) from either PG&E or non-utility third-party gas procurement service providers (referred to as core transport agents). The Parnassus Heights campus site is currently supplied natural gas by the Department of General Services. When core customers purchase gas supply from a core transport agent, PG&E still provides gas delivery, metering, and billing services to those customers. When PG&E provides both transmission and procurement services, PG&E refers to the combined service as "bundled" natural gas service. Currently, more than 97 percent of core customers, representing nearly 82 percent of the annual core market demand, receive bundled natural gas service from PG&E (PG&E, 2020a).

PG&E does not provide procurement service to non-core customers, who must purchase their gas supplies from third-party suppliers. PG&E offers backbone gas transmission, gas delivery (local transmission and distribution), and gas storage services as separate and distinct services to its non-core customers. Access to PG&E's backbone gas transmission system is available for all natural gas marketers and shippers, as well as non-core customers. PG&E also delivers gas to off-system customers (i.e., outside of PG&E's service territory) and to third-party natural gas storage customers. In 2018, total consumption of natural gas in San Francisco was 229 million therms, or 22,900,000 MMBtu (CEC, 2021b).

Natural Gas Supplies

PG&E receives natural gas from all the major natural gas basins in western North America, including basins in western Canada, the Rocky Mountains, and the southwestern United States. PG&E also is supplied by natural gas fields in California. PG&E purchases natural gas to serve its core customers directly from producers and marketers in both Canada and the United States. The contract lengths and natural gas sources of PG&E's portfolio of natural gas purchase contracts have fluctuated generally based on market conditions. PG&E provides approximately 970 billion cubic feet of natural gas per year to its customers (PG&E, 2021).

Natural Gas System Assets

PG&E owns and operates an integrated natural gas transmission, storage, and distribution system that includes most of northern and central California. PG&E's natural gas system consists of approximately 42,800 miles of distribution pipelines, over 6,400 miles of backbone and local transmission pipelines, and various storage facilities. PG&E owns and operates eight natural gas compressor stations on its backbone transmission system and one small station on its local transmission system that are used to move gas through PG&E's pipelines. PG&E's backbone transmission system is used to transport gas from PG&E's interconnection with interstate pipelines, other local distribution companies, and California gas fields to PG&E's local transmission and distribution systems.

Transportation Fuels

Gasoline and diesel fuel are by far the largest transportation fuels used by volume in San Francisco Bay Area. The total estimated 2019 sales of gasoline in San Francisco was 118 million gallons and the total estimated 2019 sales of diesel fuel in San Francisco was 11 million gallons (CEC, 2020).

Other transportation fuel sources used in California include alternative fuels, such as methanol and denatured ethanol (alcohol mixtures that contain no less than 70 percent alcohol), natural gas (compressed or liquefied), liquefied petroleum gas (LPG), hydrogen, and fuels derived from biological materials (i.e., biomass).

Local Setting at Parnassus Heights Campus Site

The Parnassus Heights campus site is served by three cogeneration/steam (high, medium, and low pressure) networks that provide electricity and steam for heating and one chilled water network for cooling, all of which originate at the Parnassus Heights Central Utility Plant (CUP). The CUP cogeneration systems provide the primary source of electricity and water heating and cooling for the campus. The current fuel source for the cogeneration systems is natural gas obtained from PG&E's system. Three separate PG&E distribution power lines provide electricity to the campus to supplement the electricity generation capacity of the CUP during peak use periods. Following are discussions of the CUP and PG&E-provided services to the Parnassus Heights campus site obtained from the *UCSF Parnassus Heights Utility Master Plan* (UCSF, 2019).

Parnassus Heights Central Utility Plant

The CUP provides heating for the entire campus site via the steam networks, and provides cooling for six campus site buildings [Clinical Sciences Building (CSB), Medical Science Building (MSB), Dolby Regeneration Medicine Building (RMB), Health Sciences Instruction and Research Towers West and East (HSIR West and East), and Parnassus Services Building (PSB)]. The campus thermal loads were recently documented from existing CUP data provided by UCSF. This included chilled water and steam loads from several months during 2017 and 2018, including the hottest day experienced at the campus in recent history, and a typical design heating period. These loads formed the basis of assessing the peak heating and cooling capacity for the campus.

Chilled water data provided by UCSF includes plant load and building loads from the MSB, RMB, and HSIR West and East. The unit of measure to express amounts of cooled water is ton of refrigeration, defined as the rate of heat transfer that results in the freezing of one short ton (2,000 pounds) of pure ice in 24 hours. A ton of refrigeration is approximately equivalent to 12,000 Btu/hour or 3.5 kilowatts (kW). The current campus site cooling load is approximately 8,800 tons, of which only 2,400 tons is connected to the existing 5,400-ton capacity chilled water network. While maintaining a 1,200-ton redundancy at the CUP, this leaves excess capacity of 1,800 tons for use elsewhere on the campus site. Steam data includes low, medium, and high pressure loads for most Parnassus Heights campus site buildings. Steam demand, which encompasses heating and process steam, is divided by existing buildings due to a higher granularity of available data.

Equipment within the CUP is nearing the end of life based on the date it was placed in service. However, the light use of the equipment, especially chillers, combined with regular maintenance is expected to allow the equipment to extend past 2030 for most major systems.

Cooling (Chilled Water)

The existing CUP chiller plant has a capacity of 5,400 tons of cooling. The existing chilled water system consists of three 1,200-ton low pressure single stage absorption chillers, a 1,200-ton electric centrifugal chiller, and a 600-ton electric centrifugal chiller. The five chillers are in a parallel arrangement connected to the primary loop of a primary-secondary chilled water pumping system.

The CSB, MSB, RMB, HSIR West and East, and PSB buildings are served by 26-inch diameter secondary chilled water supply and return piping, which narrows in diameter as it extends to each served building.

Heating (Cogeneration / Steam)

The CUP cogeneration system includes two 54,000 lbs/hr heat recovery steam generators (HRSGs) that generate steam from the exhaust flues of two gas combustion cogeneration turbines (one HRSG per turbine). Low pressure steam is produced by one backpressure steam turbine generator (STG) and is used by the three existing absorption chillers for campus distribution. Two gas- and oil-fired boilers join the HRSGs to produce high pressure steam for use in the STG, distribution to campus facilities, and medium pressure steam production.

Steam is distributed through three networks to the campus for use in heating and process loads (e.g., sterilization). High pressure steam and low pressure steam are distributed to the majority of campus site buildings, while medium pressure steam is supplied to the clinical and medical buildings only. High pressure steam is used to power an absorption chiller for cooling at Kalmanovitz Library.

Electrical and Emergency Power

The CUP provides electrical service to 16 buildings on the Parnassus Heights campus site through a 12 kV distribution network. The total assumed connected loads associated with the 16 buildings served by the CUP is 27,276 kW. The term “total connected load” is the sum of the ratings of all equipment connected to the electrical system, regardless of their status of operation. The total assumed connected load is based on power per square foot (W/ft^2) dependent on the building’s use.

During a recent period of high electricity demand on the Parnassus Heights campus site that occurred during the last 2 weeks of October 2017, the average total demand was 9.69 MW, which was serviced by the CUP’s two gas-turbines and steam turbine, with the exception of 0.34 MW that was serviced by PG&E. The peak demand of 12.68 MW occurred on October 24, 2017 at 7:55 a.m., with over 2.82 MW being serviced by PG&E.

CUP Capacity

The CUP currently supplies a substantial majority (98 percent) of the electricity service to the Parnassus Heights campus site by means of gas and steam turbine generators. The CUP has two gas

turbine generators, each rated 5,000 kW/5,938 kVA, and one steam turbine generator rated 3,750 kW/4688 kVA, all of which operate at 4,160 volts. The combined electricity generation capacity of the CUP is 13.75 MW. However, the steam turbine's generation capacity is limited by the demand of steam on the campus site, typically generating below 1 MW, and when CUP equipment is down for maintenance, CUP capacity can be reduced by 30 to 40 percent for up to a month at a time. The CUP has proved itself to be a reliable source of electricity in the past 20 years and is expected to continue to do so past 2030 with proper maintenance. However, during peak conditions caused by extreme weather events and when maintenance is being conducted on the CUP, its generation capacity is already exceeded by the campus site's power demands. A network of underground duct bank 12 kV feeders distribute the generated electricity throughout the campus site.

The CUP has three emergency diesel generators (EDGs), each rated 2 MW/2.75 MVA at 12 kV. These generators are operated in parallel with each other and provide a combined 6 MW/7.5 MVA in the event of a CUP or PG&E outage. The EDGs can operate with the cogeneration plants when the campus site operates in "island mode," i.e., disconnected from PG&E services. The CUP has an approximately five-day supply of diesel fuel in five 30,000-gallon tanks to provide emergency backup to the campus site. The fuel tanks are located south of the CUP beneath Medical Center Way.

Currently, the emergency generators are not able to provide true emergency power, defined by CEC as a 10 second transition, to all the campus site facilities that they serve. However, they provide back-up power to ensure service continuity for critical clinical and research uses. Most of the buildings on the campus site have their own emergency power sources to provide power to the CEC code required building services – elevators, lights, etc. The only buildings on campus that rely on the CUP for 10 second transition emergency power are the School of Nursing, HSIR East and West, and MSB.

PG&E Capacity

The Parnassus Heights campus site receives PG&E electrical service from three different 12 kV distribution feeders along Parnassus Avenue. The campus site ties into these utility circuits via three spliced feeders, that exist in parallel with the CUP generation to meet the campus site electrical demand. In the event of a CUP co-generation outage, the PG&E service can pick up the demand without power interruption. The combined electrical capacity from the PG&E feeders is 22.5 MW, of which 15 MW is available at one time. The PG&E distribution circuits originate from two separate PG&E substations serving the area, including Mission Substation and Judah Substation. The Judah Substation is served by the Mission Substation, so all circuits serving the Parnassus Heights campus pass through the Mission Substation. One of the three PG&E circuits serves as a backup or redundant service and is not normally connected and supporting load at the campus site. PG&E can perform switching to connect that feeder to the Parnassus Heights campus site during abnormal conditions. All three PG&E feeders are capable of providing 7.5 MW/8.32 MVA each.

Demand loads are near the limit of generation capacity at the CUP during peak hour demand. While the option of using the existing third "spare" PG&E feeder to meet future demand is available, it would eliminate redundancy of electrical service to the campus that provides a degree of reliability. The spare feeder provides redundancy at the level of the CUP, but no redundancy

exists in the PG&E distribution system. Use of the spare feeder would require UCSF to pay extra for "Special Facilities" and reserve capacity for a redundant feeder.

Total Available Capacity

The total available capacity from CUP generators and PG&E services available to the campus site 12 kV distribution system is 25.8 MW. As discussed above, this is because one of the PG&E circuits (7.5 MW) is a backup service, so only two PG&E circuits are available at once. The steam generator is limited by the amount of steam being produced for the campus site, and rarely generates beyond 1 MW of power. If the full output from the steam turbine and third PG&E service were available, the generation capacity would be over 36 MW. From October 2017 data, the peak campus demand is rarely above 13 MW. The existing generation and utility capacity are sufficient to serve the campus site at present, even if one of the CUP generators is unavailable.

Campus 12 kV Distribution System

The 12 kV feeders are served from switchgear located at the CUP. The distribution system is installed in underground duct banks. The switchgear can be connected through a tiebreaker to ensure power is maintained.

4.5.2 Regulatory Framework

Federal

Federal policies and regulations set broad energy efficiency standards and incentives for consumer products, automobile and fuel efficiency, etc. Such requirements, as those listed below, tend to be applicable to the manufacturing sector and are not directly applicable to the NHPH. Nonetheless they are listed here for informational purposes.

National Energy Conservation Policy Act

The National Energy Conservation Policy Act (NECPA) serves as the underlying authority for federal energy management goals and requirements. Signed into law in 1978, it has been regularly updated and amended by subsequent laws and regulations. This act is the foundation of most federal energy requirements. NECPA established energy-efficiency standards for consumer products and includes a residential program for low-income weatherization assistance, grants and loan guarantees for energy conservation in schools and hospitals, and energy-efficiency standards for new construction. Initiatives in these areas continue today.

National Energy Policy Act of 2005

The National Energy Policy Act of 2005 sets equipment energy efficiency standards and seeks to reduce reliance on nonrenewable energy resources and provide incentives to reduce current demand on these resources. For example, under the act, consumers and businesses can attain federal tax credits for purchasing fuel-efficient appliances and products, including hybrid vehicles; constructing energy-efficient buildings; and improving the energy efficiency of commercial buildings. Additionally, tax credits are available for the installation of qualified fuel cells, stationary microturbine power plants, and solar power equipment.

Executive Order 13423 (Strengthening Federal Environmental, Energy, and Transportation Management), signed in 2007, strengthens the key energy management goals for the federal government and sets more challenging goals than the National Energy Policy Act of 2005. The energy reduction and environmental performance requirements of Executive Order 13423 were expanded upon in Executive Order 13514 (Federal Leadership in Environmental, Energy, and Economic Performance), and signed in 2009.

Energy Independence and Security Act of 2007

The Energy Independence and Security Act of 2007 sets federal energy management requirements in several areas, including energy reduction goals for federal buildings, facility management and benchmarking, performance and standards for new buildings and major renovations, high-performance buildings, energy savings performance contracts, metering, energy-efficient product procurement, and reduction in petroleum use, including by setting automobile efficiency standards, and increase in alternative fuel use. This act also amends portions of the NECPA.

Corporate Average Fuel Economy (I) Standards

Established by the U.S. Congress in 1975, the I standards reduce energy consumption by increasing the fuel economy of cars and light trucks. The National Highway Traffic Safety Administration (NHTSA) and United States Environmental Protection Agency (U.S. EPA) jointly administer the I standards. The U.S. Congress has specified that I standards must be set at the "maximum feasible level" with consideration given to: (1) technological feasibility; (2) economic practicality; (3) effect of other standards on fuel economy; and (4) need for the nation to conserve energy.[2]

State

Warren-Alquist Act

The 1975 Warren-Alquist Act established the California Energy Resources Conservation and Development Commission, now known as the California Energy Commission (CEC). The act established a state policy to reduce wasteful, uneconomical, and unnecessary uses of energy by employing a range of measures.

California Energy Action Plan

California's *2008 Energy Action Plan Update* updates the *2005 Energy Action Plan II,* which is the state's principal energy planning and policy document. The plan maintains the goals of the original *Energy Action Plan*, describes a coordinated implementation plan for state energy policies, and identifies specific action areas to ensure that California's energy is adequate, affordable, technologically advanced, and environmentally sound. First-priority actions to address California's increasing energy demands are to promote energy efficiency, demand response (i.e., reducing customer energy usage during peak periods to address power system reliability and support the best use of energy infrastructure), and use of renewable power sources. To the extent

[2] For more information on the Corporate Average Fuel Economy standards, refer to https://www.nhtsa.gov/laws-regulations/corporate-average-fuel-economy.

that these strategies are unable to satisfy increasing energy and capacity needs, the plan supports clean and efficient fossil-fuel fired generation.

State of California Integrated Energy Policy

In 2002, the Legislature passed Senate Bill (SB) 1389, which required the CEC to develop an integrated energy plan biannually for electricity, natural gas, and transportation fuels, for the California Energy Report. SB 1389 requires the CEC to prepare a biennial Integrated Energy Policy Report (IEPR) that assesses major energy trends and issues facing the state's electricity, natural gas, and transportation fuel sectors and provides policy recommendations to conserve resources; protect the environment; ensure reliable, secure, and diverse energy supplies; enhance the state's economy; and protect public health and safety (Public Resources Code Section 25301[a]). The IEPR has replaced the Energy Action Plan as the chief program intended to provide a comprehensive statewide energy strategy to guide energy investments, energy-related regulatory efforts and GHG reduction measures.

The most recent update to the IEPR (2018) examines how California's energy system must be transformed to meet the state's 2030 GHG reduction goal, including implementation of SB 350 (De Leon, Chapter 547, Statues of 2015) to double the energy efficiency of existing buildings and SB 100's target of achieving 60 percent renewables in the electricity supply by 2030. The report also covers policies and trends in integrated resource planning, distributed energy resources, transportation electrification, barriers faced by disadvantaged communities, demand response, transmission and landscape-scale planning, the California Energy Demand Preliminary Forecast, the preliminary transportation energy demand forecast, renewable gas (in response to Senate Bill 1383), the natural gas outlook, and solutions to increase resiliency in the electricity sector. The key strategies identified in the most recent, 2018 IEPR Update, are summarized below (CEC, 2018b).

Title 24 – California Energy Efficiency Standards

The Energy Efficiency Standards for residential and nonresidential buildings specified in Title 24, Part 6 of the California Code of Regulations were established in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated approximately every three years to allow for consideration and possible incorporation of new energy-efficiency technologies and methods. The current standards became effective on January 1, 2020.

California Green Building Standards Code (CALGreen, or Title 24 Part 11)

Part 11 of the Title 24 Building Energy Efficiency Standards is referred to as the California Green Building Standards (CALGreen) Code. CALGreen is intended to encourage more sustainable and environmentally friendly building practices, require low-pollution emitting substances that cause less harm to the environment, conserve natural resources, and promote the use of energy-efficient materials and equipment. Since 2011, the CALGreen Code is mandatory for all new residential and non-residential buildings constructed in the state. Such mandatory measures include energy efficiency, water conservation, material conservation, planning and design, and overall environmental quality. The CALGreen Code was most recently updated in 2020, with new measures taking effect on January 1, 2020.

Renewables Portfolio Standard (RPS)

The State of California adopted standards to increase the percentage that retail sellers of electricity, including investor-owned utilities and community choice aggregators, must provide from renewable resources. The standards are referred to as the RPS. Qualifying renewables under the RPS include bioenergy such as biogas and biomass, small hydroelectric facilities (30 MW or less), wind, solar, and geothermal energy. The CPUC and the CEC jointly implement the RPS program. The CPUC's responsibilities include: (1) determining annual procurement targets and enforcing compliance; (2) reviewing and approving each investor-owned utility's renewable energy procurement plan; (3) reviewing contracts for RPS-eligible energy; and (4) establishing the standard terms and conditions used in contracts for eligible renewable energy (CPUC, 2021).

Executive Orders S-14-08 and S-21-09

In November 2008, Governor Schwarzenegger signed Executive Order S-14-08, which expanded the state's RPS to 33 percent renewable power by 2020. In September 2009, Governor Schwarzenegger continued California's commitment to the RPS by signing Executive Order S-21-09, which directed the California Air Resources Board (CARB) under its AB 32 authority to enact regulations to help the state meet its RPS goal of 33 percent renewable energy by 2020.

SB 350 – Clean Energy and Pollution Reduction Act of 2015

SB 350, known as the Clean Energy and Pollution Reduction Act of 2015, was enacted on October 7, 2015, and provides a new set of objectives in clean energy, clean air, and pollution reduction by 2030. The objectives include the following:

- To increase from 33 percent to 50 percent by December 31, 2030, the procurement of the state's electricity from renewable sources.
- To double the energy efficiency savings in electricity and natural gas final end uses of retail customers through energy efficiency and conservation.

Senate Bill 100

On September 10, 2018, Governor Brown signed SB 100, establishing that 100 percent of all electricity in California must be obtained from renewable and zero-carbon energy resources by December 31, 2045. SB 100 also creates new standards for the RPS goals that were established by SB 350 in 2015. Specifically, the bill increases required energy from renewable sources for both investor-owned utilities and publicly-owned utilities from 50 percent to 60 percent by 2030. Incrementally, these energy providers must also have a renewable energy supply of 33 percent by 2020, 44 percent by 2024, and 52 percent by 2027. The updated RPS goals are considered achievable, since many California energy providers are already meeting or exceeding the RPS goals established by SB 350.

On the same day that SB 100 was signed, Governor Brown signed Executive Order B-55-18 with a new statewide goal to achieve carbon neutrality (zero-net GHG emissions) by 2045 and to maintain net negative emissions thereafter.

Appliance Efficiency Regulations, California Code of Regulations Title 20

California's Appliance Efficiency Regulations (20 CCR Part 160-1608) contain standards for both federally regulated appliances and non-federally regulated appliances. The regulations are updated regularly to allow consideration of new energy efficiency technologies and methods. The current regulations were adopted by the CEC on November 18, 2009. The standards outlined in the regulations apply to appliances that are sold or offered for sale in California. More than 23 different categories of appliances are regulated, including refrigerators, freezers, water heaters, washing machines, dryers, air conditioners, pool equipment, and plumbing fittings.

Transportation Energy

AB 1007 (Pavley)-Alternative Fuel Standards

Assembly Bill 1007 (Pavley, Chapter 371, Statutes of 2005) required the CEC to prepare a state plan to increase the use of alternative fuels in California (State Alternative Fuels Plan). The CEC prepared the State Alternative Fuels Plan in partnership with the CARB and in consultation with other state, federal, and local agencies. The final State Alternative Fuels Plan, published in December 2007, attempts to achieve an 80 percent reduction in GHG emissions associated with personal modes of transportation, even as California's population increases.

California Assembly Bill 1493 (AB 1493, Pavley)

In response to the transportation sector accounting for more than half of California's carbon dioxide (CO_2) emissions, AB 1493 (commonly referred to as CARB's Pavley regulations), enacted on July 22, 2002, requires CARB to set GHG emission standards for new passenger vehicles, light duty trucks, and other vehicles manufactured in and after 2009 whose primary use is non-commercial personal transportation. Phase I of the legislation established standards for model years 2009 through 2016 and Phase II established standards for model years 2017 through 2025 (CARB, 2017; U.S. EPA, 2012). Refer to Section 4.7, *Greenhouse Gas Emissions*, of this EIR for additional details regarding this regulation.

Low Carbon Fuel Standard

The Low Carbon Fuel Standard (LCFS), established in 2007 through Executive Order S-1-07 and administered by CARB, requires producers of petroleum-based fuels to reduce the carbon intensity of their products that started with a 0.25 percent reduction in 2011, and culminated in a 10 percent total reduction in 2020. In September 2018, CARB extended the LCFS program to 2030, making significant changes to the design and implementation of the program, including a doubling of the carbon intensity reduction to 20 percent by 2030.

Petroleum importers, refiners, and wholesalers can either develop their own low carbon fuel products or buy LCFS credits from other companies that develop and sell low carbon alternative fuels, such as biofuels, electricity, natural gas, and hydrogen.

Executive Order B-16-12 – 2025 Goal for Zero Emission Vehicles

In March 2012, Governor Brown issued an executive order establishing a goal of 1.5 million ZEVs on California roads by 2025. In addition to the ZEV goal, Executive Order B-16-12

stipulated that by 2015 all major cities in California will have adequate infrastructure and be 'zero-emission vehicle ready' so that by 2020 the state will have established adequate infrastructure to support 1 million ZEVs; and that by 2050, virtually all personal transportation in the state will be based on ZEVs, and GHG emissions from the transportation sector will be reduced by 80 percent below 1990 levels.

CARB's Advanced Clean Car Program

The Advanced Clean Cars emissions-control program was approved by CARB in 2012 and is closely associated with the Pavley regulations (CARB, 2017). The program requires a greater number of zero-emission vehicle models for years 2015 through 2025 to control smog, soot, and GHG emissions. This program includes the Low-Emissions Vehicle regulations to reduce criteria pollutants and GHG emissions from light- and medium-duty vehicles; and the ZEV regulations to require manufactures to produce an increasing number of pure ZEV's (meaning battery and fuel cell electric vehicles) with the provision to produce plug-in hybrid electric vehicles (PHEV) between 2018 and 2025.

CARB's Mobile Source Strategy

The Mobile Source Strategy (2016) includes an expansion of the Advanced Clean Cars program (which further increases the stringency of GHG emissions for all light-duty vehicles, and 4.2 million zero-emission and plug-in hybrid light-duty vehicles by 2030). It also calls for more stringent GHG requirements for light-duty vehicles beyond 2025 as well as GHG reductions from medium-duty and heavy-duty vehicles and increased deployment of zero-emission trucks primarily for classes 3 through 7 "last mile" delivery trucks in California. Statewide, the Mobile Source Strategy would result in a 45 percent reduction in GHG emissions, and a 50 percent reduction in the consumption of petroleum-based fuels. CARB's Mobile Source Strategy includes measures to reduce total light-duty vehicle miles travelled (VMT) by 15 percent compared to business-as-usual in 2050.

Executive Order B-48-18

On January 26, 2018, Governor Brown issued an executive order establishing a goal of 5 million ZEVs on California roads by 2030 and to spur the installation and construction of 250,000 plug-in electric vehicle chargers, including 10,000 direct current fast chargers, and 200 hydrogen refueling stations by 2025.

University of California

University of California Sustainability Policy

According to the UC *Sustainable Practices Policy*, the University of California's system-wide goal is to achieve carbon neutrality of scopes 1 and 2 by 2025, using the following strategies:

- Annual two percent reduction in energy use intensity;
- Cost-effective on-campus renewable energy installations; and
- System-wide purchasing pool for clean electricity, biogas, and offsets by 2025.

Further policies include:

- The energy performance of new buildings other than acute care must exceed Title 24 requirements by 20 percent or meet the whole-building energy performance targets listed below in **Table 4.5-1**;
- The energy performance of new acute care buildings should exceed ASHRAE 90.1 – 2010 by 30 percent or meet whole-building energy performance targets below in **Table 4.5-2**;
- No new fossil fuel combustion is allowed for buildings and retrofits after June 30, 2019, except those projects connected to an existing campus central thermal infrastructure; and
- Complete an assessment of Scope 1 emissions from natural gas combustion to determine the best pathway to decarbonize 80 percent of scope 1 emissions through means other than offsets. This shall occur by 2035 or at the date when that location's combined heat & power plant (or any other major fossil fuel-using campus infrastructure) is planned for capital renewal or major repair, whichever occurs first.

TABLE 4.5-1
THE WHOLE-BUILDING ENERGY PERFORMANCE TARGET

Calendar Years	Compliance Target	Stretch Target
2015-2016	65%	50%
2017-2018	60%	45%
2019-2020	55%	40%
2021-2022	50%	35%
2023-2024	45%	30%
2025 or after	40%	25%

SOURCE: UC, 2020, University of California – Policy on Sustainable Practices.

TABLE 4.5-2
WHOLE-BUILDING ENERGY PERFORMANCE TARGETS FOR ACUTE CARE FACILITIES AND MEDICAL OFFICE BUILDINGS

Facility	Acute Care			Medical Office Buildings		
	Benchmark Average	Target	Stretch Target	Benchmark Average	Target	Stretch Target
UC Davis Health	230	160	115	85	60	43
UC Irvine Health	230	160	115	80	56	40
UCLA Health	230	160	115	80	56	40
UC San Diego	230	160	115	80	56	40
UC San Francisco Health	230	160	115	80	56	40

The whole-building energy performance target is expressed as a percentage of the sum of the Annual Electricity and Annual Thermal targets (converted to kBTU/gsf-yr) based on ASHRAE (2012) Advanced Energy Design Guidelines.

SOURCE: UC, 2020, University of California – Policy on Sustainable Practices.

Healthcare buildings are subject to the overall carbon neutrality goal.

UC Strategic Energy Plan

The UC Strategic Energy Plan (SEP) was prepared in 2008 for all UC campuses, to fulfill a goal of UC's *Sustainable Practices Policy* to implement energy efficiency projects in existing buildings. The UCSF portion of the SEP analyzes energy use and GHG trends and identifies potential energy efficiency retrofit projects at all buildings over 50,000 square feet at UCSF (primarily lighting, HVAC, commissioning and central plant measures). Energy savings, GHG emissions savings, and financial returns are estimated for hundreds of projects, which are grouped into Tier 1 (high priority) and Tier 2 (longer term planning) projects based on their energy savings and financial payback. The SEP project list is intended to be regularly updated by each campus to evaluate the feasibility of additional energy-saving measures.

University of California, San Francisco

UCSF has an aggressive sustainability program covering sustainability activities across the entire campus and medical center. Through its Office of Sustainability, UCSF has created work groups addressing sustainability in the following areas, some of which are directly related to energy consumption: Carbon Neutrality, Zero Waste, Water Conservation, Sustainable Food, Toxics Reduction, Green Procurement, Green Buildings, and Sustainable Operations.

UCSF Climate Action Plan and GHG Reduction Strategy

As part of implementing the UC *Sustainable Practices Policy*, UCSF developed a Climate Action Plan in 2009, a long-term strategy for voluntarily meeting the State of California's goal for reducing GHG emissions to 1990 levels by 2020, pursuant to AB 32. In addition, as part of the 2014 Long Range Development Plan (LRDP), UCSF developed a GHG Reduction Strategy (GHGRS) to provide streamlined analysis under CEQA for future development projects. Both of these documents were updated in 2017 to create a combined UCSF Climate Action Plan – Greenhouse Gas Reduction Strategy to reflect changes that have occurred since 2014 relative to the goals outlined in the UC *Sustainable Practices Policy* and the addition of new campus projects unforeseen at the time of LRDP adoption.

Specifically, the update includes strategies to meet UC goals to achieve climate neutrality from scope 1 and scope 2 emissions by 2025, and from scope 3 emissions by 2050. Additionally, the update recognizes updated GHG reduction targets of the 2017 update to the state's Climate Change Scoping Plan to achieve a 40 percent reduction in GHGs compared to 1990 levels by year 2030. The update also considers the completion of the Five Points Solar Park, a 60-megawatt solar power installation built to supply renewable energy to the University of California. The 2017 GHGRS was further updated in July 2020 and approved by UCSF in January 2021 to reflect the amendment of the 2014 LRDP from the incorporation of the CPHP.

UCSF Transportation Demand Management

UCSF employs an aggressive Transportation Demand Management (TDM) program that includes an extensive shuttle system, among other alternative transportation opportunities. Based on UCSF's 2018 employee commute survey, approximately 80 percent of the campus faculty, staff, and student population commutes by means other than driving alone. For the key features of UCSF's existing TDM program, refer to the UCSF Transportation Demand Management discussion in Section 4.7, *Greenhouse Gas Emissions*.

UCSF 2014 LRDP

Current development at UCSF is guided by the 2014 LRDP, as amended by 2014 LRDP Amendment No. 7 incorporating the CPHP, which includes specific policies related to future program development and space needs at all UCSF campus sites, including the Parnassus Heights campus site. The 2014 LRDP identified campus-wide objectives related to energy:

Campus-Wide Objectives

4. Promote Environmental Sustainability

F. Facilitate growth in an environmentally responsible manner while reducing UCSF's greenhouse gas emissions in compliance with the UC *Sustainable Practices Policy* and the goals of Assembly Bill 32 (AB32), the California Global Warming Solutions Act.[3]

The UCSF 2014 LRDP also included *Community Planning Principles*, which were produced in collaboration with the UCSF Community Advisory Group:

Community Planning Principles

Sustainability

S1. Meet or exceed guidelines and standards in the University of California's *Sustainable Practices Policy* when planning and developing projects. Policy goals are categorized as follows: Green Building; Clean Energy; Climate Protection Practices (including greenhouse gas reduction); Sustainable Transportation; Sustainable Building Operations; Recycling and Waste Management; Environmentally Preferable Purchasing Practices; Sustainable Foodservices Practices.

4.5.3 Impacts and Mitigation Measures

Significance Criteria

Would implementation of the NHPH:

a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

Approach to Analysis

This impact analysis evaluates the potential for the proposed NHPH to result in the wasteful use of energy or wasteful use of energy resources during project construction and operation, consistent with Public Resources Code 21100(b)(3). The impact analysis is based on Section 15126.2(b) and Appendix F of the State CEQA Guidelines. The analysis provides construction and operational energy use estimates for the proposed NHPH. This information is used to determine whether this energy use would be considered wasteful, inefficient, or unnecessary, taking into account available energy supplies and existing use patterns, the project's energy efficiency features, and compliance

[3] UCSF is required to develop a long-term strategy for voluntarily meeting the State of California's goal for reducing GHG emissions to 1990 levels by 2020, pursuant to the California Global Warming Solutions Act of 2006 (AB32).

with applicable standards and policies aimed to reduce energy consumption, including the state's Title 24 Energy Efficiency Standards. Energy quantification details supporting the NHPH estimates presented in this section are based on the energy use assumptions and GHG emission estimates for the GHG emissions assessment presented in Section 4.7, *Greenhouse Gas Emissions*. The construction and operation of the NHPH are also assessed for consistency with UC *Sustainable Practices Policy* provisions that are designed to conserve and reduce energy consumption.

Impact Analysis

Due to the combined effects of the construction of the proposed New Hospital and related improvements associated with energy use, the NHPH project components are considered together in construction energy use impact analysis presented below. Similarly, where applicable, the operation of the proposed New Hospital and related improvements are considered together in the operational energy use impact analysis presented herein.

Impact ENE-1: Implementation of the NHPH would not result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation. (*Less than Significant*)

New Hospital

Construction Energy Use

Construction of the proposed NHPH would result in the consumption of energy in the form of transportation fuels (i.e., gasoline and diesel fuel) from a variety of sources, including off-road construction equipment and on-road worker, vendor, and hauling vehicles. The level of energy consumption would fluctuate depending on the type of construction activities underway during any particular time period. Energy use would be higher during the period of construction involving the initial site clearance and earth-moving/grading, where the largest and most powerful equipment would be required to excavate, lift, and transport large volumes of soil and demolished materials (such as concrete slabs and asphalt) from the site. Gasoline and diesel fuel would be the primary energy source for vehicles driven by construction crews and to power the large trucks used to deliver and remove construction equipment, materials, and debris. Electricity would be used to transport (pump) water to the site, and to power automated hand tools and smaller types of construction machinery such as compressors for painting applications.

As discussed in Chapter 3, *Project Description*, the New Hospital would be completed by 2030, and the related improvements would be completed by 2034. Based on the projected equipment use and construction duration, the construction of the NHPH is estimated to result in the consumption of an average of approximately 65,000 gallons per year of diesel fuel, and an average of approximately 21,000 gallons per year of gasoline, over the approximately 10-year construction period.

Operational Energy Use

NHPH operations would require long-term consumption of energy in the form of electricity, natural gas, gasoline, and diesel fuel. The electricity, natural gas, and water usage that would be required for operation of the NHPH have been estimated based on specific building area

estimates, historical data, and CalEEMod default factors for water use. Natural gas consumption at the CUP would increase for the generation of electricity, and for the purposes of heating and cooling; however, the New Hospital would have no natural gas infrastructure and all new facilities would be electrification ready. Water use for under the NHPH would require the consumption of electricity to supply, treat, and distribute potable water to the buildings and to treat wastewater generated in the buildings. As discussed in Chapter 3, *Project Description*, UCSF proposes to reduce water use through use of efficient plumbing fixtures, medical equipment, and native and adaptive landscaping.

Mobile source fuel use associated with operation of the NHPH was estimated based on vehicle miles travelled (VMT) obtained from the transportation analysis. The VMT data were used to estimate electricity, natural gas, diesel fuel, and gasoline consumption volumes for both existing (2019) and existing plus NHPH (2030) conditions based on vehicle fleet-average fuel and electricity consumption rates (per mile) estimated using the EMFAC2017 emissions model. The increment of increased energy consumption under the NHPH was then determined by subtracting existing emissions from the resultant emissions under NHPH buildout. The increased electricity use associated with local and regional mobile sources generated by the NHPH would generally not be expected to occur at the NHPH site, but would be dispersed throughout the greater San Francisco area. While charging stations are currently available at the campus site and would be available to serve users of the NHPH, the bulk of long-term charging is expected to occur at the owners' residences. The annual energy use requirements estimated for buildout operations of the NHPH relative to existing conditions are summarized in **Table 4.5-3** by energy use type.

Analysis of Factors Identified in CEQA Guidelines Appendix F

Appendix F of the CEQA Guidelines identifies factors relating to whether a project would result in the wasteful, inefficient, or unnecessary consumption of fuel or energy, and conversely whether the project would fail to incorporate renewable energy or energy efficiency measures into building design, equipment use, transportation, or other project features. The Appendix F factors are addressed below and used as guidance to evaluate the energy impact of the NHPH relative to the identified significance criteria.

Appendix F.II.C.1: Energy Requirements and Energy Use Efficiencies

CEQA Guidelines Appendix F, Section II.C.1, includes the following impact guidance factor:

> *The project's energy requirements and its energy use efficiencies by amount and fuel type for each stage of the project including construction, operation, maintenance and/or removal. If appropriate the energy intensiveness of materials may be discussed.*

The energy inventories prepared for this evaluation include electricity and natural gas, and fuels used for construction and operation of the proposed NHPH. The estimated energy use levels are summarized above for the construction-phase energy use for the NHPH and in Table 4.5-3 for project operations. As the table shows, considerable amounts of electricity, natural gas, diesel, and gasoline would be consumed during operational phases of the NHPH. For the effects of the NPHP on the local and regional energy supplies and on the need for additional capacity, refer to the Appendix F.II.C.2 discussion, below.

TABLE 4.5-3
NHPH OPERATIONAL ENERGY USE (ANNUAL)

Energy Use Type	Existing Operational Energy Use -Parnassus Heights Campus Site	2030 Operational Energy Use - Parnassus Heights Campus Site with NHPH	Net New Energy Use under NHPH
Electricity (MWh/year)			
CUP-Generated/Imported Electricity	72,571	92,355	19,784
Water Use	2,039	2,296	257
Mobile Sources (Electric Vehicles)	443	506	63
Total Electricity Generation/Use	**75,053**	**95,157**	**20,104**
Natural Gas (MMBtu/year)			
Central Utility Plant	1,023,258	1,395,075	371,817
Mobile Sources[1]	8,648	9,357	709
Total Natural Gas Use	**1,031,906**	**1,404,432**	**372,526**
Diesel (gallons/year)			
Mobile Sources	662,666	712,383	49,717
Generator Testing	19,157	40,839	21,682
Total Diesel Use	**681,823**	**753,222**	**71,399**
Gasoline (gallons/year)			
Mobile Sources	4,246,449	5,178,022	425,200
Total Gasoline Use	4,246,449	5,178,022	425,200

NOTES: MMBtu = Million British Thermal Unit; MWh = Megawatt-hour.

1 EMFAC2017 includes compressed natural gas in terms of diesel gallon equivalents. This is converted into Btu per the U.S. Department of Energy Alternative Fuel Data Center conversion: 1 DGE of CNG = 128,488 Btu. Available at: https://afdc.energy.gov/fuels/equivalency_methodology.html.

In addition to direct construction- and operation-related energy consumption, indirect energy use would be involved to produce electricity, refine fuels, and make the materials and components used in construction, including the energy used for extraction of raw materials, manufacturing, and transportation. Energy intensiveness of electricity generation, fuel refining, and materials, also referred to as the energy "lifecycle," is not addressed in this analysis because the California Natural Resources Agency (CNRA) has indicated that lifecycle analyses are not required under CEQA (CNRA, 2009). The CNRA explained in the context of GHG emissions, that: (1) there exists no standard regulatory definition for lifecycle, and (2) even if a standard definition for lifecycle existed, the term might be interpreted to refer to emissions beyond those that could be considered 'indirect effects' as defined by CEQA Guidelines, and therefore, beyond what an EIR is required to estimate and mitigate (CNRA, 2009). This reasoning was reaffirmed in Section 15126.2(b) of the November 2018 CEQA Guidelines, which cautions that the analysis of energy impacts is subject to the rule of reason and must focus on energy demand caused by the project, signaling that a full "lifecycle" analysis that would account for energy used in building materials and consumer projects will generally not be required (CNRA, 2018).

Nonetheless, recycling reduces indirect energy consumption associated with making materials and components, and reduces the energy used for extraction of raw materials, manufacturing, and transportation. California has a statewide goal of 75 percent waste diversion by 2020. Construction activities that would be associated with the NHPH would be required to divert at least 75 percent of construction waste from landfill and incineration, with a target to exceed 85 percent. Further, the construction of the NHPH would comply with the requirements of the CALGreen mandatory measures. These recycling efforts would reduce the effects of the project's indirect energy use. Operation of the NHPH would comply with the state goal by implementing waste diversion policies and infrastructure. The NHPH would require recycling containers to be located within public areas, and a waste diversion and recycling program could be implemented within the New Hospital to divert all non-hazardous and non-health care related waste that can be safely recycled or composted.

Appendix F.II.C.2: Local and Regional Energy Supplies

CEQA Guidelines Appendix F, Section II.C.2, includes the following impact guidance factor:

> *The effects of the project on local and regional energy supplies and on requirements for additional capacity.*

As discussed above, the NHPH would result in the consumption of electricity, natural gas, gasoline, and diesel associated with mobile vehicle sources, operations of the CUP, emergency generator operations, and construction activities. The Parnassus Heights campus site is currently supplied with electricity by the Regents of the University of California and with natural gas by the Department of General Services. This electricity and natural gas are delivered by PG&E. However, the majority of electricity used at the campus site is generated on-site at the CUP. These entities have established contracts and commitments to ensure there is adequate electricity generation and natural gas capacity to meet its current and future energy loads. Total energy use requirements for the proposed NHPH upon completion, and the change from existing conditions to NHPH operations, are presented in Table 4.5-3.

Electricity

Annual average electricity consumption that would be required for the construction period would be substantially less than annual electricity consumption required for NHPH operations. Therefore, this discussion focuses on electricity demand that would occur during NHPH operations. To put the NHPH's operational electricity requirements in context, in 2019 the total generated electricity for California was 277,704 GWh of electricity (CEC, 2021a), of which consumers in San Francisco used 5,604 GWh (CEC, 2021e). The CEC estimates that state-wide electricity demand will increase to 339,160 GWh in 2030 based on an average annual mid-energy demand growth rate of 1.27 percent (CEC, 2018c). As shown in Table 4.5-3, the anticipated long-term operational increase in CUP-generated and imported electricity usage at the campus site from 72,571 megawatt-hours (MWh) per year under existing conditions to 92,355 MWh per year with the implementation of the NHPH in 2030, reflects an increase of 19,784 MWh per year in electricity obtained from the CUP and the grid and corresponding usage at the NHPH. This represents 0.007 percent of the total 2019 state-wide electricity usage and 0.35 percent of San Francisco electricity usage.

As mentioned in the environmental setting, demand loads can approach the limit of generation capacity at the CUP during peak demand periods; therefore, because the CUP would not be upgraded to a higher nameplate capacity under the CPHP,[4] UCSF would be required to rely on the PG&E electricity grid for its increased electricity demand. Given that the PG&E grid currently only supplies approximately two percent of the total campus electrical demand and is capable of supplying all the demand in the event that the CUP goes offline, it appears that the PG&E feeders have adequate capacity to serve the increased electrical demand. However, an assessment of the available capacity of the PG&E distribution feeders would be required to determine if the PG&E facilities would be adequate to serve the increased demand. If required, PG&E's spare feeder could be used; however, that may require UCSF to install a redundant feeder for reserve capacity (UCSF, 2019). PG&E's service planning and substation teams would review the anticipated proposed electricity load to ensure that there is adequate capacity at the electric substations that would serve the NHPH to support the increase in the proposed load.

Based on a comparison to the state-wide and San Francisco annual energy demand and the projected demand growth rate, the NHPH-related increase in electricity consumption would not cause adverse effects on local and regional energy supplies or require additional generation capacity beyond the state-wide planned increase to accommodate projected energy demand growth. In addition, the NHPH's operational electricity demand estimates conservatively exclude the benefits of LEED Gold design that would occur pursuant to the UC *Sustainable Practices Policy* that requires all new buildings to achieve a LEED "Silver" certification at a minimum, as well as due to future revisions to Title 24 energy standards, which would further reduce electricity demand.

The transition toward electric power sources for on-road vehicles, including the installation of additional electric vehicle charging stations, would result in an increase in the calculated total electricity usage, as shown in Table 4.5-3, above; however, the associated increased electricity use associated with mobile sources would not be expected to occur at the campus site, but would be dispersed throughout the greater San Francisco area and would not significantly impact overall electricity supply or infrastructure. While charging stations are currently available at the Parnassus Heights campus and would be available to serve users of the NHPH, the bulk of long-term charging is expected to occur at the owners' residences.

Natural Gas

There would be no natural gas consumption associated with NHPH construction activities. The CUP's annual operational natural gas consumption is estimated to increase by 371,817 MMBtu from 1,023,258 MMBtu under existing conditions in 2019 to 1,395,075 MMBtu upon completion of NHPH in 2030 (see Table 4.5-3). The increased operational natural gas use would be exclusively associated with the increased consumption at the CUP, as the New Hospital would have no natural gas infrastructure. In comparison, state-wide natural gas consumption in 2019 was 1,315,000,000 MMBtu and San Francisco natural gas demand was 22,900,000 MMBtu in 2019 (CEC, 2021b). The CUP's increase in natural gas consumption would account for approximately 0.03 percent of the 2019 statewide annual consumption and approximately 1.62 percent of the 2019

[4] Pursuant to the requirements of the UCSF Climate Action Plan and its goal to achieve climate neutrality by 2025, the NHPH does not include a proposal to update the CUP to a higher nameplate capacity.

San Francisco-wide consumption. It is projected that California natural gas demand will decrease at an annual rate of 1.1 percent to 2026 due to continued implementation of renewable generation projects and the penetration of energy efficient products in the state. After 2026, California natural gas demand is projected to increase due to population growth and associated demand (CEC, 2015).

An assessment of the available capacity of the existing natural gas transmission line that serves the CUP would be required to ensure that the existing PG&E facilities would be adequate to serve the increased demand. Additionally, UCSF's Greenhouse Gas Reduction Strategy identifies measures that improve efficiency of existing buildings, while new buildings are required to surpass Title 24 energy efficiency standards and at a minimum, attain LEED silver certification or equivalent. Also, as discussed in Chapter 3, *Project Description*, the New Hospital would be required to outperform the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASRHAE) 90.1-2010 baseline energy code by at least 30 percent and would target to outperform the code by at least 40 percent. These measures would reduce consumption of natural gas by minimizing reheating of air, improving building insulation and by requiring the flow rate and consumption at individual zones to be monitored in order to identify unusual consumption points, promote conservation, and in turn reduce energy costs as well as minimize the adverse environmental impact.

Transportation Fuels

Regarding NHPH-related fuel consumption, it is estimated that off-road construction equipment and on-road vehicles would consume an annual average of approximately 65,119 gallons of diesel fuel per year and on-road worker vehicles would consume an annual average of approximately 20,842 gallons per year of gasoline during the construction phases of the proposed NHPH between 2022 and 2032. During NHPH operation, it is estimated that the net annual increase in consumption of diesel fuel due to the NHPH would be approximately 71,399 gallons per year and the net annual increase in consumption of gasoline would be approximately 425,200 gallons per year (see Table 4.5-3). These annual average diesel use amounts for NHPH construction and operation are equivalent to approximately 0.6 percent each, of the diesel fuel sold in San Francisco, and the gasoline use amounts for construction and operations are equivalent to less than 0.02 percent and approximately 0.4 percent, respectively, of the total gasoline fuel sold in San Francisco (see "Transportation Fuels" in Section 4.5.1, *Environmental Setting*).

The overall energy use requirements would not be substantial relative to the total sales of transportation fuels in San Francisco. In addition, implementation of **NHPH Mitigation Measure AIR-1b: Best Management Practices for Controlling Particulate Emissions during Construction**, would help avoid wasteful or inefficient use of energy during construction by requiring that equipment be well maintained, and requiring that idling be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes in accordance with the Title 13, Section 2485, of the California Code of Regulations. Also, vehicle use associated with operations of the NHPH would be reduced pursuant to UCSF's aggressive TDM program that includes an extensive shuttle system, among other alternative transportation opportunities.

The NHPH would not require additional power generation plants, natural gas transmission facilities, or fuel refineries to be constructed. Through use of renewable energy, energy efficiency

standards, and electric vehicle charging infrastructure, the NHPH would minimize impacts on the local and regional energy supply. While charging stations are currently available at the Parnassus Heights campus site and would be available to serve users of the NHPH, the bulk of long-term charging is expected to occur at the owners' residences.

Appendix F.II.C.3: Peak and Base Period Demands

CEQA Guidelines Appendix F, Section II.C.3, includes the following impact guidance factor:

> *The effects of the project on peak and base period demands for electricity and other forms of energy.*

Peak period electrical demand is the short period of time during which electrical power is needed when electricity is in highest demand. Base period electrical load is the minimum amount of electrical demand needed over a 24-hour time period. Wasteful, inefficient, or unnecessary consumption or use of energy during the peak period of electrical demand has greater potential to cause adverse environmental effects compared to during the base period because of the higher demand during the peak period. The NHPH would not have a substantial impact on the peak and base period demands for electricity or other forms of energy. The NHPH's base energy consumption compared to regional and statewide energy consumption is discussed above. Further details and reasoning on the peak demand are described below.

In 2020, California's peak grid demand was 47,236 MW, while PG&E reached a maximum demand of 21,103 MW (Cal ISO, 2021). In comparison, the NHPH's maximum demand is expected to be less than 4 MW, which would be served by electricity generated at the CUP, but may be supplemented by direct-feed PG&E electricity. This estimate conservatively excludes the benefits of LEED and improvements in demand response due to future updates to the Title 24 energy standards, which would further reduce peak demand through its performance standards that are based on the time dependent valuation of energy, which uses the value of the electricity or natural gas used at every hour of the year to incentivize load shifting off of the peak use periods. Overall, the NHPH peak demand represents approximately 0.02 percent of PG&E's peak demand and even if all the electricity needed for the NHPH were to be provided directly by PG&E, it would have a relatively minor effect on PG&E's system-wide peak demands.

Appendix F.II.C.5: Energy Resources

CEQA Guidelines Appendix F, Section II.C.5, includes the following impact guidance factor:

> *The effects of the project on energy resources.*

The NHPH's energy use, including electricity, natural gas, gasoline, and diesel consumption, would primarily be associated with construction activities, vehicle travel, PUC operations, and emergency generator testing and maintenance. Total energy use requirements are described above for construction activities and shown in Table 4.5-3 for the change from existing conditions to NHPH operations. Refer to the Appendix F.II.C.2 and F.II.C.3 discussions, above, for the effects that the NHPH would have on energy resources. The NHPH's use of energy would not have a substantial adverse effect on statewide or regional energy resources relative to wasteful, inefficient, or unnecessary use of energy.

Appendix F.II.C.6: Transportation Energy Use

CEQA Guidelines Appendix F, Section II.C.6, includes the following impact guidance factor:

> *The project's projected transportation energy use requirements and its overall use of efficient transportation alternatives.*

UCSF's transportation energy use requirements in terms of gasoline and diesel quantities for construction and operation of the NHPH are presented above and in Table 4.5-3. The quantification of VMT associated with NHPH operations, which is used to quantify the total operational transportation-related energy use requirements, is discussed in detail under *Operational Energy Use*, above. Pursuant to UCSF's TDM program, the NHPH would include reductions in transportation and associated energy usage at buildout.

In addition, as discussed above, implementation of **NHPH Mitigation Measure AIR-1b**: **Best Management Practices for Controlling Particulate Emissions during Construction**, would help avoid wasteful or inefficient use of energy during construction by requiring that equipment be well maintained, and requiring that idling be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes in accordance with the Title 13, Section 2485, of the California Code of Regulations. The NHPH would also be well positioned to take advantage of the many public transit options in the vicinity of UCSF. The 16th Street Bay Area Rapid Transit (BART) station is located near the campus site and UCSF has a wide array of shuttle bus services that serve the campus site. In general, vehicle trip-generating developments near public transit facilities result in reduced energy use by projects compared to projects not in the vicinity of such facilities. According to the California Air Pollution Control Officers Association (CAPCOA, 2010), "[l]ocating a project with high density near transit will facilitate the use of transit by people traveling to or from the Project site. The use of transit results in a mode shift and therefore reduced VMT."

Impact Conclusion Summary

Based on the above analysis, the NHPH would not result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of fuel or energy.

Mitigation: None required.

Impact ENE-2: Implementation of the NHPH would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency. (*Less than Significant*)

All relevant UC *Sustainable Practices Policy* provisions that are designed to conserve and reduce energy consumption would be implemented. In addition, the NHPH would address UCSF's achievement of goals set forth in the adopted Carbon Neutrality Initiative (CNI), which has goals more stringent than the statewide target of achieving 80 percent below 1990 emission levels by 2050. The goals also have the effect of reducing overall energy usage. The NHPH would continue UCSF's substantial energy conservation efforts at the Parnassus Heights campus site by reducing energy demand through investments in achieving deep energy efficiency of the buildings and

facilities on campus. The NHPH would be required to comply with the UC *Sustainable Practices Policy*, which requires new construction of facilities to meet a minimum standard of LEED-NC Silver and strive for LEED-NC Gold when possible and for acute care facilities, requires 30 percent better energy performance than ASHRAE 90.1-2010 or meet the applicable Whole-Building Energy Performance Target (see Table 4.5-2). The proposed NHPH would not conflict with the University's policy related to renewable energy or energy efficiency. The project's impact would be less than significant.

Mitigation: None required.

Cumulative Impacts

Impact C-ENE-1: The NHPH, combined with cumulative development in the Parnassus Heights campus site vicinity and citywide, would not result in significant cumulative energy impacts. (*Less than Significant*)

Geographic Context

The geographic scope of potential cumulative effects with respect to energy resources includes PG&E's natural gas transmission system that would serve the NHPH, PG&E's electrical grid that could serve the NHPH, the CUP that would serve the NHPH, the area from which transportation fuels would be provided (for this EIR, publicly available fuel sources in the vicinity of the NHPH site), and the cumulative projects discussed in Section 4.0.

Cumulative Impact and NHPH Contribution

Given UCSF's implementation of energy reduction measures within its Greenhouse Gas Reduction Strategy that would serve to improve efficiency of existing buildings, require new buildings to surpass Title 24 energy efficiency standards and, at a minimum, attain LEED silver certification or equivalent, the NHPH would not contribute to a significant cumulative impact related to the use of large amounts of fuel or energy in a wasteful or inefficient manner and the cumulative impact would be less than significant.

Given the relatively small percentage of the NHPH's other fuel and energy uses compared to existing fuel and energy use in the region, the NHPH's less-than-significant incremental impacts related to the use of other forms of fuel or energy in a wasteful or inefficient manner would not be expected to combine with the incremental impacts of other projects to cause an adverse cumulative impact. The operational electricity requirements of the NHPH would not be cumulatively considerable and the estimated consumption rates would not be substantial compared to the 2019 citywide consumption.

NHPH-related transportation fuel impacts could overlap with the transportation needs (including fuel needs) of previously approved past projects, as well as other present or future projects that would occur during the NHPH's construction and operation. However, there is no apparent significant cumulative condition to which the NHPH could contribute. In addition,

implementation of **NHPH Mitigation Measure AIR-1b: Best Management Practices for Controlling Particulate Emissions during Construction**, would help avoid wasteful or inefficient use of energy during construction by requiring that equipment be well maintained, and requiring that idling be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes. Vehicle use associated with operations of the NHPH would be reduced due to implementation of UCSF's TDM program, which would include reductions in transportation and associated energy usage. Therefore, the NHPH's incremental impact associated with its energy use would be less than significant.

Cumulative projects could require increased peak and base energy demands and, therefore, could cause or contribute to adverse cumulative conditions. However, the cumulative projects would be expected to have relatively small energy requirements, and would be subject to the same applicable federal, state, and local energy efficiency requirements (e.g., the State's Title 24 requirements) that would be required of the NHPH, which would result in efficient energy use during their construction and operation. Adverse NHPH-related impacts to electricity demand would be negligible and would not significantly impact peak or base power demands during construction, operation, or maintenance. Accordingly, the NHPH's incremental contribution to cumulative peak and base demands would not be cumulatively considerable.

Conclusion

Based on the above analysis, the NHPH would not involve wasteful, inefficient, or unnecessary consumption of fuel or energy and would not make a cumulatively considerable contribution to a cumulative impact on energy resources. The project's cumulative impact would be less than significant.

Mitigation: None required.

4.5.4 References

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4.6 Geology and Soils

This section describes and evaluates the potential for the construction and operation of the New Hospital at Parnassus Heights (NHPH), including the related improvements, to result in significant impacts related to geology and soils, seismic hazards, and paleontological resources. The section contains a description of the existing regional and local conditions of the NHPH site and the surrounding areas as it pertains to geology, soils, and paleontology; includes a summary of the University plans and policies, and federal, State, and local regulations related to these resources; identifies criteria used to determine impact significance, and provides an analysis of the potential impacts related to geology, soils, and paleontological resources associated with the implementation of the NHPH as well as identifies feasible mitigation measures that could mitigate any potentially significant impacts.

The section is based on a review of published maps and data from the United States Geological Survey, California Geological Survey, University of California Museum of Paleontology; site-specific geotechnical investigations of the landslide hazards on Mount Sutro; and a geotechnical data report prepared in support of the NHPH.

For purposes of providing distinction between the various components of this project, references made in this EIR to "New Hospital" relate only to the New Hospital portion of the overall project, whereas references made to "NHPH" relate to the overall project, including the New Hospital and its related improvements.

4.6.1 Environmental Setting

Regional Setting

The campus site is located within the Coast Ranges geomorphic province which is characterized by marine sedimentary and volcanic rocks that form the Franciscan Assemblage occurring in northwest-trending ridges and valleys (CGS, 2002).[1] The present physiography and geology of the Coast Ranges are the result of deformation and faulting associated with the tectonic boundary between the North American plate and the Pacific plate. Plate boundary movements are largely concentrated along the well-known fault zones, which in the area include the San Andreas, Hayward, and Calaveras as well as other lesser-order faults. These faults run in a general northwest/southeast alignment and have helped form the subparallel northwest trending mountain ranges (typically ranging in elevation from 2,000 to 4,000 feet above sea level and occasionally 6,000 feet) and valleys. The Coast Ranges province is bounded on the west by the Pacific Ocean and the east by the Great Valley province where the bedrock units of the Coast Ranges dip below the thick alluvium sequences of that province.

The Coast Ranges are composed of thick sedimentary strata that are heavily deformed by tectonic forces. The northern and southern ranges are separated by a depression containing the San Francisco Bay. The northern Coast Ranges are dominated by irregular, knobby, landslide-

[1] The Franciscan Assemblage is a name applied to the various rock units that form the bulk of the Coast Range Mountains.

topography of the Franciscan Assemblage also referred to as the Franciscan Complex. In several areas, Franciscan rocks are overlain by volcanic cones and flows of the Quien Sabe, Sonoma, and Clear Lake volcanic fields. The dominant feature of the province, the San Andreas fault zone, is more than 600 miles long, extending from Point Arena to the Gulf of California.

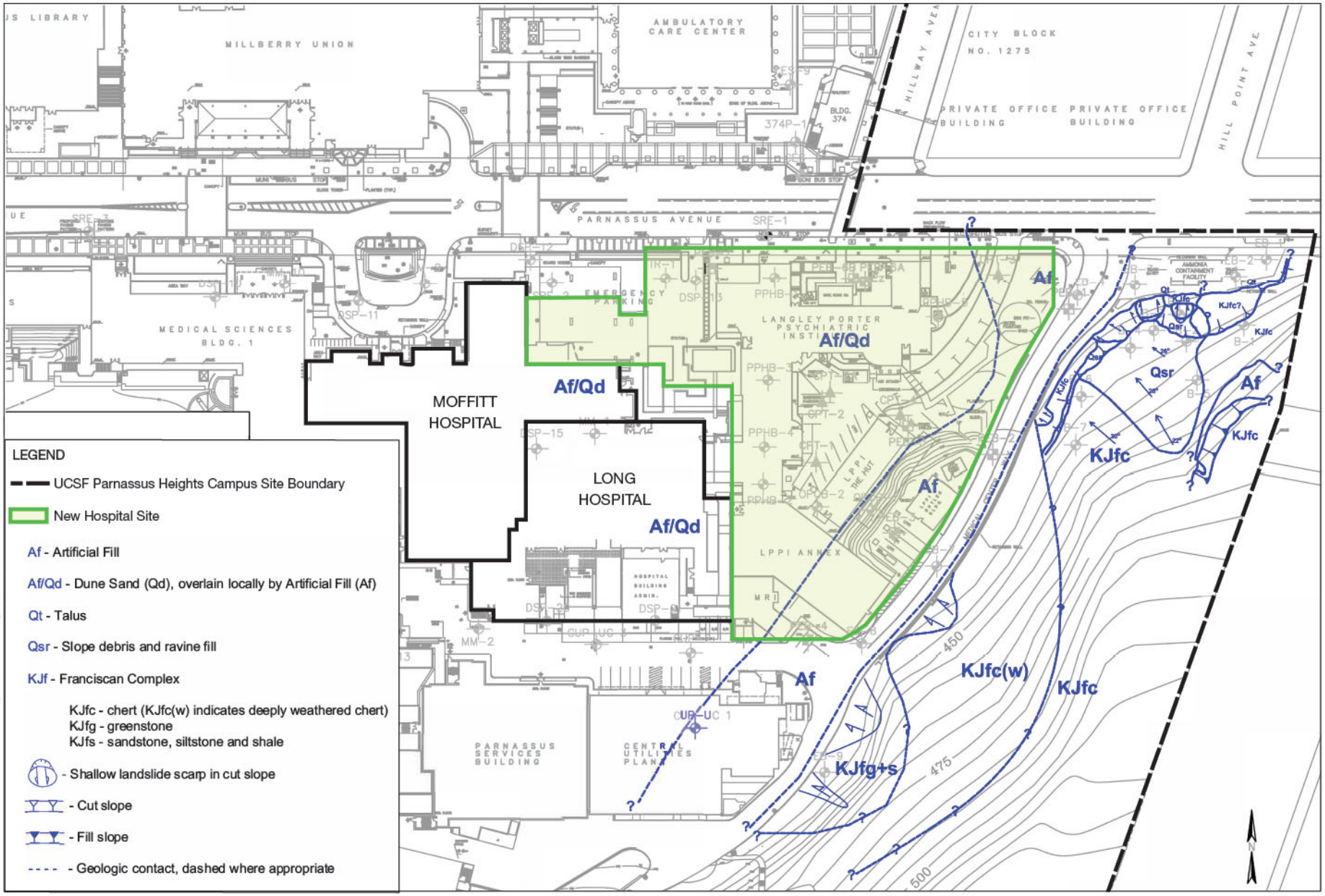
Campus Site Geology

The campus site is largely situated on the north-facing slope of Mount Sutro, in the west-central portion of San Francisco. In general, the site vicinity consists of bedrock hills surrounded by broad valleys underlain by Quaternary-age Dune Sand and Colma Formation. Ridges and isolated hills, including Mount Sutro, are composed of exposed basement rocks of the Jurassic- to Cretaceous-age Franciscan Complex.

NHPH Site

A description of geologic conditions on the NHPH site is based on surface observations and an inspection of exploratory boring samples collected in June and July 2020, review of 2020 seismic line surveys and cone penetration tests, and review of historical boring logs (Rutherford & Chekene, 2021). **Figure 4.6-1** present a geologic map for the NHPH site. Geologic materials at the NHPH site include:

- *Artificial Fill (Af)*: Artificial fill is present locally where material was placed for construction of certain existing facilities (e.g., Moffitt and Long Hospitals, LPPI Annex, etc.). The maximum thickness of artificial fill located in the New Hospital site vicinity is estimated to be approximately 8 to 10 feet. A fill prism up to 10 feet thick is also along the outboard edge of Medical Center Way.
- *Talus (Qt)*: Talus, consisting of shallow accumulations of unconsolidated landslide, soil and rock fall debris, is present locally behind the retaining walls along the base of the slope in the vicinity of the Ammonia Building.
- *Landslides (Ls)*: Several discrete landslides (slumps) are present on the lower portions of the hillslope, where the natural slope gradient has been steepened by excavation (i.e., cut slope). The observed slumps in the vicinity of the proposed building footprint involve slope debris (colluvium) mostly, with very little bedrock materials involved in the sliding. The slumps along Medical Center Way appear to be shallow (typically less than 5 to 10 feet).
- *Slope Debris and Ravine Fill (Qsr)*: Slope debris and ravine fill consist of native surficial (non-bedrock) materials overlying bedrock on the hillslope and are buried locally by artificial fill beneath Medical Center Way. The slope debris and ravine fill (colluvium) include unconsolidated accumulations of soil-like materials that are derived from weathering and slow downslope creep of soil and bedrock. Borings on the NHPH site indicate the thickness of the slope debris and ravine fill varies from approximately 4.5 to 20 feet.
- *Dune Sand (Qd)*: Quaternary-age Dune Sand consists of clean, well-sorted, fine to medium-grained sand that was transported and deposited by prevailing westerly winds. The Dune Sand underlies most of the developed part of the Parnassus Heights campus site, is overlain locally by artificial fill associated with past construction, and the thickness of deposits is variable.
- *Colma Formation (Qc)*: The Pleistocene-age Colma Formation overlies the Franciscan Complex bedrock over most of the NHPH site. The Colma Formation is a group of sandy estuarine and coastal deposits. Most of the Colma Formation at lower elevations consists of



2019/D19029101 - UCSF NHPH EIR\05 Graphics-GIS-Modeling\Illustrator

SOURCE: Rutherford + Chekene, 2021

UCSF New Hospital Parnassus Heights EIR

Figure 4.6-1
NHPH Site Geologic Map

poorly consolidated, stratified sand deposits with small to moderate amounts of silt and clay, and locally stratified clay layers. An old soil layer described as dark gray to black carbonaceous clayey material is sometimes found at the top of the Colma and under the Dune Sand. At higher elevations, the Colma Formation consists of stream, colluvial and eolian deposits.

- *Bedrock (Franciscan Complex, KJf)*: The oldest geologic formation underlying the NHPH site is Franciscan Complex bedrock. The Franciscan Complex is a highly deformed, Mesozoic-aged sequence of little to highly metamorphosed rocks representing former oceanic crust, pelagic (deep-water) deposits, and turbidites. Mount Sutro is underlain by the "Marin Headlands terrane." The predominant bedrock lithology exposed on hillslopes in the site vicinity is radiolarian chert, but exploratory borings indicate greenstone (meta volcanic rock), and sandstone-shale are also present. The rock typically is deeply weathered and fractured to substantial depths. The rock is overlain by slope debris (described above).

Fault Rupture

Background

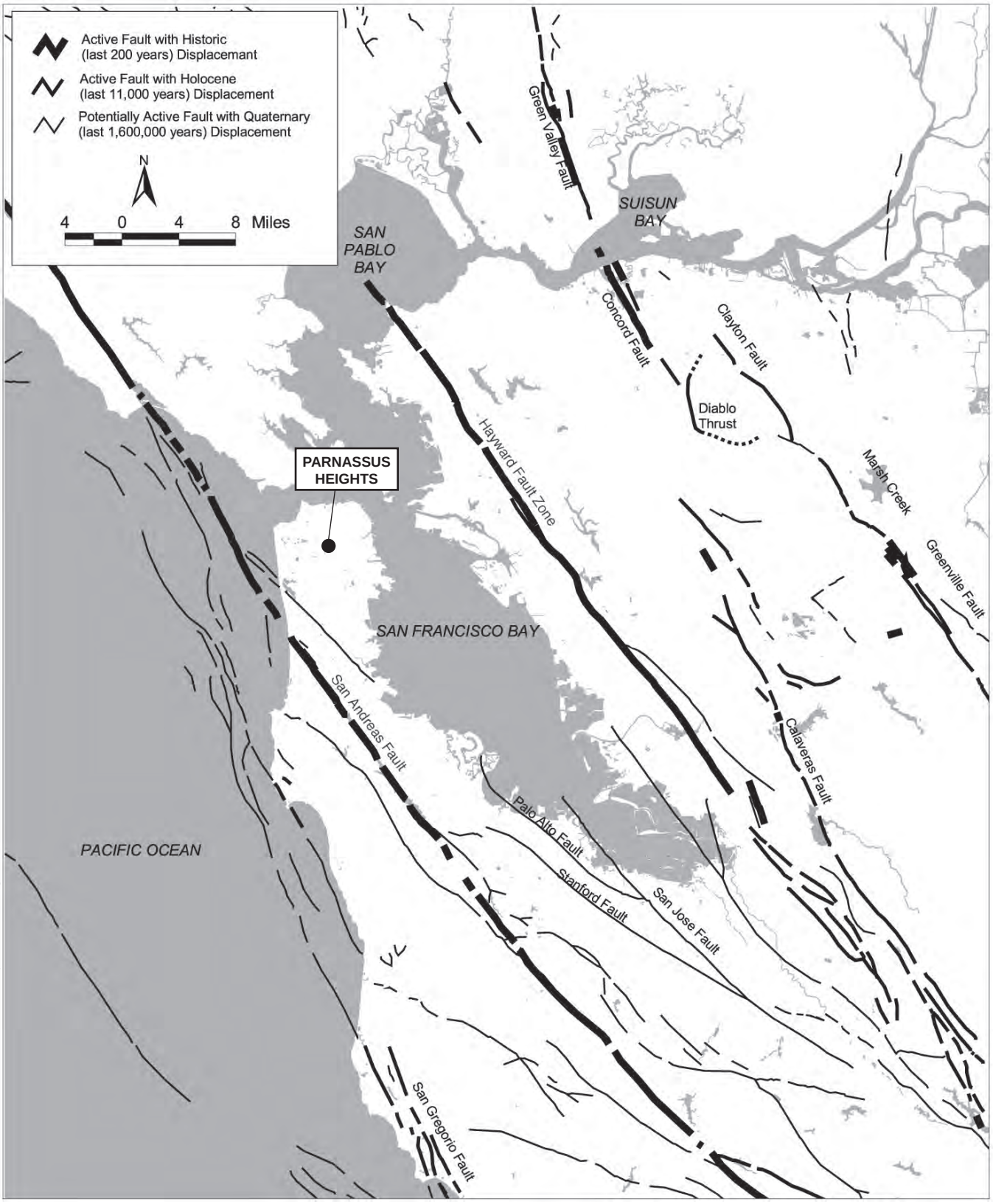
The campus site lies within a region of California that contains many active and potentially active faults, as shown in **Figure 4.6-2**. Fault rupture is defined as the displacement that occurs along the surface of a fault during an earthquake. Based on criteria established by the California Geological Survey (CGS), faults are classified as either active, potentially active, or inactive.[2] Faults are considered active when they have shown evidence of movement within the past 11,000 years (i.e., Holocene epoch). Potentially active faults are those that have shown evidence of movement between 11,000 and 1.6 million years ago (Quaternary age). Faults showing no evidence of surface displacement within the last 1.6 million years are considered inactive.

The Alquist-Priolo Earthquake Fault Zoning Act (formerly known as the Alquist-Priolo Special Studies Zones Act) established state policy to identify active faults and determine a boundary zone on either side of a known fault trace, called the Alquist-Priolo Earthquake Fault Zone. The delineated width of an Alquist-Priolo Earthquake Fault Zone is based on the location precision, complexity, or regional significance of the fault and can be between 200 and 500 feet in width on either side of the fault trace. If a project site lies within a designated Alquist-Priolo Earthquake Fault Zone, a geologic fault rupture investigation must be performed to demonstrate that a proposed building site is not threatened by surface displacement from the fault, before development permits may be issued.

Campus Site

Based on the available geologic data, no active or potentially active faults with the potential to cause surface fault rupture are known to be located beneath or in the vicinity of the Parnassus Heights campus site, including the NHPH site. The closest and most notable active fault to the campus site with surface rupture potential is the San Andreas Fault Zone, located approximately 4 miles to the west. The campus site is not located within or near a designated Alquist-Priolo Earthquake Fault Zone.

[2] The CGS was formerly called the California Division of Mines and Geology (CDMG).



SFO/19xxxx/D190291.01 - UCSF NHPH EIR/05 Graphics-GIS-Modeling/Illustrator

SOURCE: Jennings, 2010

UCSF New Hospital Parnassus Heights EIR

Figure 4.6-2
Active and Potentially Active Bay Area Earthquake Faults

ESA

Ground Shaking

As indicated in Figure 4.6-2, and described in **Table 4.6-1**, the campus site is located within 50 miles of many active or potentially active faults that are capable of producing very strong ground shaking. The San Andreas Fault Zone is located offshore in its closest location to the campus site but is still considered to have a high potential for being the source of a substantive earthquake event. The famous magnitude 1906 (M 8.25) earthquake on this fault caused major damage in San Francisco and surrounding areas. Other significant historic earthquakes that have occurred relatively near the campus site include the 1989 Loma Prieta Earthquake (M 6.9) on a remote segment of the San Andreas Fault Zone; the 1836 and 1868 (M 4.5) on the Hayward fault; and the 2000 West Napa Earthquake (M 5.2) on the West Napa Fault Zone.

TABLE 4.6-1
ACTIVE FAULTS IN THE VICINITY OF SAN FRANCISCO

Fault	Distance and Direction from Campus Site[a]	Recency of Movement	Fault Classification[b]	Historical Seismicity, Richter Magnitude[c]	Maximum Moment[d] Magnitude Earthquake
San Andreas	4 miles west	Historic (1906; 1989 ruptures) Holocene	Active	M 6.9, 1989 M 8.25, 1906 M 7.0, 1838 Many <M 6	7.9
Hayward	10 miles east	Historic (1836; 1868 ruptures) Holocene	Active	M 6.8, 1868 Many <M 4.5	7.1
San Gregorio–Seal Cove	6 miles southwest	Holocene – Late Quaternary	Active	Many M 3–M 6.4	7.3
Rodgers Creek	25 miles northeast	Historic Holocene	Active	M 6.7, 1898 M 5.6, M 5.7, 1969	7.0
Calaveras	25 miles east	Historic (1861 rupture) Holocene	Active	M 5.6–M 6.4, 1861 M 4–M 4.5 swarms 1970, 1990	6.8
Concord–Green Valley	25 miles east	Historic (1955) Holocene	Active	Historic active creep	6.9
West Napa	32 miles northeast	Historic (2014)	Active	M 6.0 2014 M 5.0 2000	6.5

NOTES:
[a] Fault distance is referenced from the fault's closest point to the county of San Francisco (excluding Treasure Island). Actual fault distance from specific project locations may therefore vary from those listed.
[b] Faults are considered active when they have shown evidence of movement within the past 11,000 years (i.e., Holocene epoch). Potentially active faults are those that have shown evidence of movement between 11,000 and 1.6 million years ago (Quaternary age). Faults showing no evidence of surface displacement within the last 1.6 million years are considered inactive.
[c] Richter magnitude (M) and year for recent and/or large events. The Richter magnitude scale reflects the maximum amplitude of a particular type of seismic wave.
[d] Moment magnitude provides a physically meaningful measure of the size of an earthquake [California Geological Survey (CGS) 2002]. The maximum moment magnitude earthquake, derived from the joint CGS/USGS Probabilistic Seismic Hazard Assessment for the State of California, 1996. CGS OFR 96-08 and USGS OFR 96-706).

SOURCES: Hart (2007); Jennings (2010); and Peterson et al. (1996)

The effects of seismic shaking are dependent on the distance from the epicenter, the causative fault, and the underlying geotechnical characteristics of the onsite geology. The U.S. Geological Survey (USGS) Working Group on California Earthquake Probabilities (also known as UCERF3) evaluated the likelihood of one or more earthquakes of moment magnitude 6.7 or higher occurring in the San Francisco Bay Area.[3] The result of the most recent evaluation indicated a 72 percent likelihood that such an earthquake event will occur in the Bay Area sometime in the next 30 years, beginning 2014. Within this 72 percent probability, the Hayward-Rodgers Creek and Calaveras fault systems are the two most likely fault systems to cause the event (USGS, 2015).

The secondary effects of seismic shaking potentially include subsidence, liquefaction, settlement, landslides, and lateral spreading, described below.

Landslides and Slope Stability

Slope failures, commonly referred to as landslides, include many phenomena that involve the downslope displacement and movement of material, either triggered by static (i.e., gravity) or dynamic (i.e., earthquake) forces. A slope failure is a mass of rock, soil, and debris displaced downslope by sliding, flowing, or falling. Exposed rock slopes undergo rockfalls, rockslides, or rock avalanches, while soil slopes experience shallow soil slides, rapid debris flows, and deep-seated rotational slides. Landslides may occur on slopes of 15 percent or less; however, the probability is greater on steeper slopes that exhibit old landslide features such as scarps, slanted vegetation, and transverse ridges.

There have been numerous studies on landslides and slope stability for the campus site. In 1999, Rutherford & Chekene performed a campus-wide slope stability evaluation based on a review of topographical maps, boundary surveys, aerial photographs, geologic reports and maps, and field reconnaissance of the campus site.

A city-wide 2000 study by Wilson et al. determined that several landslides were present on Mount Sutro. Since this analysis was not based on the collection of site specific data, the study produced a table of susceptible geologic units, rather than a hazard map (Rutherford & Chekene, 2019). In 2006, Rutherford & Chekene performed a substantive slope stability risk assessment for the Parnassus Heights campus site (Rutherford & Chekene, 2006) that utilized historical borehole logs and unpublished reports on file at Rutherford & Chekene, most notably a series of short reports by Marliave (1948a, b, c, 1951) and Woodward Lundgren & Associates (1974a, 1974b, and 1974c), as cited therein. The historical unpublished reports indicated that slope failures coincided with the construction of certain roads and new buildings on the campus site in the late 1800s. Notably, however, there were no reports of slope failure following the 1906 earthquake. The first historical reference to a slope failure on Mount Sutro was in a 1948 report by Marliave, which alluded to a failure along the then cut slope to the southeast of the Langley Porter Clinic (now known as the Langley Porter Psychiatric Institute, or LPPI) (Rutherford & Chekene, 2019).

[3] Moment magnitude is related to the physical size of a fault rupture and movement across a fault. The Richter magnitude scale reflects the maximum amplitude of a particular type of seismic wave. Moment magnitude provides a physically meaningful measure of the size of a faulting event [California Geological Survey (CGS) 2002].

A 2006 risk assessment prepared by Rutherford & Chekene included a probabilistic slope analysis using dry and wet seismic conditions. Topographic data was collected using LiDAR to develop a digital elevation model, which then served as a basis to prepare slope hazard maps.[4] The 2006 risk assessment determined that there was a high probability for the occurrence of seismic-induced landslides under the rare combination of high pore pressure distribution in the affected earth materials occurring at the same time as an earthquake (Rutherford & Chekene, 2006).

A slope stability risk assessment prepared by Rutherford & Chekene in 2019 reviewed the 2006 study and compared the data used in 2006 with updated LiDAR data[5] from 2018, previous slope hazard mapping, past slope improvement projects, and field reconnaissance conducted in 2018. From this data comparison, Rutherford & Chekene qualitatively assessed the slope hazards in terms of size and frequency of potential movement events, and also evaluated the relative risk of potential adverse effects to roads and facilities from slope movement. The findings of the 2019 investigation determined that, in general, slope failures in the form of rockfall types are expected to occur in the study area much more frequently than larger, and potentially more damaging, hillside landslides. The 2019 risk assessment concluded there was no evidence of large-scale slope movements during the 2006-2018 period; that there was evidence of small movements in some cut slopes, especially steep vegetated slopes; and that water and trees were the primary agents of observed small movements (Rutherford & Chekene, 2019).

Mapped locations of previous slope failures in the NHPH vicinity are depicted in Figure 4.6-1 (Rutherford & Chekene, 2021).

Subsidence

Subsidence is characterized as a sinking of ground surface relative to surrounding areas and can occur when underlying soils fail to support new loadings, such as structures or placement of additional fill materials. Subsidence in areas of thick alluvial deposits can also be associated with regional fluid (groundwater and/or petroleum) withdrawal, peat oxidation, or hydrocompaction. Subsidence can result in the development of ground cracks and damage to subsurface vaults, pipelines, and other improvements.

Subsidence can occur from immediate settlement, consolidation, shrinkage of expansive soil (see discussion below), and/or liquefaction (discussed below). Immediate settlement occurs when a load from a structure or placement of new fill material is applied, causing distortion in the underlying materials. This settlement occurs quickly and is typically complete after placement of the final load. Consolidation settlement occurs in saturated clay from the volume change caused by squeezing out water from the pore spaces. Consolidation occurs over a period of time and is

[4] LiDAR stands for *Light Detection and Ranging*, a remote sensing method using light in the form of a pulsed laser to measure surface topography. These light pulses, combined with other data recorded by the airborne system, generate precise, three-dimensional information about the shape of the ground surface and its characteristics. The LiDAR data used by Rutherford & Chekene 2006 was collected and compiled by Haneberg Geoscience, GeoInsite, and Rutherford & Chekene in 2005.

[5] The updated LiDAR data was obtained on September 9, 2018 by Quantum Spatial and included as an appendix in the Rutherford & Chekene 2019 report.

followed by secondary compression, which is a continued change in void ratio under the continued application of the load. Soils tend to settle at different rates and by varying amounts depending on the load weight or changes in properties over an area, which is referred to as differential settlement. Commonplace in redevelopment of older structures, the presence of undocumented fill materials makes them suspect to adequately support new improvements unless site preparations, such as removal of artificial fill and recompaction or replacement with engineered fill is conducted.

Liquefaction

Liquefaction is a form of earthquake-induced ground failure that occurs when relatively shallow, loose, granular, water-saturated soils behave similarly to a liquid when subject to high-intensity ground shaking. Liquefaction occurs when three general conditions exist: (1) shallow [50 feet below ground surface (bgs) or less] groundwater; (2) low-density non-cohesive (granular) soils; and (3) high-intensity ground motion. Liquefaction is typified by a buildup of pore-water pressure in the affected soil layer to a point where a total loss of inherent shear strength occurs, thus causing the soil to behave like a liquid. Saturated, loose to medium-dense, near-surface non-cohesive soils and cohesive soils exhibit the highest liquefaction potential. Liquefaction usually results in horizontal and vertical movement of soils from lateral spreading (i.e., lateral displacement of gently sloping ground) of liquefied materials and post-earthquake settlement of liquefied materials. The effects of liquefaction on level ground include potential seismic settlement, sand boils, ground oscillation, and bearing capacity failures below structures.

Hazard maps compiled by Association of Bay Area Governments (ABAG) based on CGS data depict liquefaction hazards for areas throughout the Bay Area, in categories ranging from very low to very high liquefaction susceptibility. The campus site is not located within any Seismic Hazard Zones for potential liquefaction (ABAG, 2019). Based on the ABAG hazard maps, the majority of the developed core of Parnassus Heights campus site, including the NHPH site, is located in an area considered by CGS to have a moderate susceptibility for liquefaction, while the rest of the campus site is an area designated with a low potential for liquefaction (ABAG, 2019). However, based on the geotechnical data report prepared for the NHPH, given the presence of primarily Dune Sand underlying the site of the New Hospital, the New Hospital site is estimated to have a moderate to high potential for liquefaction (Rutherford and Chekene, 2021).

Seismically Induced Settlement

Settlement of the ground surface can be accelerated and accentuated by earthquakes. During an earthquake, settlement can occur as a result of the relatively rapid compaction and settling of subsurface materials (particularly loose, uncompacted, and variable sandy sediments above the water table) due to the rearrangement of soil particles during prolonged ground shaking. Settlement can occur both uniformly and differentially (i.e., where adjoining areas settle at different amounts). Areas underlain by artificial fill can be particularly susceptible to this type of settlement if not addressed adequately in geotechnical site preparations (e.g., recompaction of site soils or replacement with engineered fill). The subsurface soils on the majority of the NHPH site

west of Medical Center Way are Dune Sand, and consequently, are estimated to have moderate to high potential for seismically induced settlement (Rutherford & Chekene, 2021).

Expansive Soils

Expansive soils are soils that possess what is described as "shrink-swell" behavior because they include clay minerals characterized by their ability to undergo significant volume change (shrink or swell) due to variation in moisture content. Typically, soils that exhibit expansive characteristics comprise the upper 5 feet of the surface. Sandy soils are generally not expansive, while clayey soils have a higher potential to be expansive. Changes in soil moisture content can result from rainfall, irrigation, pipeline leakage, perched groundwater, drought, or other factors. Volumetric change of expansive soils may cause excessive cracking and heaving of structures with shallow foundations, concrete slabs-on-grade, or pavements supported on these materials over long periods of cyclical changes in volume. Structural damage is usually the result of inadequate soil and foundation engineering or the placement of structures directly on expansive soils. There is a low potential for expansive soils at the NHPH site (Rutherford & Chekene, 2021).

Soil Corrosivity

The corrosivity of soils is commonly related to several key parameters, including soil resistivity, the presence of chlorides and sulfates, oxygen content and pH. Typically, the most corrosive soils are those with the lower pH and highest concentration of chlorides and sulfates. Wet/dry conditions can result in concentration of chlorides and sulfates as well as movement in the soil that tends to break down corrosive protective films and coatings on the surface of building materials. Soil corrosivity can lead to corrosion of buried iron, steel, cast iron, ductile iron, galvanized steel, and dielectric coated steel or iron. Results of corrosivity tests performed on four samples from the NHPH site indicate mildly corrosive soils (Rutherford & Chekene, 2021).

Soil Erosion

Erosion is the wearing-away of soil and rock by processes such as mechanical or chemical weathering, mass wasting, and the action of waves, wind, and underground water. Excessive soil erosion can eventually lead to damage of building foundations and roadways. In general, areas that are most susceptible to erosion are those that would be exposed during the construction phase when earthwork activities disturb soils and require stockpiling. Typically, the soil erosion potential is reduced once the soil is graded and covered with concrete, structures, asphalt, or landscaping. However, changes in drainage patterns can also cause areas to be susceptible to the effects of erosion.

Paleontological Setting

As indicated above, the NHPH site is mostly composed of radiolarian chert of the Franciscan Complex with exposures of meta-sandstone, shale, greenstone also present (Rutherford & Chekene, 2019, 2021). Geologic mapping by Blake et al. (2000) confirms the presence of these rocks types and indicates the presence of some Quaternary-age Dune Sand and Undifferentiated surficial deposits (Blake et al., 2000), which overlie the Franciscan chert. The Franciscan

Complex is mainly composed of Mesozoic-age, low to- high grade metamorphosed rocks; and while a majority of the Franciscan Complex is highly deformed from past faulting and metamorphism, it also contains unmetamorphosed sedimentary rocks. The sedimentary rocks of the Franciscan Complex have produced several marine invertebrate fossils (UCMP, 2019); however, marine invertebrate fossils are generally common and well-documented and would generally not be considered a unique paleontological resource. There have been two previously recorded vertebrate fossil localities from the Franciscan Complex; one in Franciscan chert from San Joaquin County and one in Franciscan limestone from San Luis Obispo County (UCMP, 2019). Due to the nature of a majority of the Franciscan Complex (i.e., being too highly metamorphosed to have preserved fossil remains) and the general lack of vertebrate fossil localities, this formation is considered to have low paleontological sensitivity. Based on the University of California Museum of Paleontology (UCMP) Locality Search online database search, no known paleontological resources were identified within the campus site.

4.6.2 Regulatory Framework

State

Alquist-Priolo Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act (Public Resources Code Section 2621) was enacted by the State of California in 1972 to address the hazard of surface faulting to structures for human occupancy. The primary purpose of the Alquist-Priolo Earthquake Fault Zoning Act is to prevent the construction of buildings intended for human occupancy on the surface traces of active faults. The Alquist-Priolo Earthquake Fault Zoning Act is also intended to provide the citizens with increased safety and to minimize the loss of life during and immediately following earthquakes by facilitating seismic retrofitting to strengthen buildings against ground shaking.

The Alquist-Priolo Earthquake Fault Zoning Act requires the State Geologist to establish regulatory “earthquake fault zones” around the surface traces of active faults and to issue appropriate maps to assist cities and counties in planning, zoning, and building regulation functions. The Alquist-Priolo Earthquake Fault Zoning Act and its regulations are presented in CGS Special Publication (SP) 42, Fault-Rupture Hazard Zones in California (Hart, 2007). As discussed previously, the campus site is not located within an Alquist-Priolo Fault Rupture Hazard Zone and, therefore, would be not be subject to the requirements of the Alquist-Priolo Earthquake Fault Zoning Act.

Seismic Hazards Mapping Act

In order to address the effects of strong ground shaking, liquefaction, landslides, and other ground failures due to seismic events, the State of California passed the Seismic Hazards Mapping Act of 1990 (Public Resources Code Sections 2690-2699). Under the Seismic Hazards Mapping Act, the State Geologist is required to delineate “seismic hazard zones.” There are areas of the Mount Sutro Open Space Reserve (Reserve) within the campus site that are mapped as being susceptible to seismically-induced landslide hazards. Improvements located within a seismically-induced

landslide hazard area are required to adhere to CGS SP 117A, Guidelines for Evaluating and Mitigating Seismic Hazards in California.

California Building Code

The 2019 California Building Code (CBC), Title 24 of the California Code of Regulations, is a compilation of building standards, including seismic safety standards, for new buildings. CBC standards are based on building standards that have been adopted by State agencies without change from a national model code; building standards based on a national model code that have been changed to address particular California conditions; and building standards authorized by the California legislature but not covered by the national model code. The CBC applies to all occupancies in California, except where stricter standards have been adopted by local agencies. The CBC is published on a triennial basis, and supplements and errata can be issued throughout the cycle. The 2019 CBC became effective on January 1, 2020.

California Department of Health Care Access and Information

UCSF's hospitals fall under the jurisdiction of the *Alfred E. Alquist Hospital Facilities Seismic Safety Act (Alquist Seismic Safety Act*) and Senate Bill 1953 (SB 1953), an amendment of the *Alquist Seismic Safety Act*, passed in 1994. The *Alquist Seismic Safety Act* and subsequent bill require all hospital facilities to comply with seismic safety building standards as defined by the California Department of Health Care Access and Information (HCAI) [formerly Office of Statewide Health Planning and Development (OSHPD)].

HCAI is responsible for carrying out the provisions of SB 1953. A department of the California Health and Human Services Agency, HCAI's primary goals include assessing California's healthcare infrastructure, managing the healthcare workforce, providing healthcare outcomes information to the public, insuring healthcare facilities development loans, and operating the Hospital Seismic Safety Program, which enforces building seismic safety. HCAI's Hospital Building Safety Board further advises the director of the HCAI on the administration of SB 1953 and acts as a board of appeals for hospital seismic safety issues.

SB 1953 was adopted in part so that, after a major earthquake or disaster, hospital facilities can continue to provide care to their current occupants as well as any new patients that might arrive after the event.

All of UCSF's hospital buildings must meet certain HCAI standards. If a building is to remain classified as an acute-care hospital facility[6] and thus, be compliant with SB 1953, the owner of the building must complete seismic evaluations in accordance with the Seismic Evaluation Procedures as specified in SB 1953; prepare a comprehensive plan and schedule for how each building will become compliant with SB 1953, within three years of the evaluation; and submit the report and a compliance plan to HCAI for review and approval (California State Senate, 1994).

6 An acute-care hospital provides emergency services and general medical and surgical treatment for acute disorders rather than long-term residential care for chronic illness.

In the process of compliance, HCAI and a hospital building owner evaluate both nonstructural components (communications, medical gas, etc.) and structural components (actual building structure) of acute-care hospital facilities that might sustain damage during a seismic event. Each acute-care facility is assigned a Structural Performance Category (SPC) rating and a Nonstructural Performance Category (NPC) rating. After the evaluation process, HCAI either confirms or changes the rating. The hospital then receives guidance from HCAI on how upgrades can continue (HCAI, 2021a). **Table 4.6-2** presents HCAI SPC and NPC ratings and descriptions for acute-care hospital facilities.

TABLE 4.6-2
HCAI STRUCTURAL PERFORMANCE CATEGORIES AND NONSTRUCTURAL PERFORMANCE CATEGORIES FOR ACUTE-CARE HOSPITAL FACILITIES

Performance Categories	HCAI Performance Categories Description
Structural Performance Category (SPC)	
SPC-0	No rating was reported to HCAI.
SPC-1	These buildings have a high risk of collapse in an earthquake, and are a significant safety hazard to the public. These buildings had to be retrofitted, replaced, or removed from acute care classification by 2020.
SPC-2	These buildings are in compliance with pre-1973 California Building Code, but are not in compliance with the Alquist Hospital Facilities Seismic Safety Act. These buildings do not pose a significant safety hazard, but might not be functional after a strong earthquake. These buildings must be compliant with the Act by January 1, 2030 or removed from acute care classification.
SPC-3	These buildings are compliant with the Alquist Hospital Facilities Seismic Safety Act. These buildings might sustain structural damage and might not be able to provide care after an event, but they have been constructed or reconstructed under HCAI building permits. They buildings may be used to January 1, 2030 and beyond.
SPC-4	These buildings are compliant with the Alquist Hospital Facilities Seismic Safety Act. These buildings may sustain structural damage and might not be able to provide care after an event, but they have been constructed or reconstructed under HCAI building permits. They can be used to January 1, 2030 and beyond.
SPC-5	These buildings are compliant with the Alquist Hospital Facilities Seismic Safety Act. These buildings are reasonably capable of providing care after an event, and they have been constructed or reconstructed under HCAI building permits. They can be used to January 1, 2030 and beyond.
Nonstructural Performance Category (NPC)	
NPC-0	No rating was reported to HCAI.
NPC-1	Basic systems used in life safety and care are not properly anchored, and will not survive an earthquake event. Communications, emergency power, medical gas, and fire alarm systems must be anchored by January 1, 2002.
NPC-2	Communications systems, emergency power supplies, bulk medical gas systems, fire alarm systems, and emergency lighting and exit signs are properly anchored.
NPC-3	Basic systems used in life safety and care are properly anchored in critical areas of the hospital. If there is not significant structural damage, basic emergency medical care should be able to continue.
NPC-4	All architectural, mechanical, electrical systems, components and equipment, and hospital equipment are properly anchored. If there is not significant structural damage and problems with water and sewer systems, basic emergency medical care should be able to continue.
NPC-5	All basic systems used in life safety and care are properly anchored. In addition, the building has water and wastewater holding tanks (integrated into the plumbing system) and an on-site fuel supply that will last through 72 hours of acute care operations. Radiological service can also continue.

SOURCE: HCAI, 2021a

In general, low scores mean hospital building systems are not prepared for a disaster, and high scores mean hospital building systems are prepared. If the building is not in compliance with SB 1953 based on the scores, seismic retrofit regulations (Division III-R) are applied to the building to help in its retrofit. Replacing older hospitals with modern hospitals is intended to increase the score of UCSF's medical facilities. A number of laws have amended SB 1953 since passing, including AB 2190, SB 90, SB 306, and SB 499, which have mainly adjusted timelines for facilities to complete the requirements.

HCAI added a new SPC category, SPC-4D, to enable nonconforming buildings to withstand an earthquake and remain operable. SPC-4D is a voluntary program that is primarily used to retrofit SPC-2 buildings. The retrofit work needs to be completed by 2030 to allow acute care services to remain in existing noncompliant buildings beyond 2030. SPC-4D became part of the California Building Standards Code, under Section 303A.3.3 in January 2019.

For the Parnassus Heights campus site, all applicable buildings have an SPC-3 or higher rating with the exception of Moffitt Hospital, which has an SPC-2 rating. With respect to nonstructural performance all the hospital buildings have an NPC-3 rating (HCAI, 2021b).

Public Resources Code Section 5097.5 and Section 30244

State requirements for paleontological resource management are included in PRC Section 5097.5 and Section 30244. Section 5097.5 prohibits the removal of any paleontological site or feature from public lands without permission of the jurisdictional agency. It requires reasonable mitigation of adverse impacts to paleontological resources from developments on public (State, county, city, district) lands. Section 30244 requires that, where development would adversely impact archaeological or paleontological resources as identified by the State Historic Preservation Officer, reasonable mitigation measures shall be required.

University of California

University of California Policy on Seismic Safety

The University of California's *Seismic Safety Policy* originally developed in 1975 and last updated March, 2021[7] applies to all UC facilities within California except 1) those under the regulatory authority of the HCAI or 2) K-12 schools or community college facilities built after 2018 under the regulatory authority of the Division of the State Architect (DSA). The policy requires these buildings and facilities where University operations and activities occur be acquired, built, maintained, and rehabilitated to an acceptable level of earthquake safety. The purpose of this policy is to use current earthquake engineering practices and University resources to provide an acceptable level of earthquake safety for students, employees, and the public who occupy University buildings and other facilities, at all locations of University operations and activities to the maximum extent feasible. This policy addresses a number of topics, including but not limited to: surveying of existing buildings and facilities; interim use plans; a program for abatement of seismic hazards in

[7] This policy is periodically updated and the most recent version can be found at https://policy.ucop.edu/doc/3100156/Seismic.

buildings and other facilities; seismic rehabilitation standards; post-earthquake response; standards for new construction and renovation, and seismic peer review.

UCSF 2014 LRDP

The UCSF 2014 LRDP identified campus-wide objectives and objectives specific to the Parnassus Heights campus site. The following UCSF 2014 LRDP campus-wide objectives relate to seismicity, geology and soils:

Campus-Wide Objectives

3. **Ensure UCSF's Facilities are Seismically Safe**

   A. Ensure inpatient facilities meet state seismic requirements, as set forth in the *Alquist Seismic Safety Act* (SB 1953), by constructing and maintaining modern, seismically safe hospitals and facilities that will remain operational in the event of a major earthquake.

   B. Plan new facilities and implement improvements to comply with UC's Seismic Safety Policy, to ensure a seismically safe environment for UCSF patients, visitors, physicians and staff.

   C. Designate buildings for renovation, demolition, and replacement as warranted.

CPHP

The following UCSF CPHP objectives for the NHPH relate to seismicity, geology and soils:

Parnassus Heights

- Meet seismic requirements of California Senate Bill 1953 by developing a new, seismically-sound, state-of-the-art inpatient facility.

4.6.3 Impacts and Mitigation Measures

Significance Criteria

Would implementation of the NHPH:

a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

   i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42;

   ii. Strong seismic ground shaking;

   iii. Seismic-related ground failure, including liquefaction; or

   iv. Landslides.

b) Result in substantial soil erosion or the loss of topsoil;

c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse;

d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property;

e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water; or

f) Directly or indirectly destroy a unique paleontological resource or site or unique geological feature.

g) Exceed the LRDP EIR standard of significance by exposing people to structural hazards in an existing building rated Level V (Poor), or Level VI (Very Poor), under the University's seismic performance rating system, or substantial nonstructural hazards.

Criteria Not Analyzed

As stated in the Initial Study, there would no impact related to the following topics for the reasons described below:

- ***Fault rupture*.** The campus site is not located within or immediately adjacent to any known active fault, and therefore, the potential for fault rupture to adversely affect the site is very low.
- ***Expansive soils*.** Expansive soils are commonly addressed in required geotechnical evaluations of onsite geotechnical hazards, and past geotechnical investigations at the campus site has not revealed the presence of expansive soils. Furthermore, the University requires all new facilities to adhere to the current CBC, which includes detailed provisions to ensure that the design of new facilities is appropriate to site soil conditions, including requirements to address expansive and otherwise problematic soils. With adherence to the CBC, impacts related to site soil conditions – including but not limited to expansive soils, if any are present – would be less than significant.
- ***Septic systems*.** The proposed NHPH does not include any activities that would require the utilization of septic systems or alternative wastewater disposal systems. No impact would occur.
- ***LDRP EIR standard of significance*.** None of the structures planned for renovation under the proposed NHPH are rated Level V (Poor), or Level VI (Very Poor) under the University's seismic performance rating system for structural hazards. No impact would occur.

Furthermore, as stated in the Initial Study, impacts related to the following topic were determined to be less than significant with mitigation for the reasons described below:

- ***Directly or indirectly destroy a unique paleontological resource or site or unique geological feature.*** As discussed in the Initial Study, the subsurface construction at the NHPH site could have the potential, albeit low, to directly or indirectly destroy a previously unknown unique paleontological resource, which would be a significant impact. However, implementation of NHPH Mitigation Measure GEO-VII.f requires pre-project training of construction personnel of the paleontological sensitivity of the project area; and outlines protocols to follow in the event of inadvertent discovery of paleontological resources. Implementation of this mitigation

measure would ensure potential impacts to previously unknown paleontological resources would be less than significant.

Additionally, from a cumulative perspective, other projects within and outside the campus site are located within areas that could contain significant fossil resources. The associated subsurface disturbances for the construction of foundations and utilities increases the likelihood that paleontological resources could be uncovered, and it is therefore possible that cumulative development would result in the demolition or destruction of significant paleontological resources. While the loss of resources is considered a significant cumulative impact, the destruction of paleontological resources is site specific, and with implementation of NHPH Mitigation Measure GEO-VII.f, the NHPH would not contribute considerably to the loss of paleontological resources, and the impact would be less than significant.

Approach to Analysis

The potential for significant impacts related to geology and soils from the construction and operation of the campus facilities developed under the proposed NHPH was determined based on a thorough review of the existing conditions informed by data compiled by USGS, CGS, ABAG, and site specific slope stability studies and geotechnical data report prepared by Rutherford & Chekene (2006, 2019, and 2021) for the campus site.

In 2015, the California Supreme Court held that CEQA generally does not require a lead agency to consider the impacts of the existing environment on the future residents or users of a project [*California Building Industry Association v. Bay Area Air Quality Management District* (2015) 62 Cal. 4th 369.]. However, if a project exacerbates a condition in the existing environment, the lead agency is required to analyze the impact of that exacerbated condition on the environment, which may include future occupants of the project. As stated in *Ballona Wetlands Land Trust v. City of Los Angeles* [(2011) 201 Cal.App.4th 455, 473]: "[T]he purpose of an EIR is to identify the significant effects of a project on the environment, not the significant effects of the environment on the project." While the potential for increased exposure of people or structures to risks associated with seismic occurrences and location of people or structures on unstable geologic units as a result of the location of NHPH activities are discussed in this section for informational purposes, the effects of the preexisting hazards on users of the proposed development under the NHPH are not environmental impacts under CEQA.

Impact Analysis

Impact GEO-1: Construction and operation of the NHPH would not directly or indirectly cause substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking. (*Less than Significant*)

New Hospital

The proposed New Hospital would be approximately 900,000 gross square feet (gsf), and consist of 15 stories plus rooftop mechanical equipment and a full basement. The New Hospital building consists of a 5-story podium, above which a 10-story tower would rise.

As discussed above in Section 4.6.1, *Environmental Setting*, the Bay Area region is considered seismically active and will likely experience a substantive regional earthquake within the operational life of the New Hospital. And while the New Hospital would not cause or exacerbate seismic ground shaking hazards, there is a potential for strong to very strong intensity ground shaking to occur within the campus site that would be associated with such an earthquake. The intensity of such an event would depend on the causative fault and the distance to the epicenter, the magnitude, the duration of shaking, and the nature of the geologic materials on which the project components would be constructed. Intense ground shaking and high ground accelerations would affect the entire area and the primary and secondary effects of ground shaking could damage structural foundations, distort or break infrastructure, and place people at risk of injury or death. The New Hospital would result in new building development, and an increase in population at the campus site, including daily physicians/faculty, staff, patients and visitors, being subject to considerable seismic ground shaking from a substantive earthquake.

As discussed in Section 4.6.2, *Regulatory Setting*, above, in compliance with the CBC, for all structural improvements and associated improvements that would occur for the New Hospital, design level geotechnical evaluations would be required to be prepared and implemented prior to final design and construction. The final design-level geotechnical evaluation would include any necessary recommendations for site preparations (e.g., compaction requirements, engineered fill criteria, and moisture limitations) and/or foundation systems necessary to reduce seismic-related hazards to less than significant levels consistent with the applicable seismic design criteria of the CBC. Implementing the regulatory requirements of the CBC, and ensuring that buildings, structures, and related improvements are constructed in compliance with the law is the responsibility of the state licensed project engineers and building officials. The CBC describes required standards for the construction, alteration, movement, replacement, location, and demolition of every building or structure or any appurtenances connected or attached to such buildings or structures throughout California. The standards include earthquake design requirements that determine the seismic design category and then describe the structural design requirements. The geotechnical engineer, as a registered professional with the State of California, is required to comply with the CBC while applying standard engineering practice and the appropriate standard of care for anticipated seismic events. The California Professional Engineers Act (Building and Professions Code Sections 6700–6799), and the Codes of Professional Conduct, as administered by the California Board of Professional Engineers and Land Surveyors, provide the basis for regulating and enforcing engineering practice in California.

In addition, construction of New Hospital as an essential services building would require design, site preparation and foundation construction in accordance with the most current version of the seismic standards of SB 1953 and the HCAI requirements for new hospital facilities. Geotechnical review of the foundation design of new hospital facilities would also be required to adhere to the guidelines presented in *California Geological Survey – Note 48, Checklist for the Review of Engineering Geology and Seismology Reports for California Public Schools, Hospitals, and Essential Services Buildings*.

With compliance with the regulatory requirements and the implementation of geotechnical design recommendations consistent with seismic design criteria, impacts related to seismic shaking associated with earthquakes that may occur at the New Hospital would be less than significant.

Mitigation: None required.

Related Improvements

Renovation of Moffitt and Long Hospitals

As discussed in Chapter 3, *Project Description*, under the NHPH project, Moffitt Hospital would be renovated and reused to provide 49 inpatient beds. In addition, once the New Hospital is complete, interior renovations would be implemented at Moffitt and Long Hospitals to facilitate the inpatient clinical and support program needs for the increased patient capacity at Parnassus Heights under the NHPH. The proposed interior renovations include approximately 74,000 gross square feet gsf in Long Hospital and 29,000 gsf in Moffitt Hospital. In addition, building space of Moffitt and Long Hospitals would be increased (by approximately 4,500 gsf for Moffitt Hospital and up to 5,000 gsf for Long Hospital).

Moffitt Hospital has a Seismic Performance Category rating of 2 (SPC-2). Under SB 1953, Moffitt Hospital is required to undergo a seismic retrofit to remain an acute care facility past 2030. Under the NHPH, Moffitt Hospital would be brought up to SPC-4D code compliance. This would include addition of steel bracing and other structural upgrades, and the addition of an exit stair structure to Moffitt Hospital.

All proposed renovation work at Moffitt and Long Hospitals would be required to be implemented in accordance with the seismic standards of SB 1953 and the HCAI requirements for hospital facilities.

With compliance with the regulatory requirements and the implementation of geotechnical design recommendations consistent with seismic design criteria, impacts related to seismic shaking associated with earthquakes that may occur at the renovated Long and Moffitt Hospitals would be less than significant.

Mitigation: None required.

Widening of Medical Center Way, Replacement of Diesel Fuel Tanks and Medical Gas Tanks, Vegetation Management and Slope Stabilization Improvements, and Parnassus Avenue Pedestrian Bridge and Tunnel

As described in Chapter 3, *Project Description*, other NHPH related improvements would include widening of Medical Center Way, replacement of diesel fuel tanks and medical gas tanks, vegetation management and slope stabilization improvements, and Parnassus Avenue bridge and tunnel. As with all development under the NHPH, these improvements could be subject to substantive ground shaking associated with an earthquake on a nearby fault. These improvements at the campus site would be subject to existing regulatory requirements including the CBC, and the UC *Seismic Safety Policy*. Furthermore, as applicable, any related improvements that may be constructed outside the campus site boundary, such as the Parnassus Avenue bridge and tunnel,

would be subject to the City's building department permit review process to ensure compliance with City building code provisions.

With compliance with the regulatory requirements and the implementation of geotechnical design recommendations, impacts related to seismic shaking for these NHPH related improvements would be less than significant.

Mitigation: None required.

Impact GEO-2: Construction and operation of the NHPH would not directly or indirectly cause substantial adverse effects, including the risk of loss, injury, or death involving strong seismic related ground failure, including liquefaction. (*Less than Significant*)

New Hospital

As discussed in Section 4.6.1, *Environmental Setting*, the campus site is not located within a Seismic Hazard Zone for liquefaction susceptibility. However, based on the geotechnical data report prepared for the NHPH, given the presence of primarily Dune Sand underlying the site of the New Hospital, the New Hospital site is estimated to have a moderate to high potential for liquefaction (Rutherford and Chekene, 2021).

If present and not addressed adequately during site preparation for new construction, liquefiable subsurface materials can cause ground failures and differential settlement that can lead to substantive structural damage. As discussed above, the New Hospital would be required to adhere to seismic design criteria of the CBC. In addition, structures considered essential services buildings, such as the New Hospital, are required to be designed and constructed in accordance with the most current version of the seismic standards of SB 1953 and the HCAI requirements for new hospital facilities. Geotechnical review of the foundation design of new hospital facilities would be required to adhere to the guidelines presented in *California Geological Survey – Note 48, Checklist for the Review of Engineering Geology and Seismology Reports for California Public Schools, Hospitals, and Essential Services Buildings.*

Therefore, a geotechnical investigation will be completed to identify both site preparation measures (e.g., use of engineered fill or treatment of liquefiable soils) and foundation design measures in a final design level geotechnical report. Implementation of the recommendations within the final design level report would ensure that any potential liquefaction as well as any associated ground failure induced by seismic activity would be minimized.

As a result, the potential impacts related to ground failure, including liquefaction, for the New Hospital would be less than significant.

Mitigation: None required.

Related Improvements

Renovation of Moffitt and Long Hospitals

Moffitt and Long Hospitals are existing buildings that would undergo renovations as part of the NHPH, and experience a minor increase in overall building area. In addition, as discussed above, Moffitt Hospital would undergo a seismic retrofit and would be brought up to SPC-4D code compliance. Similar to above, these projects would be subject to existing regulatory requirements including the CBC, and as applicable, SB 1953 and HCAI seismic requirements. With compliance with the regulatory requirements, potential impacts related to ground failure, including liquefaction, would be less than significant.

Mitigation: None required.

Widening of Medical Center Way, Replacement of Diesel Fuel Tanks and Medical Gas Tanks, Vegetation Management and Slope Stabilization Improvements, and Parnassus Avenue Pedestrian Bridge and Tunnel

The NHPH related improvements would be designed and constructed in accordance with a required site-specific design level geotechnical report that would include measures to address any liquefaction hazards, if discovered on the related improvements' sites. The investigation and final recommendations for these related improvements would be consistent with regulatory requirements, including the CBC, SB 1953 and HCAI, and the UC *Seismic Safety Policy*. Furthermore, as applicable, any related improvements that may be constructed outside the campus site boundary, such as the Parnassus Avenue bridge and tunnel, would be subject to the City's building department permit review process to ensure compliance with City building code provisions.

As such, the impact due to liquefaction hazards associated with the NHPH related improvements, if present, would be less than significant.

Mitigation: None required.

Impact GEO-3: Construction and operation of the NHPH would not directly or indirectly cause substantial adverse effects, including the risk of loss, injury, or death involving landslides. (*Less than Significant with Mitigation*)

New Hospital

The site of the New Hospital is largely developed with existing buildings and paved areas, and there are no mapped locations of previous slope failures within the New Hospital site (see discussion of mapped slope failures under Related Improvements, below). However, slope stability hazards could be caused by the proposed excavation and grading activities for the New Hospital building construction. Construction of the New Hospital would require excavation of the site for the building basement level and foundation, accommodating new subsurface utilities, and regrading of ground elevations. Excavation on the New Hospital site would be between approximately 15 and 40 feet in depth, depending on location.

As described in Chapter 3, *Project Description*, UCSF is exploring options for the foundation design of the New Hospital, including a mixed foundation option consisting of deep auger pressure grouted (APG) pile foundations on the north side, and a thick concrete mat foundation on the south side; and an all deep foundations option consisting of deep APG pile foundations on the north and drilled piers or caissons on the south. The final foundation design would be dependent on additional site borings to verify the bedrock profile of the site. In addition, several different shoring systems in both temporary and permanent configurations would be implemented along the New Hospital site boundaries, including use of soldier piles with tie backs, and/or secant piles.

If not managed appropriately, excavation and slope cut excavation could exacerbate slope instability, create unstable slopes or sidewalls that could damage improvements or threaten the stability of neighboring structures. However, similar to the discussion in Impact GEO-1 above, prior to final design and commencement of excavation and grading activities, including slope cut excavation, an appropriate site specific design-level geotechnical evaluation would be prepared. While the proposed New Hospital would be constructed outside the Reserve where previous slope failures exist, for any proposed disturbances that might occur adjacent to the Reserve that coincides with areas mapped as susceptible to earthquake-induced landslides, construction would also require compliance with the Seismic Hazards Mapping Act and CGS SP 117A. The final design-level geotechnical evaluation would include any necessary recommendations for shoring and anchoring of sidewalls to ensure that the impact due to slope stability hazards is reduced to a less than significant level. In addition, if applicable, the final design-level geotechnical report would be required to adhere to CGS SP 117A. Implementation of these geotechnical requirements would ensure slope stability at the New Hospital site, and the impacts related to landslide hazards would be less than significant.

Mitigation: None required.

Related Improvements

Renovation of Moffitt and Long Hospitals

The site of the existing Moffitt and Long Hospitals is largely developed with these buildings and paved areas, and there are no mapped locations of previous slope failures within the site of these two hospitals. Moffitt and Long Hospitals would undergo renovations as part of the NHPH, and experience a minor increase in overall building area. If needed, any geotechnical recommendations for these projects would be consistent with regulatory requirements including the CBC, SB 1953 and HCAI, as applicable as it applies to slope stability. As such, the impact related to landslide hazard would be less than significant.

Mitigation: None required.

Widening of Medical Center Way, and Replacement of Diesel Fuel Tanks

The proposed widening of Medical Center Way would occur on the west side of the roadway, and would not encroach within the hillside to the east. The proposed replacement site for the diesel fuel tanks is located within a developed area. There are no mapped locations of previous slope failures within the site for these improvements. Any geotechnical recommendations for these

projects would be consistent with regulatory requirements including the CBC, as applicable, as it applies to slope stability. As such, the impact related to landslide hazard would be less than significant.

Mitigation: None required.

Replacement of Medical Gas Tanks, and Vegetation Management and Slope Stabilization Improvements

As discussed in the Environmental Setting, the campus site includes relatively steep terrain within the Reserve that has been subject to numerous slope stability studies. A 2006 slope stability risk assessment determined that there is a high probability for the occurrence of seismic-induced landslides under the rare combination of high pore pressure distribution (wet conditions) in the affected earth materials occurring at the same time as the scenario earthquake (Rutherford & Chekene, 2006). A 2019 slope stability risk assessment using newly available high resolution LiDAR data integrated with field reconnaissance concluded that the areas of concern identified in 2006 remain unchanged; there is no evidence of large-scale slope movements during the intervening 2006-2018 period; evidence of small movements are noted in some cut slopes, especially steep vegetated slopes; and water and trees are the primary agents of observed small movements where root growth tends to open and widen existing cracks in near surface bedrock materials. Rockfalls are anticipated to be a maintenance item for the main roads where chert rock is exposed in cut slopes, including Medical Center Way (see Figure 4.6-1 in the Environmental Setting). Although rocks have a potential to impact vehicles and pedestrians, they are mostly small events requiring removal of fallen debris (Rutherford & Chekene, 2019).

The site of the medical gas tank replacement, and vegetation management and slope stabilization improvements, are located within or partially within mapped locations of previous slope failure. Deep pile foundations are proposed to support the pad for the proposed medical tanks. With respect to the slope stabilization improvements on the hillside east of Medical Center Way proposed under the NHPH, the specific stabilization technique(s) that may be implemented are being determined, and could include soil nailing, surface mesh / erosion protection, catchment barrier, and/or benching.

While there continues to be no evidence of a deep-seated landslide hazard at the campus site, the presence of smaller slope stability hazards could still result in damage or injury if not addressed appropriately, and the impact would be potentially significant. The 2019 slope stability report included several recommendations to improve slope stability and safety. These recommendations are incorporated into **NHPH Mitigation Measure GEO-3**.

Similar to the discussion in Impact GEO-1 above, prior to final design and commencement of excavation and grading activities, including slope cut excavation, an appropriate site specific design-level geotechnical evaluation would be prepared for the related improvements. For any proposed disturbances that might occur within the Reserve that coincide with areas mapped as susceptible to earthquake-induced landslides, construction would also require compliance with the Seismic Hazards Mapping Act and CGS SP 117A. The final design-level geotechnical evaluation would include any necessary recommendations for shoring and anchoring of sidewalls to ensure

that the impact due to slope stability hazards is less than significant. In addition, if applicable, the final design-level geotechnical report would be required to adhere to CGS SP 117A.

With implementation of the proposed slope stabilization improvements, **NHPH Mitigation Measure GEO-3**, and geotechnical recommendations as specified in required geotechnical evaluations, the impact from the related improvements associated with landslide hazards would be reduced to a less than significant level.

> **NHPH Mitigation Measure GEO-3:** UCSF shall implement the following geotechnical recommendations as adapted from those contained within the Rutherford & Chekene March 2019 report:
>
> - Remove selected trees located on or at the crest of steep rock slopes on which tree root wedging decreases stability. Determination of specific trees to be removed shall be made in association with a certified arborist and state licensed geotechnical engineer or engineering geologist. Removal will involve cutting trees and leaving stumps such that the root system can rot in situ with minimal disturbance to the surface geology.
>
>   Conduct qualitative monitoring of identified slopes by a state licensed geotechnical engineer or engineering geologist or as directed by said professional. Monitoring shall occur, at a minimum, after each major storm or earthquake, as defined by the geotechnical professional. The geotechnical professional shall submit a report of findings to UCSF that includes recommendations for additional slope stability improvements, if deemed necessary, to maintain continued safety in accordance with geotechnical standards and building code requirements.
>
> **Significance after Mitigation:** Less than Significant.

Parnassus Avenue Pedestrian Bridge and Tunnel

Similar to the discussion in Impact GEO-1 above, prior to final design and commencement of excavation and grading activities, an appropriate site specific design-level geotechnical evaluation would be prepared for the related improvements. The final design-level geotechnical evaluation for the proposed tunnel would include any necessary recommendations for shoring and anchoring of sidewalls to ensure that the impact due to slope stability hazards is less than significant. The proposed pedestrian bridge would not be affected by potential slope stability hazards.

The Parnassus Avenue bridge and tunnel would be constructed outside the campus site boundary, would also be subject to City's building department permit review process to ensure compliance with applicable City building code provisions.

With implementation of geotechnical recommendations as specified in required geotechnical evaluations and compliance with City codes, the impact from the Parnassus Avenue tunnel on landslide hazards would be reduced to a less than significant level.

> **Significance after Mitigation:** None required.

Impact GEO-4: Construction and operation of the NHPH would not have the potential to result in substantial erosion or the loss of topsoil. (*Less than Significant*)

New Hospital

The site of the New Hospital is largely developed with the existing LPPI building, supporting structures, and paved areas. Prior to construction of the New Hospital, as a separate planned project, the LPPI, supporting structures, and paving would be removed from the site. Given that the New Hospital site was previously developed and the majority of native topsoil is no longer present, proposed excavation would not result in substantial loss or erosion of topsoil. However, as discussed in Impact GEO-3, above, the New Hospital would also involve a large volume of excavation. Erosion of exposed underlying soils can occur as a result of the forces of wind or water, and could be worsened during these ground disturbing activities.

Projects that disturb more than one acre of land during construction are required to file a Notice of Intent with the State Water Resources Control Board (SWRCB) to be covered under the National Pollution Discharge Elimination System (NPDES) Construction General Permit for discharges of stormwater associated with construction activity (also discussed further in Section 4.9, *Hydrology and Water Quality*). The Construction General Permit requires the preparation and implementation of a Stormwater Pollution Prevention Plan (SWPPP) which would include erosion control measures in the form of best management practices (BMPs) that would be effective in reducing the potential for erosion during construction. BMPs would include, but would not be limited to, installation of erosion control materials on exposed slopes, avoiding heavy grading and earthwork operations during the rainy season, and incorporating landscaping as early as possible. Once construction is completed for the New Hospital, the area of disturbance would be covered by the New Hospital building, entry roads, pedestrian walkways and other hardscaping, or landscaped such that the potential for erosion is minimized. Therefore, with adherence to existing regulatory requirements that would require implementation of erosion control BMPs during construction, the impact related to erosion or loss of surface soils would less than significant.

Mitigation: None required.

Related Improvements

Renovation of Moffitt and Long Hospitals, Widening of Medical Center Way, Replacement of Diesel Fuel Tanks, and Parnassus Avenue Bridge and Tunnel

The sites of the renovation of Moffitt and Long Hospitals, widening of Medical Center Way, replacement of diesel fuel tanks, and the Parnassus Avenue tunnel are largely developed with existing buildings and paved areas. Given that these sites were previously developed and the majority of native topsoil is no longer present, any proposed clearing or excavation at these sites would not result in substantial loss or erosion of topsoil. Nevertheless, erosion of exposed underlying soils can occur as a result of the forces of wind or water, and could be worsened during these ground disturbing activities. As applicable, these improvements, would be subject to the requirements of the NPDES Construction General Permit. Construction work that involves ground disturbing activities would be required to prepare and implement a SWPPP with erosion control BMPs. Furthermore, as applicable, any improvements that would be constructed outside

the campus site boundary, including the Parnassus Avenue tunnel, would be subject to construction site runoff requirements and post-construction stormwater controls in accordance with the City Public Works Code and in compliance with the City's Stormwater Management Ordinance. As such, the impact related to erosion and loss to topsoil would be less than significant.

Mitigation: None required.

Replacement of Medical Gas Tanks, Vegetation Management and Slope Stabilization Improvements

The sites of the replacement medical gas tanks and slope stabilization improvements would occur within the Reserve, and could result in removal of topsoil, and/or erosion of exposed soils at these locations could occur as a result of the forces of wind or water, during ground disturbing activities. Once implemented, however, the proposed slope stabilization improvements would serve the purpose of reducing potential erosion associated with unstable slopes. Proposed vegetation management activities would not be expected to require removal of substantial topsoil. As applicable, these related improvements would be subject to the requirements of the NPDES Construction General Permit. Construction work that involves ground disturbing activities would be required to prepare and implement a SWPPP with erosion control BMPs. As such, the impact related to erosion and loss to topsoil would be less than significant.

Mitigation: None required.

Impact GEO-5: The NHPH would not be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse. (*Less than Significant*)

New Hospital

As discussed above, the New Hospital would be developed primarily within an already developed area of the campus site. Existing structures on the New Hospital site, including the LPPI and supporting structures, range in age and were constructed under different stages of building code requirements and undocumented site preparation measures. Underlying subsurface materials include artificial fills, compressible soils, or conditions that are otherwise unsuitable for the proposed New Hospital without adequate site preparations. While, as discussed above, there would be substantive amounts of excavation for the New Hospital that could remove any existing near surface fills or other unsuitable soils, there could be areas with soils that are considered incapable of adequately supporting the new loadings (weight of new structures, foundations and/or engineered fill).

As discussed in Impact GEO-3, unstable slopes could also be created by excavations for new development proposed under the New Hospital that could result in on- or off-site landslides. However, as noted above, all construction activities would be required to adhere to CBC requirements which include measures to ensure that excavations are adequately protected from

instability, largely through shoring requirements, that would be effective in minimizing the potential for on-or off-site landslides. Therefore, with conformance to the CBC and a required design-level geotechnical report that includes recommendations for excavation stability, the potential impact related to landslides and sidewall stability would be less than significant.

Lateral spreading, a phenomenon related to liquefaction where liquefiable materials can be displaced on exposed slopes, and liquefaction are addressed in Impact GEO-2, above. Adherence to CBC requirements and implementation of the design-level geotechnical report to address lateral spreading and liquefaction hazards, if present, would ensure that the impact would be less than significant.

Subsidence and collapse are additional geotechnical hazards that would be evaluated as part of preliminary geotechnical investigations as required by the CBC. Each project specific final design-level geotechnical report would then use collected subsurface data to determine site preparation measures, such as the re-compaction of existing soils or placement of engineered fill, and foundation design measures in accordance with CBC, for the new loadings (weight of new structures) proposed. Implementation of these design-level criteria to geotechnical site preparation and foundation design would ensure that the impact from subsidence or collapse would be less than significant.

Therefore, as required by the CBC, the preparation of site specific design-level geotechnical reports would include recommendations for site preparation and foundation design that would ensure that any unstable soils would be minimized and the potential impacts would be less than significant.

Mitigation: None required.

Related Improvements

Renovation of Moffitt and Long Hospitals, Widening of Medical Center Way, Replacement of Diesel Fuel Tanks and Medical Gas Tanks, Vegetation Management and Slope Stabilization Improvements, and Parnassus Avenue Pedestrian Bridge and Tunnel

As applicable, the related improvements at the campus site would be designed and constructed in accordance with the requirements of the CBC which would include site specific geotechnical evaluations and design-level reports that contain recommendations for site preparation and foundations. Furthermore, as applicable, related improvements that would be constructed outside the campus site boundary would be subject to City's building department permit review process to ensure compliance with applicable City building code provisions. As such, any impacts associated with unstable soils would be less than significant.

Mitigation: None required.

Cumulative Impacts

Impact C-GEO-1: Implementation of the NHPH, in combination with past, present and reasonably foreseeable future projects, would not result in significant cumulative impacts related to geology and soils. (*Less than Significant*)

The geographic scope considered for the cumulative analysis is the greater Bay Area which is considered at high risk of experiencing a seismic event. As noted above, the Bay Area is considered to have a high probability of a substantive earthquake occurring over the next 30 years (USGS, 2015). Development of the NHPH along with the other past, present, and reasonably foreseeable cumulative projects would not directly or indirectly exacerbate those seismic risks. However, current and future project development at the campus site and elsewhere in the entire Bay Area region could expose additional people and structures to potentially adverse effects associated with earthquakes, including seismic ground shaking, seismic related ground failure, and seismically-induced landslides. However, site-specific geotechnical studies required by the local agencies which typically adopt CBC seismic requirements would determine how future development projects could be designed to minimize exposure of people to these impacts. Therefore, the proposed project, other current projects, and future development would be constructed to more updated standards which could potentially provide greater protection than the older structures throughout the region. Other current and future projects within the Bay Area region would also be required to adhere to current building standards with seismic design criteria that incorporates the most current science and understanding of geotechnical and seismic hazards such that damage or injury would be minimized.

Ground disturbing activities could expose soils in a manner that lead to increased erosion if not managed properly. Such erosion could cause unstable ground surfaces and result in eventual damage to roads, foundations and other improvements. Cumulative effects of increased erosion on receiving water quality are addressed in Section 4.9, *Hydrology and Water Quality*, Impact 4.9-7.

Construction activities at the campus site, as well as other current and future cumulative projects greater than 1 acre in size, which would apply to the vast majority of the cumulative projects, would be required to comply with the NPDES Construction General Permit, which contains erosion control requirements that would minimize the potential for soil erosion. The NPDES program requires the preparation and implementation of Stormwater Pollution Prevention Programs (SWPPPs) for construction activities that include BMPs that ensure erosion control measures are included during construction. All cumulative projects, including the NHPH, would be required to comply with these regulations, as would other nearby reasonably foreseeable development and other construction projects. In addition, once construction is completed, the cumulative projects generally include the cover of site soils with either landscaping or impervious surfaces, which limits the potential for erosion.

Significance after Mitigation: None required.

4.6.4 References

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4.7 Greenhouse Gas Emissions

This section describes and evaluates potential for the construction and operation of the NHPH to result in significant impacts on greenhouse gas (GHG) emissions and global climate change. The section includes a description of the existing regional and local conditions, and an existing regulatory framework governing GHG emissions; presents the significance criteria used to evaluate the impacts of the project's GHG emissions, and the results of the impact assessment, including any significant impacts and associated feasible mitigation measures. The proposed NHPH is also evaluated for consistency with plans and policies of the State of California, the University of California, and *Plan Bay Area 2040* related to GHG emissions and climate change.

For purposes of providing distinction between the various components of this project, references made in this EIR to "New Hospital" relate only to the New Hospital portion of the overall project, whereas references made to "NHPH" relate to the overall project, including the New Hospital and its related improvements.

4.7.1 Environmental Setting

Gases that trap heat in the atmosphere are referred to as greenhouse gases (GHGs) because they capture heat radiated from the sun as it is reflected back into the atmosphere, much like a greenhouse does. The accumulation of GHGs in the atmosphere contributes to global climate change. Climate change, which is discussed in more detail below, refers to any significant changes in measures of climate (such as temperature, precipitation, or wind) lasting for an extended period (decades or longer). Climate change may result from:

- Natural factors, such as changes in the sun's intensity or slow changes in the Earth's orbit around the sun;
- Natural processes within the climate system (e.g., changes in ocean circulation, reduction in sunlight from the addition of GHG and other gases to the atmosphere from volcanic eruptions); and
- Human activities that change the atmosphere's composition (e.g., through burning fossil fuels) and the land surface (e.g., deforestation, reforestation, urbanization, desertification).

The primary effect of human activities has been a rise in the average global tropospheric temperature of 0.2 degree Celsius (°C) per decade, determined from meteorological measurements worldwide between 1990 and 2005. Climate change modeling using 2000 emission rates shows that further warming is likely to occur, which would induce further changes in the global climate system during the current century (IPCC, 2007).

Greenhouse Gases

The primary GHGs, or climate pollutants, are carbon dioxide (CO_2), black carbon, methane (CH_4), nitrous oxide (N_2O), ozone, and water vapor.

While the primary GHGs are naturally occurring, CO_2, CH_4, and N_2O are also emitted from human activities, accelerating the rate at which these compounds occur within the earth's atmosphere. Emissions of CO_2 are largely by-products of fossil fuel combustion, whereas CH_4 results from off-gassing associated with agricultural practices and landfills. N_2O is a byproduct of various industrial processes. Black carbon (fine particulate matter from incomplete combustion) has emerged as a major contributor to global climate change, possibly second only to CO_2. Black carbon is produced naturally and by human activities as a result of the incomplete combustion of fossil fuels, biofuels, and biomass (Center for Climate and Energy Solutions, 2010). Other GHGs include hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride, and are generated in certain industrial processes. GHGs are typically reported in "carbon dioxide-equivalent" measures (CO_2e).[1]

Effects of Climate Change

The scientific community's understanding of the fundamental processes responsible for global climate change has improved over the past decade, and its predictive capabilities are advancing. However, there remain significant scientific uncertainties in, for example, predictions of local effects of climate change, occurrence, frequency, and magnitude of extreme weather events, effects of aerosols, changes in clouds, shifts in the intensity and distribution of precipitation, and changes in oceanic circulation. Due to the complexity of the Earth's climate system and inability to accurately model it, the uncertainty surrounding climate change may never be completely eliminated. Nonetheless, the *Fifth Assessment Report, Summary for Policy Makers*[2] of the Intergovernmental Panel on Climate Change (IPCC) states that, "it is *extremely likely* that more than half of the observed increase in global average surface temperature from 1951 to 2010 was caused by the anthropogenic increase in GHG concentrations and other anthropogenic forc[es [*sic*] together" (IPCC, 2014). A report from the National Academy of Sciences concluded that 97 to 98 percent of the climate researchers most actively publishing in the field support the tenets of the IPCC in that climate change is very likely caused by human (i.e., anthropogenic) activity (Anderegg *et al*, 2010).

The Fourth California Climate Change Assessment (Fourth Assessment), published in 2018, finds that the potential impacts in California due to global climate change include: loss in snowpack; sea level rise; more extreme heat days per year; more high ozone days; more extreme forest fires; more severe droughts punctuated by extreme precipitation events; increased erosion of California's coastlines and sea water intrusion into the Sacramento and San Joaquin Deltas and associated levee systems; and increased pest infestation (OPR, 2018a).

The Fourth Assessment's findings are consistent with climate change studies published by the California Natural Resources Agency (CNRA) since 2009, starting with the *California Climate Adaptation Strategy* as a response to the Governor's Executive Order (EO) S-13-2008 (CNRA, 2009). In 2014, the CNRA rebranded the first update of the 2009 adaptation strategy as the *Safeguarding California Plan* (CNRA, 2014). The 2018 update to *Safeguarding California*

1 Because of the differential heat absorption potential of various GHGs, GHG emissions are frequently measured in "carbon dioxide-equivalents," which present a weighted average based on each gas's heat absorption (or "global warming") potential.

2 IPCC is currently in the process of preparing the Sixth Assessment Report which has yet to be published at the time of this Draft EIR.

identifies hundreds of ongoing actions and next steps State agencies are taking to safeguard Californians from climate impacts within a framework of 81 policy principles and recommendations (CNRA, 2018a). In 2016, the CNRA released *Safeguarding California: Implementation Action Plans* in accordance with EO B-30-15, identifying a lead agency to lead adaptation efforts in each sector. In accordance with the 2009 *California Climate Adaptation Strategy*, the CEC was directed to develop a website on climate change scenarios and impacts that would be beneficial for local decision makers. The website, known as Cal-Adapt, became operational in 2011.[3] The information provided on the Cal-Adapt website represents a projection of potential future climate scenarios comprised of local average values for temperature, sea level rise, snowpack, and other data representative of a variety of models and scenarios, including potential social and economic factors.

Below is a summary of some of the potential effects that could be experienced in California as a result of global warming and climate change.

Temperature Increase

As noted above, the primary effect of adding GHGs to the atmosphere has been a rise in the average global temperature. The impact of human activities on global temperature is readily apparent in the observational record. Since 1895, the contiguous U.S. has observed an average temperature increase of 1.5°F per century. The last five-year period (2014–2018) is the warmest on record for the contiguous U.S. (NOAA, 2019), while the 20 warmest years have occurred over the past 22-year period (Climate Central, 2019).

The Fourth Assessment indicates that average temperatures in California could rise by 5.6°F to 8.8°F by the end of the century, depending on the global trajectory of GHG emissions (OPR, 2018a). With climate change, extreme heat conditions and heat waves are predicted to impact larger areas, last longer, and have higher temperatures. Heat waves, defined as three or more days with temperatures above 90°F, are projected to occur more frequently by the end of the century. Extreme heat days and heat waves can negatively impact human health. Heat-related illness includes a spectrum of illnesses ranging from heat cramps to severe heat exhaustion and life-threatening heat stroke (CalEPA, 2013).

Wildfires

The expected hotter and drier conditions expected with climate change will make forests more susceptible to extreme wildfires. A recent study found that if GHG emissions continue to rise, the frequency of extreme wildfires burning over approximately 25,000 acres in California would increase by nearly 50 percent, and the average area burned statewide each year would increase by 77 percent, by the year 2100. In the areas that have the highest fire risk, wildfire insurance is estimated to see costs rise by 18 percent by 2055 and the fraction of property insured would decrease (Westerling, 2018).

[3] The Cal-Adapt website address is: http://cal-adapt.org.

Air Quality

Higher temperatures, conducive to air pollution formation, could worsen air quality in California and make it more difficult for the State to achieve air quality standards. Climate change may increase the concentration of ground-level ozone in particular, which can cause breathing problems, aggravate lung diseases such as asthma, emphysema, and chronic bronchitis, and cause chronic obstructive pulmonary disease. Emissions from wildfires can lead to excessive levels of particulate matter, ozone, and volatile organic compounds (Kenward *et al*, 2013). Additionally, severe heat accompanied by drier conditions and poor air quality could increase the number of heat-related deaths, illnesses, and asthma attacks throughout the State (CalEPA, 2013).

Water Supply and Water Quality

There is a high degree of uncertainty with respect to the overall impact of global climate change on future water supplies in California. Studies indicate considerable variability in predicting precise impacts of climate change on California hydrology and water resources. Increasing uncertainty in the timing and intensity of precipitation will challenge the operational flexibility of California's water management systems. Warmer, wetter winters would increase the amount of runoff available for groundwater recharge; however, this additional runoff would occur at a time when some basins are either being recharged at their maximum capacity or are already full. Conversely, reductions in spring runoff and higher evapotranspiration because of higher temperatures could reduce the amount of water available for recharge (CNRA, 2014).

Climate change could alter water quality in a variety of ways, including through higher winter flows that reduce pollutant concentrations (through dilution) or increase erosion of land surfaces and stream channels, leading to higher sediment, chemical, and nutrient loads in rivers. Water temperature increases and decreased water flows can result in increasing concentrations of pollutants and salinity. Increases in water temperature alone can lead to adverse changes in water quality, even in the absence of changes in precipitation.

Sea Level Rise

Climate change could potentially affect: the amount of snowfall, rainfall and snowpack; the intensity and frequency of storms; flood hydrographs (flash floods, rain or snow events, coincidental high tide and high runoff events); sea level rise and coastal flooding; coastal erosion; and the potential for salt water intrusion (CNRA, 2014).

Agriculture

California has a massive agricultural industry that represents 11.3 percent of total U.S. agricultural revenue. Higher CO_2 levels can stimulate plant production and increase plant water-use efficiency. However, a changing climate presents significant risks to agriculture due to "potential changes to water quality and availability; changing precipitations patterns; extreme weather events including drought, severe storms, and floods; heat stress; decreased chill hours; shifts in pollinator lifecycles; increased risks from weeds, pest and disease; and disruptions to the transportation and energy infrastructure supporting agricultural production" (CNRA, 2014).

Ecosystems and Wildlife

Increases in global temperatures and the potential resulting changes in weather patterns could have ecological effects on a global and local scale. With climate change, ecosystems and wildlife will be challenged by the spread of invasive species, barriers to species migration or movement in response to changing climatic conditions, direct impacts to species health, and mismatches in timing between seasonal life-cycle events such as species migration and food availability (CNRA, 2014).

Public Health[4]

Global climate change is also anticipated to result in more extreme heat events (OPR et al, 2018a). These extreme heat events increase the risk of death from dehydration, heart attack, stroke, and respiratory distress, especially with people who are ill, children, the elderly, and the poor, who may lack access to air conditioning and medical assistance. A warming planet is expected to bring more severe weather events, worsening wildfires and droughts, cause a decline in air quality, and result in rising sea levels, and increases in allergens and in vector-borne diseases, all of which present significant health and wellbeing risks for California populations (CNRA, 2018a).

Emissions Inventories

An emissions inventory that identifies and quantifies the primary human-generated sources and sinks of GHGs is a well-recognized and useful tool for addressing human society's contributions to climate change. This section summarizes the latest information on global, United States, California, and local GHG emission inventories.

Global Emissions

Global estimates are based on country inventories developed as part of programs of the United Nations Framework Convention on Climate Change. Worldwide man-made emissions of GHGs were approximately 49 billion metric tons (MT) CO_2e in 2010, including ongoing emissions from industrial and agricultural sources and emissions from land use changes (e.g., deforestation). Emissions of CO_2 from fossil fuel use and industrial processes account for 65 percent of this total CO_2e, while CO_2 emissions from all sources account for 76 percent of the total CO_2e. Methane emissions account for 16 percent and N_2O emissions for 6.2 percent. Worldwide emissions of GHGs in 1970 were 27 billion MT of CO_2e per year (IPCC, 2014), indicating that emissions have almost doubled in a span of 40 years. The IPCC is currently working on its *Sixth Assessment Report* with an updated inventory which is yet to be published.

U.S. Emissions

In 2019, the United States emitted about 6,558 million metric tons (MMT) of CO_2e, with 92 percent of those emissions coming from fossil fuel combustion. Of the major sectors nationwide, transportation accounts for the highest amount of GHG emissions (approximately 29 percent), followed by electricity (25 percent), industry (23 percent), agriculture (10 percent), commercial

[4] As discussed in Chapter 2.0 *Project Description*, one of the primary objectives of implementation of the proposed NHPH is to expand access to public health care.

buildings (7 percent), and residential buildings (6 percent). Between 1990 and 2019, total U.S. GHG emissions rose by 1.8 percent, but emissions have generally decreased since peaking in 2005. Since 1990, U.S. emissions have increased at an average annual rate of 0.1 percent (USEPA, 2021).

State of California Emissions

The California Air Resources Board (CARB) compiles GHG inventories for the State of California. Based on the 2019 GHG inventory data (i.e., the latest year for which data are available from CARB) published by CARB in 2021, California emitted 418.2 MMT CO_2e including emissions resulting from imported electrical power (CARB, 2021). Between 2000 and 2019, the gross domestic product of California grew by approximately 63 percent. Despite the economic growth, CARB's 2019 statewide inventory indicated that California's net GHG emissions in 2019 were just 13 MMT CO2e below 1990 levels, which is the 2020 GHG reduction target codified in California Health and Safety Code (HSC), Division 25.5, also known as The Global Warming Solutions Act of 2006 (AB 32). **Table 4.7-1** identifies and quantifies statewide anthropogenic GHG emissions and sinks (e.g., carbon sequestration due to forest growth) in 1990 and 2019. As shown in the table, the transportation sector is the largest contributor to statewide GHG emissions at approximately 40 percent in 2019. Data in this table reflect CARB adjusting statewide emissions to account for updates to global warming potential of GHGs other than CO2 as determined by IPCC.

TABLE 4.7-1
STATE OF CALIFORNIA GREENHOUSE GAS EMISSIONS

Category	Total 1990 Emissions using IPCC SAR (MMT CO_2e)	Percent of Total 1990 Emissions SAR/AR4	Total 2019 Emissions using IPCC AR4 (MMT CO_2e)	Percent of Total 2019 Emissions
Transportation	150.7	35%/35%	166	40%
Electric Power	110.6	26%/26%	59	14%
Commercial Fuel Use	14.4	3%/3%	16	4%
Residential	29.7	7%/7%	27	6%
Industrial	103.0	24%/24%	97	23%
Recycling and Waste[a]	–	–	8.5	2%
High GWP/Non-Specified[b]	1.3	<1%/<1%	33	5%
Agriculture/Forestry	23.6	6%/5%	33	8%
Forestry Sinks	-6.7		-- [c]	--
Net Total (IPCC SAR)	**426.6**	**100%[e]**	--	--
Net Total (IPCC AR4)[d]	**431**	**100%**	**418.2**	**100%**

NOTES:
IPCC = Intergovernmental Panel on Climate Change; SAR = Second Assessment Report; AR4 = Fourth Assessment Report.

[a] Included in other categories for the 1990 emissions inventory.
[b] High global warming potential (GWP) gases are not specifically called out in the 1990 emissions inventory.
[c] Revised methodology under development (not reported for 2019).
[d] CARB revised the State's 1990 level GHG emissions using GWPs from the IPCC AR4.
[e] Values may not total to 100 % due to rounding

SOURCES: California Air Resources Board, Staff Report – California 1990 Greenhouse Gas Emissions Level and 2020 Emissions Limit, (2007); California Air Resources Board, "California Greenhouse Gas 2000-2019 Inventory by Scoping Plan Category – Trends of Emissions and Other Indicators https://ww3.arb.ca.gov/cc/inventory/pubs/reports/2000_2019/ghg_inventory_trends_00-19.pdf. Accessed August 2021.

Bay Area Emissions Inventory

Based on 2015 data, in the nine county San Francisco Bay Area, GHG emissions from the transportation sector represent the largest source of the Bay Area's GHG emissions at 41 percent, followed by the stationary industrial sources at 26 percent, electricity generation and co-generation at 14 percent, and fuel use (primarily natural gas) in buildings at 10 percent. The remaining 8 percent of emissions is composed of fluorinated gas emissions and emissions from solid waste and agriculture. Of the total transportation emissions in 2015, on-road sources accounted for approximately 87 percent, while off-road sources accounted for the remainder (BAAQMD, 2017a).

UCSF Emissions Inventory

To achieve consistency in reporting across different geographies, the GHG Protocol established by the World Research Institute, developed a GHG emissions classification system that classifies GHG emissions into three categories based on the nature and source of the emissions and the level of operational control exercised by the organization over the emission source. This classification system is listed in the University of California *Sustainable Practices Policy* and is used by the University, including UCSF, to gather data on its annual GHG emissions for reporting to the California Climate Action Registry (CCAR) and The Climate Registry (TCR).

Scope 1 Emissions are emitted on the project site/facility and are associated with on-site combustion of natural gas, fuel use in vehicle fleets, and fugitive emissions of gases used for refrigeration, medical use, and scientific research. Fugitive gases include hydrofluorocarbon gases, perfluorocarbon gases, and sulfur hexafluoride (SF6).

Scope 2 Emissions are those associated with the consumption of purchased energy from off-site sources. Scope 2 electricity emissions reflect emissions from all energy used at the electricity-generating power plant, but exclude transmission and distribution losses, which are reported under Scope 3.

Scope 3 Emissions are indirect emissions not covered in Scope 2, including sources such as GHG emissions from employee and student commuting, business air and ground travel, electricity transmission and distribution losses, off-site wastewater treatment, and off-site municipal solid waste disposal.

The UC *Sustainability Practices Policy* requires each campus to report a GHG emissions inventory to an independent reporting organization. UCSF reported calendar year 2008 Scope 1 and Scope 2 emissions to the CCAR. UCSF currently reports its annual Scope 1 and Scope 2 GHG emissions inventory to TCR. TCR is a nonprofit collaboration among North American states, provinces, territories and Native Sovereign Nations that sets consistent and transparent standards to calculate, verify and publicly report GHG emissions into a single registry. The most recent inventory reported to TCR was for calendar year 2017. UCSF emissions inventories reported to outside agencies are verified by accredited independent auditors.

Since 2008, UCSF has also been required to report its Scope 1 emissions from its Central Utility Plant (CUP) at the Parnassus Heights campus site to CARB annually under the AB 32 Reporting Rule. UCSF tracks and reports its progress towards meeting its GHG emissions goals in its

Annual Sustainability Report. The most recent inventory reported to CARB was for fiscal year 2017/2018. UCSF also reports to the UC Regents annually on its progress in meeting the goals in the UC *Sustainable Practices Policy*.[5] The most recent Annual Report on Sustainable Practices is for 2018/2019. **Table 4.7-2** below presents the UCSF GHG verified emissions inventory through 2019 as reported in its latest Annual Sustainability Report. While emissions for year 2020 have been compiled, they have yet to be third-party verified, and are not reported in this Draft EIR. The 2020 emissions demonstrate that UCSF has achieved the required 20 percent reduction compared to baseline year 1990 emissions.

TABLE 4.7-2
UCSF GREENHOUSE GAS EMISSIONS INVENTORY (MT CO2E/YEAR)

Scope	Emission Category	1990	1990%	2008	2008%	2019	2019%
1	Buildings and Facilities – Natural Gas	44,923	40.9%	90,026	57.6%	79,508	62.6%
1	Buildings and Facilities – Other Fuels	114	0.1%	NA	NA	220	0.2%
1	UCSF Fleet	1,944	1.8%	3,200	2.0%	2,123	1.7%
1	Refrigerants and Medical Gases	3,500	3.2%	3,500	2.2%	2,591	2.0%
1	CCAR Acquisition Adjustment	10,178	9.3%	NA	NA	NA	NA
2	Buildings and Facilities - Electricity	24,529	22.3%	24,962	16.0%	8,978	7.1%
	Scope 1 and 2 Subtotal	*85,188*	*77.6%*	*121,688*	*77.8%*	*89,059*	*70.1%*
3	Business Air Travel	7,549	6.9%	12,582	8.0%	19,931	15.7%
3	Commute	17,080	15.6%	22,069	14.1%	18,093	14.2%
	Scope 1, 2, and 3 Total	**109,817**	**100.0%**	**156,339**	**100.0%**	**127,083**	**100.0%**

NOTE: Note that emissions reported in the Annual Sustainability Report only include Scope 3 mobile emissions under UCSF's control from employee air travel and employee, student, and faculty commute. Emissions from travel by patients and visitors are not included herein but are considered in the impact analysis in Section 4.7.3 *Impacts and Mitigation Measures*.

SOURCE: University of California, San Francisco (UCSF), *UCSF Climate Action Plan –Greenhouse Gas Reduction Strategy*, April 2017 and TCR 2019 Summary, 2020.

Greenhouse Gas Emission Estimates and Energy Providers in San Francisco

Electricity in San Francisco is primarily provided by the Pacific Gas and Electricity Company (PG&E) and the San Francisco Public Utilities Commission (SFPUC). In 2019, electricity consumption in San Francisco totaled approximately 5.6 million megawatt-hours (CEC, 2019). The City produces approximately 80 percent of this power through Hetch Hetchy Power and CleanPowerSF, with the remaining energy coming from Pacific Gas & Electric. CleanPowerSF was launched by the SFPUC in 2016 to provide renewable energy to residents and businesses. The organization was formed to achieve the city's targets regarding the delivery of completely emissions-free electricity by 2030 (Stark, 2019).

[5] The University of California system-wide Annual Sustainability Reports are available at: http://sustainability.universityofcalifornia.edu/reports.html

Muni, City buildings, and a limited number of other commercial accounts in San Francisco are provided energy by the SFPUC, which operates three hydroelectric power plants that are part of San Francisco's Hetch Hetchy water supply and distribution system. This system has the lowest GHG emissions of any large electric utility in California.

The UC Regents is a Registered Electricity Service Provider with the CPUC, and UCSF purchases electricity from the UC Regents through the Direct Access Program. This program is referred to as the UC Clean Power Program and contributes to achieving carbon neutrality in Scope 2 (indirect) emissions through the purchase of carbon-free electricity. As of 2019, the UC Clean Power Program became 100 percent carbon neutral. UCSF has committed that by 2025, all of its purchased electricity will be carbon-free.

City of San Francisco Greenhouse Gas Footprint

The majority of San Francisco's GHG emissions are from electricity and natural gas used in buildings (47 percent), and fuel used in cars and trucks (41 percent). The remaining emissions are from the landfilling of organic waste (7 percent), municipal operations (3 percent), agriculture/urban soils (2 percent), and wastewater treatment (< 1 percent). GHG emissions for calendar year 2019 totaled 4.6 million MT CO_2e which represents a reduction of 41 percent from baseline 1990 levels (SF Environment, 2021).

4.7.2 Regulatory Framework

Federal

U.S. Environmental Protection Agency "Endangerment" and "Cause or Contribute" Findings

The U.S. Supreme Court held that the United States Environmental Protection Agency (USEPA) must consider regulation of motor vehicle GHG emissions. In *Massachusetts v. Environmental Protection Agency* et al., twelve states and cities, including California, together with several environmental organizations sued to require the USEPA to regulate GHGs as pollutants under the CAA (127 S. Ct. 1438 (2007)). The Supreme Court ruled that GHGs fit within the CAA's definition of a pollutant and the USEPA had the authority to regulate GHGs.

On December 7, 2009, the USEPA Administrator signed two distinct findings regarding GHGs under Section 202(a) of the CAA:

- ***Endangerment Finding*:** The current and projected concentrations of the six key GHGs—CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6—in the atmosphere threaten the public health and welfare of current and future generations.
- ***Cause or Contribute Finding*:** The combined emissions of these GHGs from new motor vehicles and new motor vehicle engines contribute to the GHG pollution that threatens public health and welfare.

These findings did not, by themselves, impose any requirements on industry or other entities. However, these actions were a prerequisite for implementing GHG emissions standards for vehicles.

Vehicle Emissions Standards

In 1975, Congress enacted the Energy Policy and Conservation Act, which established the first fuel economy standards for on-road motor vehicles in the United States. Pursuant to the act, the USEPA and National Highway Traffic Safety Administration (NHTSA) are responsible for establishing additional vehicle standards. In August 2012, standards were adopted for model year 2017 through 2025 for passenger cars and light-duty trucks. By 2025, vehicles are required to achieve both 54.5 mpg (if GHG reductions are achieved exclusively through fuel economy improvements) and 163 grams of CO_2 per mile. According to the USEPA, a model year 2025 vehicle would emit one-half of the GHG emissions from a model year 2010 vehicle (USEPA, 2012). Notably, the State of California harmonized its vehicle efficiency standards through 2025 with the federal standards (see Advanced Clean Car program below).

In January 2017, USEPA issued its Mid-Term Evaluation of the GHG emissions standards, finding that it would be practical and feasible for automakers to meet the model year 2022-2025 standards through a number of existing technologies.

In August 2018, the USEPA revised its 2017 determination, and issued a proposed rule that maintains the 2020 Corporate Average Fuel Economy (CAFE) and CO_2 standards for model years 2021 through 2026.[6] The estimated CAFE and CO_2 standards for model year 2020 are 43.7 mpg and 204 grams of CO_2 per mile for passenger cars and 31.3 mpg and 284 grams of CO_2 per mile for light trucks, projecting an overall industry average of 37 mpg, as compared to 46.7 mpg under the standards issued in 2012. On February 7, 2019, the State of California, joined by 16 other states and the District of Columbia, filed a petition challenging the USEPA's proposed rule to revise the vehicle emissions standards, arguing that the USEPA had reached erroneous conclusions about the feasibility of meeting the existing standards.[7] In August of 2020 a decision was made by the Second Circuit Court of Appeals to vacate the rule and the USEPA's existing CAFE standards will remain unchanged.

State

California has promulgated a series of executive orders, laws, and regulations aimed at reducing both the level of GHGs in the atmosphere and emissions of GHGs from commercial and private activities within the State. The major components of California's climate protection initiative are summarized below.

6 Federal Register. Vol. 83, No. 165. August 24, 2018. Proposed Rules.

7 Amicus brief, 2019. USCA Case #18-1114, Doc#1772455_filed February 14, 2019. Available: http://climatecasechart.com/case/california-v-epa-4/. Accessed April 17, 2019.

California Environmental Quality Act and Senate Bill 97

Under CEQA lead agencies are required to disclose the reasonably foreseeable adverse environmental effects of projects they are considering for approval. GHG emissions have the potential to adversely affect the environment because they contribute to global climate change. In turn, global climate change has the potential to raise sea levels, alter rainfall and snowfall, and affect habitat, among other effects.

Senate Bill (SB) 97, signed in August 2007, acknowledges that climate change is a prominent environmental issue requiring analysis under CEQA. This bill directed the Governor's Office of Planning and Research (OPR) to prepare, develop, and transmit to the CNRA guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions, as required by CEQA, no later than July 1, 2009. The CNRA was required to certify or adopt those guidelines by January 1, 2010. On December 30, 2009, the CNRA adopted amendments to the State CEQA Guidelines, as required by SB 97. The State CEQA Guidelines amendments provide guidance to public agencies regarding the analysis and mitigation of the effects of GHG emissions in CEQA documents. The amendments became effective March 18, 2010.

State CEQA Guidelines

The State CEQA Guidelines are embodied in the California Code of Regulations (CCR), Public Resources Code, Division 13, starting with Section 15000. The current State CEQA Guidelines Section 15064.4 specifically addresses the significance of GHG emissions, requiring a lead agency to make a "good-faith effort" to "describe, calculate or estimate" GHG emissions in CEQA environmental documents (CNRA, 2018b). Section 15064.4 further states that the analysis of GHG impacts should include consideration of (1) the extent to which the project may increase or reduce GHG emissions, (2) whether the project GHG emissions would exceed a threshold of significance that the lead agency determines applies to the project, and (3) the extent to which the project would comply with "regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions (see, e.g., Section 15183.5(b))."

The CEQA Guidelines also state that a project's incremental contribution to a cumulative effect is not cumulatively considerable if the project will comply with the requirements in a previously approved plan or mitigation program (including plans or regulations for the reduction of GHG emissions) that provides specific requirements that will avoid or substantially lessen the cumulative problem within the geographic area in which the project is located (State CEQA Guidelines Section 15064(h)(3)).

The CEQA Guidelines do not require or recommend a specific analytical methodology or provide quantitative criteria for determining the significance of GHG emissions, nor do they set a numerical threshold of significance for GHG emissions. Section 15064.7(c) clarifies that "when adopting or using thresholds of significance, a lead agency may consider thresholds of significance previously adopted or recommended by other public agencies or recommended by experts, provided the decision of the lead agency to adopt such thresholds is supported by substantial evidence."

When GHG emissions are found to be significant, CEQA Guidelines Section 15126.4(c) includes the following direction on measures to mitigate GHG emissions:

"Consistent with Section 15126.4(a), lead agencies shall consider feasible means, supported by substantial evidence and subject to monitoring or reporting, of mitigating the significant effects of greenhouse gas emissions. Measures to mitigate the significant effects of greenhouse gas emissions may include, among others:

(1) Measures in an existing plan or mitigation program for the reduction of emissions that are required as part of the lead agency's decision;

(2) Reductions in emissions resulting from a project through implementation of project features, project design, or other measures;

(3) Off-site measures, including offsets that are not otherwise required, to mitigate a project's emissions;

(4) Measures that sequester greenhouse gases; and

(5) In the case of the adoption of a plan, such as a general plan, long range development plan, or plans for the reduction of greenhouse gas emissions, mitigation may include the identification of specific measures that may be implemented on a project-by project basis. Mitigation may also include the incorporation of specific measures or policies found in an adopted ordinance or regulation that reduces the cumulative effect of emissions."

State of California Executive Orders

Executive Order S-3-05. In 2005, in recognition of California's vulnerability to the effects of climate change, then-Governor Arnold Schwarzenegger issued EO S-3-05, which set forth a series of target dates by which statewide emissions of GHGs would be progressively reduced, as follows:

- By 2010, reduce GHG emissions to 2000 levels;
- By 2020, reduce GHG emissions to 1990 levels; and
- By 2050, reduce GHG emissions to 80 percent below 1990 levels.

Executive Order S-1-07. EO S-1-07, which was signed by then-Governor Schwarzenegger in 2007, proclaims that the transportation sector is the main source of GHG emissions in California, generating more than 40 percent of statewide emissions. It established a low carbon fuel standard (LCFS) with a goal to reduce the carbon intensity of transportation fuels sold in California by at least 10 percent by 2020.

In September 2018, CARB extended the LCFS program to 2030, making significant changes to the design and implementation of the program, including a doubling of the carbon intensity reduction to 20 percent by 2030.

Executive Orders S-14-08 and S-21-09. In November 2008, then-Governor Schwarzenegger signed EO S-14-08, which expands the State's Renewable Portfolio Standard (RPS) to 33 percent renewable power by 2020. In September 2009, then-Governor Schwarzenegger continued California's commitment to the RPS by signing EO S-21-09, which directs CARB under its AB 32 authority to enact regulations to help the State meet its RPS goal of 33 percent renewable energy by 2020.

Executive Order S-13-08. Governor Schwarzenegger signed EO S-13-08 on November 14, 2008. The order called on State agencies to develop California's first strategy to identify and prepare for expected climate impacts. As a result, the *2009 California Climate Adaptation Strategy (CAS)* report was developed to summarize the best known science on climate change impacts in the State to assess vulnerability and outline possible solutions that can be implemented within and across State agencies to promote resiliency. The State has also developed an Adaptation Planning Guide (CNRA, 2012) to provide a decision-making framework intended for use by local and regional stakeholders to aid in the interpretation of climate science and to develop a systematic rationale for reducing risks caused or exacerbated by climate change. The State's third major assessment on climate change explores local and statewide vulnerabilities to climate change, highlighting opportunities for taking concrete actions to reduce climate-change impacts.

Executive Order B-16-12. In March 2012, Governor Jerry Brown issued an executive order establishing a goal of 1.5 million zero emission vehicles (ZEVs) on California roads by 2025. In addition to the ZEV goal, EO B-16-12 stipulated that by 2015 all major cities in California will have adequate infrastructure and be 'zero-emission vehicle ready'; that by 2020 the State will have established adequate infrastructure to support 1 million ZEVs; that by 2050, virtually all personal transportation in the State will be based on ZEVs, and that GHG emissions from the transportation sector will be reduced by 80 percent below 1990 levels.

Executive Order B-30-15. Governor Brown signed EO B-30-15 on April 29, 2015, which directed the following:

- Established a new interim statewide reduction target to reduce GHG emissions to 40 percent below 1990 levels by 2030.
- Ordered all State agencies with jurisdiction over sources of GHG emissions to implement measures to achieve reductions of GHG emissions to meet the 2030 and 2050 reduction targets.
- Directed CARB to update the Climate Change Scoping Plan to express the 2030 target in terms of million metric tons of carbon dioxide equivalent.

Executive Order B-48-18. On January 26, 2018, Governor Brown issued an executive order establishing a goal of 5 million ZEVs on California roads by 2030.

Executive Order B-55-18. On September 10, 2018, Governor Brown signed EO B-55-18, committing California to total, economy-wide carbon neutrality by 2045. EO B-55-18 directs CARB to work with relevant State agencies to develop a framework to implement and accounting that tracks progress toward this goal. Assembly Bill 1395 to implement this neutrality goal is currently under consideration in the State Senate.

State of California Policy and Legislation

Assembly Bill 1493. In 2002, then-Governor Gray Davis signed Assembly Bill (AB) 1493. AB 1493 required that CARB develop and adopt, by January 1, 2005, regulations that achieve "the maximum feasible reduction of GHGs emitted by passenger vehicles and light-duty trucks and other

vehicles determined by CARB to be vehicles whose primary use is noncommercial personal transportation in the State."

To meet the requirements of AB 1493, in 2004 CARB approved amendments to the California Code of Regulations (CCR) adding GHG emissions standards to California's existing standards for motor vehicle emissions. All mobile sources are required to comply with these regulations as they are phased in from 2009 through 2016.

Because the Pavley standards (named for the bill's author, State Senator Fran Pavley) would impose stricter standards than those under the CAA, California applied to the USEPA for a waiver under the CAA. In 2008, the USEPA denied the application. In 2009, however, the USEPA granted the waiver. The waiver has been extended consistently since 2009; however, in 2018 the USEPA and NHTSA indicated their intent to revoke California's waiver, and prohibit future State emissions standards enacted under the CAA. On May 12, 2021, the National Highway Traffic Safety Administration (NHTSA) published a notice of proposed rulemaking in the Federal Register, proposing to repeal key portions of the rule attempting to revoke the waiver.

Senate Bills 1078 and 107. SB 1078 (Chapter 516, Statutes of 2002) requires retail sellers of electricity, including investor-owned utilities and community choice aggregators, to provide at least 20 percent of their supply from renewable sources by 2017. SB 107 (Chapter 464, Statutes of 2006) changed the target date to 2010.

California Health and Safety Code, Division 25.5 – California Global Warming Solutions Act of 2006 – California Global Warming Solutions Act (Assembly Bill 32 and Senate Bill 32). In September 2006, then-Governor Arnold Schwarzenegger signed the California Global Warming Solutions Act (AB 32). AB 32 established regulatory, reporting, and market mechanisms to achieve quantifiable reductions in GHG emissions and establishes a cap on statewide GHG emissions. AB 32 required that statewide GHG emissions be reduced to 1990 levels by 2020. This reduction would be accomplished by enforcing a statewide cap on GHG emissions that would be phased in starting in 2012. To effectively implement the cap, AB 32 directed CARB to develop and implement regulations to reduce statewide GHG emissions from stationary sources. AB 32 specified that regulations adopted in response to AB 1493 should be used to address GHG emissions from vehicles. However, AB 32 also includes language stating that if the AB 1493 regulations cannot be implemented, then CARB should develop new regulations to control vehicle GHG emissions under the authorization of AB 32.

In 2016, Senate Bill (SB) 32 and its companion bill AB 197 amended HSC Division 25.5 and established a new climate pollution reduction target of 40 percent below 1990 levels by 2030 and included provisions to ensure the benefits of State climate policies reach into disadvantaged communities.

Climate Change Scoping Plan. A specific requirement of AB 32 was to prepare a Climate Change Scoping Plan for achieving the maximum technologically feasible and cost-effective GHG emissions reduction by 2020. CARB developed and approved the initial Scoping Plan in 2008, outlining the regulations, market-based approaches, voluntary measures, policies, and other emission reduction programs that would be needed to meet the 2020 statewide GHG emission

limit and initiate the transformations needed to achieve the State's long-range climate objectives (CARB, 2008).

The First Update to the Scoping Plan was approved by CARB in May 2014 and built upon the initial Scoping Plan with new strategies and recommendations. CARB approved the 2017 Climate Change Scoping Plan Update (2017 Scoping Plan Update) in December 2017. The 2017 Scoping Plan Update outlines the proposed framework of action for achieving the 2030 GHG target of 40 percent reduction in GHG emissions relative to 1990 levels (CARB, 2017). The 2017 Scoping Plan Update identifies key sectors of the State's implementation strategy, which includes improvements in low carbon energy, industry, transportation sustainability, natural and working lands, waste management, and water. Through a combination of data synthesis and modeling, CARB determined that the target statewide 2030 emissions limit is 260 MMT CO_2e, and that further commitments will need to be made to achieve an additional reduction of 50 MMT CO_2e beyond current policies and programs. The cornerstone of the 2017 Scoping Plan Update is an expansion of the Cap-and-Trade program to meet the aggressive 2030 GHG emissions goal and ensure achievement of the 2030 limit set forth by EO B-30-15.

The 2017 Scoping Plan Update's strategy for meeting the State's 2030 GHG target incorporates the full range of legislative actions and State-developed plans that have relevance to the year 2030, including the following, described elsewhere in this section:

- Extending the low carbon fuel standard beyond 2020 and increasing the carbon intensity reduction requirement to at least 18 percent by 2030;
- SB 350, which increases renewables portfolio standard (RPS) to 50 percent and requires a doubling of energy efficiency for existing buildings by 2030;
- The 2016 Mobile Source Strategy to reduce emissions from mobile sources, including an 80 percent reduction in smog-forming emissions and a 45 percent reduction in diesel particulate matter from 2016 level in the South Coast Air Basin, a 45 percent reduction in GHG emissions, and a 50 percent reduction in the consumption of petroleum-based fuels;
- The Sustainable Freight Action Plan to improve freight efficiency and transition to zero emission freight handling technologies (described in more detail below);
- SB 1383, which requires a 50 percent reduction in anthropogenic black carbon and a 40 percent reduction in hydrofluorocarbon and methane emissions below 2013 levels by 2030; and
- Assembly Bill 398, which extends the State Cap-and-Trade Program through 2030.

In the 2017 Scoping Plan Update, CARB recommends statewide targets of no more than six metric tons CO_2e per capita by 2030 and no more than two metric tons CO_2e per capita by 2050. CARB acknowledges that because the statewide per capita targets are based on the statewide GHG emissions inventory that includes all emissions sectors in the State, it is appropriate for local jurisdictions to derive evidence-based local per-capita goals based on local emissions sectors and growth projections.

To demonstrate how a local jurisdiction can achieve their long-term GHG goals at the community plan level, CARB recommends developing a geographically-specific GHG reduction plan (i.e.,

climate action plan) consistent with the requirements of CEQA Section 15183.5(b). A so-called "CEQA-qualified" GHG reduction plan, once adopted, can provide local governments with a streamlining tool for project-level environmental review of GHG emissions, provided there are adequate performance metrics for determining project consistency with the plan. Absent conformity with such a plan, CARB recommends "that projects incorporate design features and GHG reduction measures, to the degree feasible, to minimize GHG emissions. Achieving no net additional increase in GHG emissions, resulting in no contribution to GHG impacts, is an appropriate overall objective for new development" (CARB, 2017).[8] While acknowledging that recent land use development projects in California have demonstrated the feasibility to achieve zero net additional GHG emissions (e.g., Newhall Ranch Resource Management and Development Plan), the 2017 Scoping Plan Update states that "Achieving net zero increases in GHG emissions, resulting in no contribution to GHG impacts, may not be feasible or appropriate for every project, however, and the inability of a project to mitigate its GHG emissions to net zero does not imply the project results in a substantial contribution to the cumulatively significant environmental impact of climate change under CEQA. Lead agencies have the discretion to develop evidence-based numeric thresholds (mass emissions, per capita, or per service population) consistent with this Scoping Plan, the State's long-term GHG goals, and climate change science…To the degree a project relies on GHG mitigation measures, CARB recommends that lead agencies prioritize on-site design features that reduce emissions, especially from VMT, and direct investments in GHG reductions within the project's region that contribute potential air quality, health, and economic co-benefits locally" (CARB, 2017).[9]

Cap-and-Trade Program. Initially authorized by AB 32, and extended through the year 2030 with the passage of Assembly Bill 398 (2017), the California Cap-and-Trade Program is a core strategy that the State is using to meet its GHG reduction targets for 2020 and 2030, and ultimately achieve an 80 percent reduction from 1990 levels by 2050. CARB designed and adopted the California Cap-and-Trade Program to reduce GHG emissions from "covered entities"[10] (e.g., electricity generation, petroleum refining, cement production, and large industrial facilities that emit more than 25,000 metric tons CO_2e per year), setting a firm cap on statewide GHG emissions and employing market mechanisms to achieve reductions.[11] Under the Cap-and-Trade Program, an overall limit is established for GHG emissions from capped sectors. The statewide cap for GHG emissions from the capped sectors commenced in 2013. The cap declines over time. Facilities subject to the cap can trade permits to emit GHGs.[12]

Up to eight percent of a covered entity's compliance obligation can be met using carbon offset credits, which are created through the development of projects, such as renewable energy generation or carbon sequestration projects, that achieve a reduction of emissions or an increase in the removal of carbon from the atmosphere from activities not otherwise regulated, covered

8 At pages 100 - 101.

9 At page 102.

10 "Covered Entity" means an entity within California that has one or more of the processes or operations and has a compliance obligation as specified in subarticle 7 of the Cap-and-Trade Regulation; and that has emitted, produced, imported, manufactured, or delivered in 2008 or any subsequent year more than the applicable threshold level specified in Section 95812 (a) of the Regulation.

11 17 CCR §§ 95800 to 96023.

12 See generally 17 CCR §§ 95811, 95812.

under the cap, or resulting from government incentives. Offsets are verified reductions of emissions whose ownership can be transferred to others. As required by AB 32, any reduction of GHG emissions used for compliance purposes must be real, permanent, quantifiable, verifiable, enforceable, and additional. Offsets used to meet regulatory requirements must be quantified according to CARB-adopted methodologies, and CARB must adopt a regulation to verify and enforce the reductions. The criteria developed will ensure that the reductions are quantified accurately and are not double-counted within the system (CARB, 2008).

If California's direct regulatory measures reduce GHG emissions more than expected, then the Cap-and-Trade Program will be responsible for relatively fewer emissions reductions. If California's direct regulatory measures reduce GHG emissions less than expected, then the Cap-and-Trade Program will require relatively more emissions reductions. In other words, the Cap-and-Trade Program can be adaptively managed by the State to ensure achievement of California's 2020 and 2030 GHG emissions reduction mandates, depending on whether other regulatory measures are more or less effective than anticipated.

Senate Bill 375. Signed into law on October 1, 2008, SB 375 supplements GHG reductions from new vehicle technology and fuel standards with reductions from more efficient land use patterns and improved transportation. Under the law, CARB approved GHG reduction targets in February 2011 for California's 18 federally designated regional planning bodies, known as Metropolitan Planning Organizations (MPOs). CARB may update the targets every four years and must update them every eight years. MPOs in turn must demonstrate how their plans, policies and transportation investments meet the targets set by CARB through Sustainable Communities Strategy. The original target reductions for the Bay Area are a regional reduction of per-capita CO_2 emissions from cars and light-duty trucks by 7 percent by 2020 and by 15 percent by 2035, compared to a 2005 baseline. The year 2035 reduction target has since been revised in 2018 to reduce per capita vehicular GHG emissions 19 percent by 2035 from a 2005 baseline. ABAG addresses these goals in *Plan Bay Area*, which identifies Priority Development Areas near transit options to reduce use of on-road vehicles.

Senate Bill X 1-2. Senate Bill X 1-2, signed by Governor Brown in April 2011, enacted the California Renewable Energy Resources Act. The law obligates all California electricity providers, including investor-owned and publicly-owned utilities, to obtain at least 33 percent of their energy from renewable resources by the year 2020.

Advanced Clean Cars Program. In January 2012, pursuant to Recommended Measures T-1 and T-4 of the Scoping Plan, CARB approved the Advanced Clean Cars Program, a new emissions-control program for model year 2017 through 2025.The program combines the control of smog, soot, and GHGs with requirements for greater numbers of zero-emission vehicles. By 2025, when the rules will be fully implemented, the new automobiles will emit 34 percent fewer global warming gases and 75 percent fewer smog-forming emissions.

The program also requires car manufacturers to offer for sale an increasing number of zero-emission vehicles (ZEVs) each year, including battery electric, fuel cell, and plug-in hybrid electric vehicles. In December 2012, CARB adopted regulations allowing car manufacturers to

comply with California's GHG emissions requirements for model years 2017-2025 through compliance with the USEPA GHG requirements for those same model years.

Senate Bill 743. In 2013, Governor Brown signed Senate Bill (SB) 743, which added Public Resources Code Section 21099 to CEQA, to change the way that transportation impacts are analyzed under CEQA to better align local environmental review with statewide objectives to reduce GHG emissions, encourage infill mixed-use development in designated priority development areas, reduce regional sprawl development, and reduce vehicle miles traveled (VMT) in California.[13]

As required under SB 743, OPR developed potential metrics to measure transportation impacts that may include, but are not limited to, total VMT, VMT per capita, automobile trip generation rates, or automobile trips generated. The new VMT metric is intended to replace the use of automobile delay and level of service (LOS) as the metric to analyze transportation impacts under CEQA. In its 2018 *Technical Advisory on Evaluating Transportation Impacts in CEQA,* OPR recommends different thresholds of significance for projects depending on land use types. For example, residential and office space projects must demonstrate a VMT level that is 15 percent less than that of existing development to determine whether the mobile-source GHG emissions associated with the project are consistent with statewide GHG reduction targets. With respect to retail land uses, any net increase of VMT may be sufficient to indicate a significant transportation impact (OPR, 2018b). In 2016, the City of San Francisco adopted local VMT metrics to implement the directive from SB 743.

Mobile Source Strategy (2016). Implementing CARB's Mobile Source Strategy includes measures to reduce total light-duty VMT by 15 percent from the business-as-usual in 2050. The Mobile Source Strategy includes an expansion of the Advanced Clean Cars Program (which further increases the stringency of GHG emissions for all light-duty vehicles, and 4.2 million zero-emission and plug-in hybrid light-duty vehicles by 2030). It also calls for more stringent GHG requirements for light-duty vehicles beyond 2025 as well as GHG reductions from medium-duty and heavy-duty vehicles and increased deployment of zero-emission trucks primarily for class 3 – 7 "last mile" delivery trucks in California. Statewide, the Mobile Source Strategy would result in a 45 percent reduction in GHG emissions, and a 50 percent reduction in the consumption of petroleum-based fuels by 2030/2031.

California Sustainable Freight Action Plan (2016). California Sustainable Freight Action Plan includes strategies to improve freight efficiency and transition to zero emission freight handling technologies. It includes goals to achieve 25 percent improvement of freight system efficiency by 2030, and to deploy over 100,000 freight vehicles and equipment capable of zero emission operation by 2030, and maximize near-zero emission freight vehicles and equipment powered by renewable energy by 2030 (Caltrans, 2016).

Senate Bill 350. The Clean Energy and Pollution Reduction Act of 2015 or SB 350 (Chapter 547, Statutes of 2015) was approved by Governor Brown on October 7, 2015. SB 350 increased the

[13] Steinberg. 2013. Available online at http://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201320140SB743, accessed on March 10, 2017.

standards of the California Renewable Portfolio Standards (RPS) program by requiring that the amount of electricity generated and sold to retail customers per year from eligible renewable energy resources be increased from 33 percent to 50 percent by December 31, 2030. The Act requires the State Energy Resources Conservation and Development Commission to establish annual targets for statewide energy efficiency savings and demand reduction that will achieve a cumulative doubling of statewide energy efficiency savings in existing electricity and natural gas final end uses of retail customers by January 1, 2030.

Senate Bill 100. On September 10, 2018, Governor Brown signed SB 100, establishing that 100 percent of all electricity in California must be obtained from renewable and zero-carbon energy resources by December 31, 2045. SB 100 also creates new standards for the RPS goals that were established by SB 350 in 2015. Specifically, the bill increases required energy from renewable sources for both investor-owned utilities and publicly-owned utilities from 50 percent to 60 percent by 2030. Incrementally, these energy providers must also have a renewable energy supply of 33 percent by 2020, 44 percent by 2024, and 52 percent by 2027. The updated RPS goals are considered achievable, since many California energy providers are already meeting or exceeding the RPS goals established by SB 350.

SB 1383 (Short-lived Climate Pollutants). Senate Bill 1383, passed in 2016, requires statewide reductions in short-lived climate pollutants (SLCPs) across various industry sectors. The SLCPs covered under AB 1383 include methane, fluorinated gases, and black carbon – all GHGs with a much higher warming impact than carbon dioxide and with the potential to have detrimental effects on human health. SB 1383 requires CARB to adopt a strategy to reduce methane by 40 percent, hydrofluorocarbon gases by 40 percent, and anthropogenic black carbon by 50 percent below 2013 levels by 2030. The methane emission reduction goals include a 75 percent reduction in the level of statewide disposal of organic waste from 2014 levels by 2025.

California Assembly Bill 341. AB 341, which became law in 2011, establishes a new statewide goal of 75 percent recycling through source reduction, recycling, and composting by 2020, and changed the way that the State measures progress toward the 75 percent recycling goal, focusing on source reduction, recycling and composting. AB 341 also requires all businesses and public entities that generate 4 cubic yards or more of waste per week to have a recycling program in place. The purpose of the law is to reduce GHG emissions by diverting commercial solid waste to recycling efforts and expand the opportunity for additional recycling services and recycling manufacturing facilities in California (CalRecycle, 2019).

California Assembly Bill 1826. AB 1826, known as the Commercial Organic Waste Recycling Law, became effective on January 1, 2016, and requires businesses and multi-family complexes (with 5 units or more) that generate specified amounts of organic waste (compost) to arrange for organics collection services. The law phases in the requirements on businesses with full implementation realized in 2019:

- ***First Tier*:** Commencing in April 2016, the first tier of affected businesses included those that generate eight or more cubic yards of organic materials per week.

- ***Second Tier*:** In January 2017, the affected businesses expanded to include those that generate four or more cubic yards of organic materials per week.
- ***Third Tier*:** In January 2019, the affected businesses are further expanded to include those that generate four or more cubic yards of commercial solid waste per week.

State of California Building Codes

California Building and Energy Efficiency Standards (Title 24). The CEC first adopted Energy Efficiency Standards for Residential and Nonresidential Buildings (CCR, Title 24, Part 6) in 1978 in response to a legislative mandate to reduce energy consumption in the State. Although not originally intended to reduce GHG emissions, increased energy efficiency and reduced consumption of electricity, natural gas, and other fuels would result in fewer GHG emissions from residential and nonresidential buildings subject to the standards. The standards are updated periodically (typically every three years) to allow for the consideration and inclusion of new energy efficiency technologies and methods (CEC, 2015).

The current Title 24, Part 6 standards (2019 standards) were made effective on January 1, 2020.

California Green Buildings Standards Code (CALGreen). Part 11 of the Title 24 Building Energy Efficiency Standards is referred to as the California Green Building Standards (CALGreen) Code. CALGreen is intended to encourage more sustainable and environmentally friendly building practices, require low-pollution emitting substances that cause less harm to the environment, conserve natural resources, and promote the use of energy-efficient materials and equipment. Since 2011, the CALGreen Code is mandatory for all new residential and non-residential buildings constructed in the State. Such mandatory measures include energy efficiency, water conservation, material conservation, planning and design and overall environmental quality.

The CALGreen Code was most recently updated in 2019 to include new mandatory measures for residential and non-residential uses; the new measures took effect on January 1, 2020. (California Building Standards Commission, 2019).

University of California

Policies and Plans of the University of California

In 2007, the Chancellor of UCSF signed the *American College and University Presidents' Climate Commitment* (ACUPCC) to complete a GHG emissions inventory, set target dates and interim milestones for becoming climate-neutral,[14] take steps to reduce GHG emissions, and prepare public progress reports (American College, 2007). As an intermediate target, UC established the goals of reducing GHG emissions to 2000 levels by 2014; 1990 levels by 2020; and achieving climate neutrality as soon as possible after reaching the 2014 and 2020 reduction targets. More recently, UCSF committed to achieving net zero Scope 1 and Scope 2 emissions by

[14] Climate neutrality for UCSF is defined as the University having a net-zero impact on the Earth's climate; it will be achieved by minimizing GHG emissions as much as possible and using other measures to mitigate the remaining GHG emissions (*UCSF Climate Action Plan*, December 2009).

the year 2025.[15] These goals pertain to Scope 1 and Scope 2 emissions of the six Kyoto GHGs originating from sources specified in the ACUPCC,[16] as well as Scope 3 emissions from business airline travel and commuting by UCSF staff and students. The policy specifies that these goals will be pursued while maintaining the primary research and education mission of the University.

As outlined in UCSF's *Climate Action Plan* of December 2009, the UC President adopted the *Sustainable Practices Policy* in 2007, which committed UC to implementing actions intended to minimize the University's impact on the environment and reduce the University's dependence on non-renewable energy. The policy was most recently revised in July 2019, and now covers the areas of green building design, clean energy, climate protection, sustainable transportation, sustainable building operations for campuses, zero waste, sustainable procurement, sustainable foodservices, sustainable water systems, and sustainability at UC Health. The *Sustainable Practices Policy* will continue to be updated over time.[17]

In addition, the *Sustainable Practices Policy* sets the following requirements and goals relevant to GHG emissions reduction:

New Buildings

- All new building projects, other than acute care facilities, shall be designed, constructed, and commissioned to outperform the CBC energy-efficiency standards by at least 20% or meet the whole-building energy performance targets. The University will strive to design, construct, and commission buildings that outperform CBC energy efficiency standards by 30% or more, or meet the stretch whole-building energy performance targets.
- Acute care/hospital facilities and medical office buildings shall be designed, constructed, and commissioned to outperform ASHRAE 90.1 - 2010 by at least 30% or meet the whole-building energy performance targets.
- No new building or major renovation that is approved after June 30, 2019 shall use onsite fossil fuel combustion (e.g., natural gas) for space and water heating (except those projects connected to an existing campus central thermal infrastructure).
- All new buildings will achieve a USGBC LEED "Silver" certification at a minimum. All new buildings will strive to achieve certification at a USGBC LEED "Gold" rating or higher, whenever possible within the constraints of program needs and standard budget parameters.
- All new building projects will achieve at least two points within the available credits in LEED-BD+C's Water Efficiency category.

Renovated Buildings

- Major renovations of buildings are defined as projects that require 100% replacement of mechanical, electrical and plumbing systems and replacement of over 50% of all non-shell areas (interior walls, doors, floor coverings and ceiling systems) shall at a minimum comply

[15] This is the current commitment made under the ACUPCC and the goal that is referenced in UCSF's Annual Progress Report to the UC Regents.

[16] The six greenhouse gases identified in the Kyoto Protocol/ACUPCC are carbon dioxide, methane, nitrous oxide, sulfur hexafluoride, hydrofluorocarbons, and perfluorocarbons.

[17] The current version of the *Policy on Sustainable Practices* is available at: https://policy.ucop.edu/doc/3100155/SustainablePractices

with III.A.4 or III.A.5, above. Such projects shall outperform CBC Title 24, Part 6, currently in effect, by 20%. This does not apply to acute care facilities.

- Acute care facilities and medical office buildings undertaking major renovations as defined above will outperform ASHRAE 90.1- 2010 by 30%.
- Renovation projects with a project cost of $5 million or greater that do not constitute a Major Renovation, shall at a minimum achieve a LEED-ID+C Certified rating and register with the utilities' Savings by Design program, if eligible. This does not apply to acute care facilities.

Clean Energy

- *Energy Efficiency*: Each location will implement energy efficiency actions in buildings and infrastructure systems to reduce the location's energy use intensity by an average of least 2 percent annually.
- *On-campus Renewable Electricity*: Campuses and health locations will install additional on-site renewable electricity supplies and energy storage systems whenever cost-effective and/or supportive of the location's Climate Action Plan or other goals.
- *Off-campus Clean Electricity*: By 2025, each campus and health location will obtain 100% clean electricity. By 2018, the University's Wholesale Power Program will provide 100% clean electricity to participating locations.
- *On-campus Combustion*: By 2025, at least 40% of the natural gas combusted on-site at each campus and health location will be biogas. This goal may be realized when supply and transport of biogas is financially feasible and CARB certification is available.

Climate Protection

- Each campus and the UC Office of the President will develop strategies for meeting the following UC goals:
  - Climate neutrality from scope 1 and 2 sources by 2025
  - Climate neutrality from specific scope 3 sources (as defined by Second Nature's Carbon Commitment) by 2050 or sooner
  - Reduce GHG emissions to 1990 levels by 2020, pursuant to the California Global Warming Solutions Act of 2006.

  Each campus will complete an assessment of Scope 1 emissions from natural gas combustion by 2035 or at the date when that location's combined heat & power plant (or any other major fossil fuel-using campus infrastructure) is planned for capital renewal or major repair, whichever occurs first. The assessment should determine the best pathway, at that point, to decarbonize 80% of scope 1 emissions through means other than offsets.

Sustainable Transportation

- Each location will reduce GHG emissions from its fleet and report annually on its progress. Locations shall implement strategies to reduce fleet emissions and improve fuel efficiency of all university-owned or operated fleet vehicles and equipment where practical options exist through acquisition and fleet operation protocols. By 2025, zero emission vehicles or hybrid vehicles shall account for at least 50% of all new light-duty vehicle acquisitions.

- The University recognizes that single-occupant vehicle (SOV) commuting is a primary contributor to commute GHG emissions and localized transportation impacts.
  - By 2025, each location shall strive to reduce its percentage of employees and students commuting by SOV by 10% relative to its 2015 SOV commute rates.
  - By 2050, each location shall strive to have no more 40% of its employees and no more than 30% of all employees and students commuting to the location by SOV.
- Consistent with the State of California goal of increasing alternative fuel – specifically electric – vehicle usage, the University shall promote purchases and support investment in alternative fuel infrastructure at each location.
  - By 2025, each location shall strive to have at least 4.5% of commuter vehicles be ZEV.
  - By 2050, each location shall strive to have at least 30% of commuter vehicles be ZEV.
- Each location will develop a business-case analysis for any proposed parking structures serving University affiliates or visitors to campus to document how a capital investment in parking aligns with each campus' Climate Action Plans and/or sustainable transportation policies.

Sustainable Building Operations for Campuses

- Each campus will submit for certification one pilot building at a LEED-O+M "Certified" level or higher.
- Each campus shall register a master site to certify campus-wide LEED-O+M credits and prerequisites to streamline the certification of multiple buildings through the LEED-O+M rating system by July 1, 2015. Each campus shall certify their campus-wide credits as soon as possible after the master site has been registered.
- Each campus shall seek to certify as many buildings as possible through the LEED-O+M rating system, within budgetary constraints and eligibility limitations.
- All locations shall implement an ongoing Green Lab Assessment Program supported by a department on campus to assess operational sustainability of research groups and the laboratories and other research spaces they use by Summer 2018.
  - At least one staff or faculty member from the location must have the role of managing the Green Lab Assessment Program.
  - Any green lab assessment programs and related efforts will adhere to all relevant UC, state and national policies and laws. Safety will never be compromised to accommodate sustainability goals.
  - All locations shall submit a UC Green Laboratories Action Plan by Summer 2018.

Zero Waste

- The University prioritizes waste reduction in the following order: reduce, reuse, and then recycle and compost.
- The University supports the integration of waste, climate and other sustainability goals, including the reduction of embodied carbon in the supply chain through the promotion of a circular economy and the management of organic waste to promote atmospheric carbon

reduction. In support of this goal, waste reporting will include tracking estimated scope 3 GHG emissions.

- The University will reduce per capita total municipal solid waste generation at all locations other than health locations as follows:
  - Reduce waste generation per capita to Fiscal Year (FY) 2015/16 levels by 2020
  - Reduce waste generation by 25% per capita from FY2015/16 levels by 2025
  - Reduce waste generation by 50% per capita from FY2015/16 levels by 2030
- The University will achieve zero waste by 2020 at all locations other than health locations. Minimum compliance for zero waste is 90% diversion of municipal solid waste from landfill.
- By 2020, the University will prohibit the sale, procurement or distribution of packaging foam, such as food containers and packaging material, other than that utilized for laboratory supply or medical packaging and products. The University seeks to reduce, reuse and find alternatives for packaging foam used for laboratory and medical packaging products. No packaging foam or expanded polystyrene shall be used in foodservice facilities for takeaway containers.

Sustainable Procurement

- The University values the health and wellbeing of its students, staff, faculty, visitors, and suppliers. The University seeks to provide healthy and accessible conditions for the communities it serves and this will be considered as a fundamental factor when making procurement decisions. Where functional alternatives to harmful products or impacts exist, they are to be strongly preferred.
- The University prioritizes waste reduction in the following order: reduce, reuse, and then recycle. Accordingly, sustainable procurement will look to reduce unnecessary purchasing first, then prioritize purchase of surplus or multiple use products, before looking at recyclable or compostable products.
- The University's sustainable purchasing requirements are:
  - 100% compliance with Required Level Green Spend criteria within three fiscal years of the addition of those products and/or product categories to the Guidelines.
  - 25% Green Spend as a total percentage of spend per product category; target to be reached within three fiscal years after a category is added to the Guidelines.
  - 25% Economically and Socially Responsible Spend as a total percentage of addressable spend; target to be reached within five fiscal years of adoption of this section in the Guidelines.
- The University's sustainable purchasing reporting requirements are:
  - Reporting on percent Green Spend beginning at the close of the first full Fiscal Year after a category is added to the Guidelines.
  - Reporting on percent Economically and Socially Responsible Spend beginning at the close of Fiscal Year 2018/19.
  - Reporting on percent Sustainable Spend will be piloted by UCOP beginning at the close of Fiscal Year 2018/19.

- Each University's Procurement department will integrate sustainability into its processes and practices, including competitive solicitations, in order to satisfy the sustainable purchasing goals outlined above for products, as well as for the procurement of services. The University will do so by:
  - Allocating a minimum of 15% of the points utilized in solicitation evaluations to sustainability criteria. Criteria may include, but is not limited to, sustainable product attributes, supplier diversity, supplier practices, contributions to health and wellbeing, and materials safety.
  - Supporting outreach, education and providing equal access to small, diverse, and disadvantaged suppliers for all applicable University procurement opportunities.
  - Comparing the Total Cost of Ownership when evaluating costs for goods and services in the selection of suppliers, whenever feasible.
  - Targeting sustainable products and services for volume-discounted pricing to make less competitive or emerging sustainable products and services cost competitive with conventional products and services.
  - Leveraging its purchasing power and market presence to develop sustainable product and service options where not already available.
  - Requiring packaging for all products procured by the University be designed, produced, and distributed to the end user in a sustainable manner.
  - Contracting with suppliers of products (e.g. electronics, furniture, lab consumables) that have established (preferably non-manufacturer specific) end-of-life reuse, recycling, and/ or takeback programs at no extra cost to the University, and in compliance with applicable federal, state, and University regulations regarding waste disposal.
  - Requiring sustainability related purchasing claims to be supported with UC recognized certifications and/or detailed information on proven benefits, durability, recycled content, and recyclability properties, in accordance with the Federal Trade Commission's Green Guides for the use of environmental marketing claims.
  - Working with its suppliers to achieve greater transparency and sustainable outcomes throughout the supply chain. This may include maximizing the procurement of products that optimize use of resources from extraction through manufacturing and distribution.
- All procurement staff will consult the UC Sustainable Procurement Guidelines document for minimum mandatory sustainability requirements to be included in solicitations for a given product or service category.

Sustainable Foodservice Operations

- *Food Procurement*: Each campus and health location foodservice operation shall strive to procure 20% sustainable food products by the year 2020, while maintaining accessibility and affordability for all students and UC Health Location's foodservice patrons.
- *Education*: Each campus and health location shall provide patrons with access to educational materials that will help support their food choices.
- *Engagement with External Stakeholders*: Campus and health location departments, organizations, groups, and individuals shall engage in activities with their surrounding communities that support common goals regarding sustainable food systems.

- *Sustainable Operations*: Campus and health location foodservice operations shall strive to earn third party "green business" certifications for sustainable dining operations.

- Retail foodservice tenants will strive to meet the policies. above. Given the constraints faced by nationally-branded franchises that must purchase food through corporate contracts, location departments managing retail foodservice tenants will have the option of meeting the procuring 20% of all sustainable food products by the year 2020 policy by aggregating the purchases of all retail entities under the jurisdiction of a single operational unit on location.

Sustainable Water Systems

- Locations will reduce growth-adjusted potable water consumption 20% by 2020 and 36% by 2025, when compared to a three-year average baseline of FY2005/06, FY2006/07, and FY2007/08. Locations that achieve this target early are encouraged to set more stringent goals to further reduce potable water consumption. Each Campus shall strive to reduce potable water used for irrigation by converting to recycled water, implementing efficient irrigation systems, drought tolerant planting selections, and/or by removing turf.

- Each location will develop and maintain a Water Action Plan that identifies long term strategies for achieving sustainable water systems. Campuses will include quantification of total square feet of used turf and under-used turf areas on campus as well as a plan for phasing out un-used turf irrigated with potable water.

- Each campus shall identify existing single pass cooling systems and constant flow sterilizers and autoclaves in laboratories and develop a plan for replacement.

- New equipment requiring liquid cooling shall be connected to an existing recirculated building cooling water system, new local chiller vented to building exhaust or outdoors, or to the campus chilled water system through an intervening heat exchange system if available.

  – Once through or single pass cooling systems shall not be allowed for soft plumbed systems using flexible tubing and quick connect fittings for short term research settings.

  – If no alternative to single pass cooling exists, water flow must be automated and controlled to avoid water waste.

Sustainability at UC Health

- Health locations will achieve Practice Greenhealth's award "Greenhealth Partner for Change." Locations will use the definitions in Practice Greenhealth to set medical-center-specific goals for waste diversion and reduction as well as water reduction.

- UC San Francisco Health and UCLA Health have the following targets:

  – By 2020, 50% of total solid waste diverted from landfill and incineration.

  – By 2020, 40 lbs of total solid waste per Adjusted Patient Day.

  – In line with campus targets, UCLA and UCSF Medical Centers will reduce growth-adjusted potable water consumption 20% by 2020 and 36% by 2025, when compared to a three-year average baseline of FY2005/06, FY2006/07, and FY2007/08.

UC Carbon Neutrality Initiative

In November 2013, UC President Janet Napolitano announced the UC Carbon Neutrality Initiative, which commits the UC to achieving climate neutrality from Scope 1 and 2 sources by 2025 and progressing toward climate neutrality from specific Scope 3 sources by 2050 or sooner. Scope 1 emission sources include direct emissions from sources owned or controlled by the UC, such as emissions from stationary combustion, process emissions, and fugitive emissions; while Scope 2 sources include indirect emissions from purchased electricity and purchased cogeneration for heating or cooling. Scope 3 sources include emissions from all other sources that occur as a result of university operations but occur from sources not owned or controlled by the university.

UC Strategic Energy Plan

The UC Strategic Energy Plan (SEP) was prepared in 2008 for all UC campuses, to fulfill a goal of the *Sustainable Practices Policy* to implement energy efficiency projects in existing buildings. The UCSF portion of the SEP analyzes energy use and GHG trends, and identifies potential energy efficiency retrofit projects for all buildings over 50,000 square feet at UCSF (primarily lighting, HVAC, commissioning and central plant measures). Energy savings, GHG emissions savings, and financial returns are estimated for hundreds of projects, which are grouped into Tier 1 (high priority) and Tier 2 (longer term planning) projects based on their energy savings and financial payback. The SEP project list is updated every year by each campus to evaluate the feasibility of additional energy-saving measures.

University of California, San Francisco

UCSF has a robust sustainability program covering sustainability activities across the entire campus and medical center. Through its Office of Sustainability, UCSF has created work groups addressing sustainability in the following areas, most of which have direct implications for GHG emissions: Carbon Neutrality, Zero Waste, Water Conservation, Sustainable Food, Toxics Reduction, Green Procurement, Green Buildings, and Sustainable Operations.

UCSF's Sustainability Governance consists of the Academic Senate Sustainability Committee and the University's Advisory Committee on Sustainability (UACS). The Academic Senate Sustainability Committee identifies faculty recommendations on improving sustainability at UCSF. The charge of the UACS is to:

- Annually examine UCSF's effect on the environment from a comprehensive perspective;
- Evaluate existing UCSF policies, procedures, and programs that affect the environment;
- Serve as a coordinating body for groups or individuals concerned with sustainability issues;
- Advise selected work groups in the development and implementation of UCSF's sustainability initiatives and goals; and
- Support reduction of GHG emissions to 1990 levels by 2020.

UCSF includes a Sustainability Dashboard on its LivingGreen web site that includes performance metrics for multiple issue areas, including GHG emissions. UCSF also publishes an annual sustainability report on its web site.[18]

The Sustainability Annual Report summarizes the entire UCSF Campus' key accomplishments utilizing 10 key categories of the *Sustainable Practices Policy*, for a given Fiscal Year, with the most recent report documenting FY18. The FY18 report also includes goals for FY19. Where available, it presents data separately for the UCSF Campus and the UCSF Medical Center. Where data is reported for both, the report refers to the entire UCSF campus.

UCSF Climate Action Plan and GHG Reduction Strategy

As part of implementing the *Sustainable Practices Policy*, UCSF developed a Climate Action Plan in 2009, a long-term strategy for voluntarily meeting the State of California's goal for reducing GHG emissions to 1990 levels by 2020, pursuant to AB 32. In addition, as part of the 2014 LRDP, UCSF developed a GHG Reduction Strategy (GHGRS) to provide streamlined analysis under CEQA for future development projects. Both of these documents were updated in 2017 to create a combined UCSF Climate Action Plan – GHGRS to reflect changes that have occurred since 2014 in both the goals outlined in the *Sustainable Practices Policy* and the addition of new campus projects unforeseen at the time of LRDP adoption.

Specifically, the updated GHGRS includes strategies to meet UC goals to achieve climate neutrality from Scope 1 and Scope 2 emissions by 2025. Additionally, the 2017 update recognized new GHG reduction target in response to the State's Climate Change Scoping Plan to achieve a 40 percent reduction in GHGs compared to 1990 levels by year 2030. The update also:

- Considers the completion of the Five Points Solar Park, a 60-megawatt solar power installation built to supply renewable energy to the University of California;
- Consolidates GHG reduction efforts already underway and planned for UCSF over the life of the LRDP through 2035;
- Quantifies the impact on GHG emissions of projected land use as represented by the LRDP; and
- Helps streamline CEQA review of future campus development projects as consistent with the LRDP growth projections and the GHG reduction policies and programs contained in the GHGRS.

Under CEQA, the effects of GHG emissions are considered a potentially significant environmental impact. In addressing climate change, CEQA provides a useful mechanism for local agencies to evaluate new development on a comprehensive basis rather than on an individual project basis. The 2017 GHGRS was further updated in July 2020 and approved by UCSF in January 2021 to reflect the amendment of the 2014 LRDP from the incorporation of the CPHP.

[18] Annual Sustainability Reports are available on the UCSF LivingGreen web site: http://sustainability.ucsf.edu/.

The updated GHGRS requires the implementation of Tier 1 emission reduction measures along with a mix of Tier 2 reduction measures identified by UCSF to close the gap necessary to meet emission reduction targets for 2020, 2025, 2030, and 2050 and allow for utilization of the streamlining review process under CEQA. Consequently, a future development project would be considered consistent with the revised GHGRS if it is consistent with the assumptions within the GHGRS with respect to the amount and type of development and inclusive of GHG reduction measures within the GHGRS. Projects consistent with the revised GHGRS, inclusive of conformance with any applicable performance measures, would not be required to provide additional analysis under CEQA Sections 15064(h) and 15183.5(b)(2).

UCSF Transportation Demand Management

UCSF employs an aggressive Transportation Demand Management (TDM) program that includes an extensive shuttle system, among other alternative transportation opportunities. Based on UCSF's 2018 employee commute survey, approximately 80 percent of the campus faculty, staff and student population commutes by means other than driving alone. Key features of UCSF's existing TDM program include the following:

- 60 shuttles serving 17 locations, with over 2.3 million passengers per year
- 33 vanpools that travel as far as Sacramento and operate using the Green Road Safety System, which improves fuel consumption and safety
- 62 reserved carpool stalls at various sites
- Marin Commute Club buses with about 55 daily riders who live in Marin and Sonoma Counties to the north of San Francisco
- 18 City CarShare vehicles with dedicated parking spaces, along with 1,500 UCSF members who can use these vehicles by scheduling their use on-line
- 18 electric-vehicle charging stations at Parnassus Heights, Mount Zion, and Mission Bay, with plans for another 20 at Mission Bay in the Owens Street Garage and 10 at other locations
- Over 1,900 UCSF users of the ZimRide online carpool matching program
- 972 bicycle parking spaces with another 100 planned at Mission Bay, as well as bike racks on shuttles, a cyclist shower program that allows bicyclists to use UCSF showers at a discount, and other bicycle-related benefits
- Bay Area Bike Share station at Mission Bay (due to commence operation by the end of 2016), where members will have access to bicycles (and a regional network of stations) provided by the Bay Area Air Quality Management District
- More than 400 off-street motorcycle parking stalls in garages and surface parking lots
- An "emergency ride home" program to encourage use of alternative modes of transportation
- Clipper Card (public transit pass) sales at easily accessible locations, including through UCSF's website

- Close to 1,800 UCSF employees that participate in a pretax transit program, which saved UCSF employees over $700,000 on public transit commute costs in 2013
- As UCSF is subject to the City of San Francisco's parking tax, market rate pricing for parking will be implemented that will further discourage personal vehicle use.

Regional

Bay Area Air Quality Management District

The Bay Area Air Quality Management District (BAAQMD) is the regional government agency that regulates stationary sources of air pollution within the nine San Francisco Bay Area counties. BAAQMD regulates GHG emissions through the following plans, programs, and guidelines.

Clean Air Plan. BAAQMD and other air districts prepare clean air plans in accordance with the state and federal Clean Air Acts. On April 19, 2017, the BAAQMD Board of Directors adopted the 2017 Clean Air Plan Spare the Air, Cool the Climate, an update to the 2010 Clean Air Plan. The Clean Air Plan is a comprehensive plan that focuses on the closely-related goals of protecting public health and protecting the climate. Consistent with the State's GHG reduction targets, the plan lays the groundwork for a long-term effort to reduce Bay area GHG emissions 40 percent below 1990 levels by 2030 and 80 percent below 1990 levels by 2050.

As part of the Basin-Wide Methane Strategy outlined in the 2017 Clean Air Plan, the BAAQMD is currently developing a new regulation to address significant releases of methane in the Bay Area, called *Regulation 13, Rule 1: Significant Methane Releases*, which would serve as a general backstop rule to address releases of methane from regulated sources.

BAAQMD Climate Protection Program. The BAAQMD established a climate protection program to reduce pollutants that contribute to global climate change and affect air quality in the San Francisco Bay Area Air Basin. The climate protection program includes measures that promote energy efficiency, reduce vehicle miles traveled, and develop alternative sources of energy, all of which assist in reducing emissions of GHG and in reducing air pollutants that affect the health of residents. The BAAQMD also seeks to support current climate protection programs in the region and to stimulate additional efforts through public education and outreach, technical assistance to local governments and other interested parties, and promotion of collaborative efforts among stakeholders.

BAAQMD CEQA Air Quality Guidelines. The BAAQMD CEQA Air Quality Guidelines were prepared to assist in the evaluation of air quality impacts of projects and plans proposed within the Bay Area. The guidelines provide recommended procedures for evaluating potential air impacts during the environmental review process, consistent with CEQA requirements, and include recommended thresholds of significance, mitigation measures, and background air quality information. The guidelines also include recommended assessment methodologies for air toxics, odors, and GHG emissions. In June 2010, the BAAQMD's Board of Directors adopted CEQA thresholds of significance and an update of the CEQA Guidelines, which included significance thresholds for GHG emissions based on the emission reduction goals for 2020 articulated by the State Legislature in AB 32. The first threshold, 1,100 MT CO_2e per year, is a numeric emissions

level below which a project's contribution to global climate change would be less than cumulatively considerable. For larger and mixed-use projects, the Guidelines state that emissions would be less than cumulatively significant if the project as a whole would result in an efficiency of 4.6 MT CO_2e per service population or better (BAAQMD, 2010).

On March 5, 2012, the Alameda County Superior Court issued a judgment finding that the BAAQMD had failed to comply with CEQA when it adopted the thresholds of significance in the BAAQMD CEQA Air Quality Guidelines. That decision was appealed to the Court of Appeal and one of the issues in the case has been decided by the California Supreme Court. The Supreme Court found that CEQA does not require an analysis of how existing environmental conditions will impact future residents or users of a proposed project, and remanded the case down for the lower court to decide remaining issues. Following the Superior Court order, the BAAQMD released revised *CEQA Air Quality Guidelines* in May of 2012 that include guidance on calculating air pollutant emissions, obtaining information regarding the health impacts of air pollutants, and identifying potential mitigation measures, and which set aside the significance thresholds. There was no challenge to BAAQMD's 2010 GHG emissions thresholds or the substantial evidence supporting those thresholds (BAAQMD, 2012). In May 2017, the Air District published a new version of the Guidelines, which included no changes to the quantitative GHG thresholds, but presented them as guidance and recommended that lead agencies consider the information to develop their own thresholds of significance.

Under BAAQMD's current *CEQA Air Quality Guidelines*, a local government may prepare and adopt a qualified GHG Reduction Strategy that is consistent with AB 32 goals. If a project is consistent with an adopted qualified GHG Reduction Strategy and General Plan that addresses the project's GHG emissions, it can be presumed that the project will not have significant GHG emissions under CEQA (BAAQMD, 2017b).

Metropolitan Transportation Commission/Association of Bay Area Governments Sustainable Communities Strategy. MTC is the federally recognized MPO for the nine county Bay Area. On July 18, 2013, the *Plan Bay Area* was jointly approved by ABAG's Executive Board and by MTC. The Plan includes the region's Sustainable Communities Strategy, as required under SB 375, and the 2040 Regional Transportation Plan. The Sustainable Communities Strategy lays out how the region will meet GHG reduction targets set by CARB. CARB's current targets call for the region to reduce per capita vehicular GHG emissions 10 percent by 2020 and 19 percent by 2035 from a 2005 baseline (CARB, 2018). A central GHG reduction strategy of *Plan Bay Area* is the concentration of future growth within Priority Development Areas (PDAs) and Transit Priority Areas (TPAs). To be eligible for PDA designation, an area must be within an existing community, near existing or planned fixed transit or served by comparable bus service, and planned for more housing.[19] A TPA is an area within one-half mile of an existing or planned major transit stop such as a rail transit station, a ferry terminal served by transit, or the intersection of two or more major bus routes (MTC, 2013).

[19] It should be noted that on February 20, 2020, MTC adopted growth geographies for several new PDAs, including a "Central City Neighborhoods PDA" in San Francisco that includes a portion of the Parnassus Heights campus site. This and other new PDAs are not included in the *Plan Bay Area 2040*, but will be studied in the *Draft Plan Bay Area 2050 Blueprint* (MTC, 2020).

On July 26, 2017, MTC adopted *Plan Bay Area 2040*, a focused update that builds upon the growth pattern and strategies developed in the original *Plan Bay Area* but with updated planning assumptions that incorporate key economic, demographic and financial trends since the original plan was adopted (MTC, 2017). The Parnassus Heights campus site is located within a TPA with respect to *Plan Bay Area 2040*. As stated above, a TPA is defined as an area within one-half mile of an existing or planned major transit stop (Public Resources Code Section 21099(a)(7)), where "major transit stop" is defined as a site containing any of the following: an existing rail or bus rapid transit station, a ferry terminal served by either a bus or rail transit service, or the intersection of two or more major bus routes with a frequency of service interval of 15 minutes or less during the morning and afternoon peak commute periods.

Local

City and County of San Francisco

Pursuant to Article 9, Section 9 of the California State Constitution, UCSF is constitutionally exempt from local land use regulations whenever using property under its control in furtherance of its educational purposes. This authority includes University master planning and oversight of land uses and the development, maintenance and use of physical facilities under UCSF control. Thus, the following City plans and policies do not apply to UCSF and are presented for informational purposes only. The following is a general discussion of City policy with respect to GHG emissions.

San Francisco Greenhouse Gas Reduction Ordinance

In May 2008, the CCSF adopted Ordinance No. 81-08 amending the San Francisco Environment Code to establish GHG emissions targets and departmental action plans and to authorize the San Francisco Department of the Environment to coordinate efforts to meet these targets. The City ordinance establishes the following GHG emissions reduction limits and target dates by which to achieve them: determine 1990 Citywide GHG emissions by 2008, the baseline level, with reference to which target reductions are set; reduce GHG emissions by 25 percent below 1990 levels by 2017; reduce GHG emissions by 40 percent below 1990 levels by 2025; and reduce GHG emissions by 80 percent below 1990 levels by 2050. The City's GHG reduction targets are consistent with—in fact, more ambitious than—those set forth in Governor Brown's recent Executive Order B-30-15 by targeting a 40 percent reduction by 2025 rather than by 2030.

San Francisco Greenhouse Gas Reduction Strategy

San Francisco has developed a number of plans and programs to reduce the City's contribution to global climate change and to meet the goals of the City's Greenhouse Gas Reduction Ordinance. San Francisco's Greenhouse Gas Reduction Strategy documents its actions to pursue cleaner energy, energy conservation, and alternative transportation and solid waste policies. For instance, the City has implemented mandatory requirements and incentives that have measurably reduced GHG emissions including, but not limited to, increasing the energy efficiency of new and existing buildings, installation of solar panels on building roofs, implementation of a green building strategy, adoption of a zero waste strategy, a construction and demolition debris recovery ordinance, a solar energy generation subsidy, incorporation of alternative fuel vehicles in the City's transportation fleet (including buses), and a mandatory recycling and composting

ordinance. The strategy also identifies 42 specific regulations for new development that would reduce a project's GHG emissions.

San Francisco's policies and programs have resulted in a reduction in GHG emissions to below 1990 levels, exceeding statewide AB 32 GHG reduction goals. San Francisco's GHG emissions in 2010 were 5.3 MMT CO_2e, which represents a 14.5 percent reduction in GHG emissions compared to 1990 levels (6.2 MMT CO_2e). The reduction is largely a result of reduced GHG emissions from the electricity sector, from 2.0 MMT CO_2e (1990) to 1.3 MMT CO_2e (2010), and the waste sector, from 0.5 MMT CO_2e (1990) to 0.2 MMT CO_2e (2010) (SF DOE, 2013).

4.7.3 Impacts and Mitigation Measures

Significance Criteria

Would implementation of the NHPH:

a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Approach to Analysis

GHG emissions and global climate change represent cumulative impacts of human activities and development projects locally, regionally, statewide, nationally, and worldwide. GHG emissions from all of these sources cumulatively contribute to the significant adverse environmental impacts of global climate change. No single project could generate enough GHG emissions to noticeably change the global average temperature; instead, the combination of GHG emissions from past, present, and future projects around the world have contributed and will continue to contribute to global climate change and its associated environmental impacts.

BAAQMD has prepared guidelines and methodologies for analyzing the impacts associated with GHG emissions. These guidelines are consistent with CEQA Guidelines Sections 15064.4 and 15183.5, which address the analysis and determination of significant impacts from a proposed project's GHG emissions. CEQA Guidelines Section 15064.4 allows lead agencies to rely on a qualitative analysis to describe GHG emissions resulting from a project. CEQA Guidelines Section 15183.5 allows for public agencies to analyze and mitigate GHG emissions as part of a larger plan for the reduction of GHGs and describes the required contents of such a plan. Accordingly, UCSF prepared its own combined Climate-Action Plan and GHGRS, updated in July 2020 and approved by UCSF in January 2021 (described under *Regulatory Framework*, above). The updated GHGRS provides a framework for meeting the new (2017) statewide 2030 GHG emissions reduction target of 40 percent below 1990 levels and maintaining its status as a qualified GHG reduction plan per *CEQA Guidelines* Section 15183.5, through the year 2035. The intent of the updated GHGRS is to ensure that UCSF can answer "no" to the above stated questions regarding "Greenhouse Gas Emissions" in the Environmental Checklist Form (Appendix G) of the *CEQA Guidelines.*

The GHGRS provides a checklist for determining project consistency with the GHGRS and to provide the opportunity to demonstrate that a project would minimize GHG emissions while ensuring that UCSF will achieve its projected reductions of GHGs. The checklist screens projects for growth assumptions assuming adopted GHG reduction measures that, when implemented, will provide confidence that the project will not impede UCSF's ability to meet its GHG emissions targets. The checklist is based on the GHGRS year 2030 emissions target and growth assumptions associated with the CPHP.

Notwithstanding the adoption of the 2020 GHGRS that is qualified as a GHG reduction strategy per CEQA Guidelines Section 15183.5 through the year 2030, GHG impact assessment in this EIR uses a no net increase in GHG emissions due to the project as a threshold for impact evaluation. The 2017 Scoping Plan Update states that "there are recent examples of land use development projects in California that have demonstrated that it is feasible to design projects that achieve zero net additional GHG emissions." In the 2017 Scoping Plan Update, CARB recognizes that achieving no net increase in GHG emissions compared to existing conditions would demonstrate that a project is not contributing to climate change impacts, and is a recommended objective for land use development projects that are able to feasibly achieve this goal (In practice, for large institutional projects, achievement of a no net increase in GHG emissions compared to existing conditions may require the acquisition of offsets). Accordingly, the NHPH would result in a significant impact on the environment if GHG emissions from its construction and operations would exceed a threshold of zero net additional GHG emissions compared to the existing GHG emissions at the Parnassus Heights campus site, estimated to be 127, 083 MT CO_2e annually for all Scope 1, Scope 2, and Scope 3 sources.

Construction-generated GHGs are considered in this analysis by amortizing over a period of 30 years and then added to annual operational emissions in the emission inventories compiled for this analysis.[20]

Impact Analysis

Due to the combined effects of the construction of proposed New Hospital and related improvements, the NHPH project components are considered together in the analysis of construction phase GHG emissions presented below. Similarly, where applicable, the operation of proposed New Hospital and related improvements are considered together in the analysis of the operational GHG emissions presented herein.

[20] Construction emissions are amortized over a period of 30 years to represent the estimated useful life of the proposed project, a methodology consistent with preliminary guidance developed by the South Coast Air Quality Management District and widely used as an industry standard. The GHG operational analysis is consistent with the OPR's *CEQA and Climate Change Advisory Discussion Draft*. As stated therein, "when possible, lead agencies should quantify the project's construction and operational greenhouse gas emissions, using available data and tools, to determine the amount, types, and sources of greenhouse gas emissions resulting from the project." Governor's Office of Planning and Research, CEQA and Climate Change Advisory Discussion Draft, December 2018, p. 8.

Impact GHG-1: Construction and operation of the NHPH would generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment. (*Less than Significant with Mitigation*)

NHPH

Construction

As discussed in Chapter 3, *Project Description*, the NHPH would provide for development of an approximately 900,000 gross square feet (gsf) New Hospital. The NHPH would also include other components, including the renovation of Moffitt and Long Hospitals, the widening of Medical Center Way, the diesel fuel tanks and medical gas tanks replacement, proposed vegetation management and slope stabilization improvements, and the Parnassus Avenue pedestrian bridge and tunnel. The New Hospital and majority of related improvements would be completed by 2030. Exceptions would be proposed interior renovations to Moffitt and Long Hospitals, and the Parnassus Avenue bridge and tunnel, which would be completed after 2030. Calculations conducted using the CalEEMod emissions estimator model as part of the air quality analysis determined that amortized over 30-years, annual construction emissions would be 292 MT CO_2e/yr.

Operations

Area, Energy, Mobile and Indirect Sources

Operational GHG emissions associated with the New Hospital and renovated Moffitt and Long Hospitals would result from vehicle emissions associated with increased mobile source VMT, electrical and natural gas usage, water and wastewater transport (the energy used to pump water and wastewater to and from the campus site) and solid waste generation; Operational GHG emissions associated with the other NHPH related improvements would be mostly limited to electrical usage (e.g., for lighting the widened Medical Center Way and the Parnassus Avenue pedestrian bridge and tunnel). As of 2019, 92 percent of the imported electricity at UCSF is carbon free and UCSF committed that 100 percent of its imported electricity shall be carbon free by 2025. No GHG emissions are predicted from imported electricity usage under full operation of the NHPH. GHG emissions from natural gas are direct emissions resulting from on-site combustion for the CUP. There would be no new extension of natural gas service to the New Hospital for heating and any other purposes. GHG emissions from water and wastewater transport are also indirect emissions resulting from the energy required to transport water from its source, and the energy required to treat wastewater and transport it to its treated discharge point. Solid waste-related emissions are generated when the increased waste generated by the development is disposed in a landfill where it decomposes, producing methane gas.[21]

Under UCSF's GHGRS, new buildings are required to meet or surpass Title 24 energy efficiency standards and attain a minimum LEED silver certification or equivalent. GHG emissions from mobile transportation, water and wastewater conveyance, and solid waste were estimated using the CalEEMod model, while emissions from natural gas combustion were estimated based on existing UCSF Parnassus Heights campus site usage inventory for the most recent inventory year (2018) and UCSF predictions up to the year 2030 buildout of the New Hospital.

[21] CH_4 from decomposition of municipal solid waste deposited in landfills is counted as an anthropogenic (human-produced) GHG (USEPA, 2006).

Increased vehicle emissions from additional hospital visitors and staff, would be one of the major sources of operational emissions. The net increase in VMT that would occur with operation of the NHPH that was used in this analysis to estimate vehicle-related emissions was derived from the transportation analysis in Section 4.15, *Transportation*. Project operations are projected to generate approximately 53,600 additional daily VMT.

Estimated emissions from construction and operation of the NHPH in year 2030 are presented in **Table 4.7-3**. While some of the related improvements would occur after 2030, the construction-related emissions associated with these improvements are included and these improvements would not contribute additional operational emissions. Construction-related GHG emissions were amortized over an assumed 30-year lifetime of the project and are included in the table, as the BAAQMD has not adopted a separate GHG threshold for construction emissions. As shown in the table, GHG emissions generated by the NHPH would be approximately 27,449 MT CO_2e per year. Because these emissions exceed the net zero threshold, the impact is identified as significant, and mitigation measures are required.

TABLE 4.7-3
ANNUAL OPERATIONAL GHG EMISSIONS: YEAR 2030 WITH THE NHPH

Emission Source	Emissions (metric tons year)			
	CO_2	CH_4	N_2O	Total CO_2e
Mobile Sources[a]	5,550	<1	<1	5,644
Electricity[b]	0	0	0	0
Natural gas combustion (CUP)	19,729	0.3	1.04	20,047
Water and wastewater	35.8	3.7	<1	154
Solid Waste	434	25.7	<1	1,075
Generators	237	<1	<1	237
Construction (Amortized 30 years)	292	<1	<1	292
Total Increase in GHGs (2030)	**26,278**	29.7	1	**27,449**
Achieve Net Zero Increase?				No
Significant Impact?				Yes

NOTE: Project CO_2e emissions estimates were made using CalEEMod v.2020.4.

[a] Mobile emissions are calculated based on daily VMT calculated for the transportation analysis and conservatively multiplied by 365 to arrive at an annual VMT.

[b] UCSF has committed to net zero electricity by 2025 and no GHG emissions are predicted from electrical usage under buildout of the NHPH.

SOURCE: ESA 2021.

Feasible GHG reduction measures are included in the existing GHGRS update, which build upon the strategies and measures in the *Sustainable Practices Policy* and 2017 GHGRS update. **Table 4.7-4** summarizes the recommended reduction measures and lists the corresponding UC *Sustainable Practices Policy* and existing GHGRS measures, where applicable. These reduction measures were incorporated into the GHGRS update under Amendment No. 7 to the 2014 LRDP. Notwithstanding these additional reductions, **NHPH Mitigation Measure GHG-1** is identified to reduce GHG emissions to a net zero increase and a less than significant impact with mitigation. To

achieve the net zero increase, NHPH Mitigation Measure GHG-1 sets forth a numerical performance standard based on the estimated GHG emissions generated for the proposed NHPH (27,449 MT CO_2e per year) to be offset.

Consequently, GHG emissions associated with the NHPH would be reduced to a less-than-significant level with implementation of NHPH Mitigation Measure GHG-1.

TABLE 4.7-4
SUMMARY OF UCSF RECOMMENDED GREENHOUSE GAS REDUCTION MEASURES AND UC SUSTAINABLE PRACTICES POLICY COMPLIANCE

Reduction Measure	SPP Policies	GHGRS Policies	Implemented as Part of the Project?
Energy Efficiency			
High-Efficiency Lighting: Consistent with GHGRS Strategy EN-1, UCSF would opt to install high-efficiency lighting within the New Hospital High-efficiency medical exam lights and surgery room lighting could use LED or other high-efficiency technology.	Section A	Section 5.1; Measure EN-1	Yes; UCSF to implement lighting with efficiencies surpassing Title 24 requirements.
High-Efficiency Appliances: UCSF could establish energy efficiency criteria for appliances installed within the New Hospital.	Section A and B	Section 5.1; Measure EN-1	Yes; Acute care/ hospital facilities are to be designed, constructed, and commissioned to outperform ASHRAE 90.1 - 2010 by at least 30% or meet the whole-building energy performance targets.
On-Site Steam and Electric Cogeneration: Cogeneration systems can use a variety of fuels to generate electricity or power at the point of use, allowing the heat that would normally be lost in the power generation process to be recovered to provide needed heating	NA	NA	Yes; CUP already operating on campus site.
Energy-Efficient Building Envelopes. Title 24 Standards are scheduled for updates and improvements every 3 years, with the ultimate goal of zero net energy. The New Hospital will be required to exceed 2019 Title 24 standards.	Section A	Section 5.1; Measure EN-2	Yes; Considered in the GHG Inventory (see Table 4.7-3).
Renewable Energy			
Off-Site Renewable Energy Generation: Through direct access, UCSF currently purchases approximated 6 percent of the electricity supplied to the Parnassus Heights campus site as carbon free power. UCSF has committed to purchasing electricity that is carbon-free electrical usage to meet zero GHG electrical demand.	Section B: B-3	Section 5.1; Measure EN-3.2	Yes; Considered in the GHG Inventory (see Table 4.7-3).
Bio-Methane Fueling the Central Utilities Plant: UCSF would purchase bio-methane to address GHG emissions associated with use of natural gas at the CUP.	Section B: B-4	Section 5.1; Measure EN-3.3	No, UCSF does not currently have sufficient supplies in place and otherwise cost prohibitive at present.

TABLE 4.7-4 (CONTINUED)
SUMMARY OF UCSF RECOMMENDED GREENHOUSE GAS REDUCTION MEASURES AND UC SUSTAINABLE PRACTICES POLICY COMPLIANCE

Reduction Measure	SPP Policies	GHGRS Policies	Implemented as Part of the Project?
Mobile			
Bicycle Infrastructure: The New Hospital would provide new bicycle parking facilities such as short-term bicycle racks and a longer-term bicycle parking facility.	NA	NA (in TDM Plan)	Yes.
Employee Trip Reduction Program: UCSF would continue to implement an its TDM Program to reduce mobile source emissions from employee commutes.	Section D	Strategy TR-1	Yes; VMT assumes mode split from existing UCSF TDM Measures.
Improved Walkability Design: The NHPH proposes pedestrian pathways to connect to other land uses on campus with crosswalks at major street intersections.	NA	NA	Yes; VMT assumes mode split from existing UCSF TDM Measures.
Neighborhood Electric Vehicles (NEV): Provide an NEV-friendly road network within the campus, including charging stations, and use an NEV fleet to shuttle visitors and employees between the various buildings on campus.	Section D	NA	No; no internal roadway system for project.
Transit Oriented Design: The existing Parnassus Heights campus site is served by Muni light rail and busses as well as UCSF's fleet of shuttles.	NA	NA	Yes; VMT assumes mode split from existing transit options.
Solid Waste			
Institute a Recycling and Waste Diversion Program: The existing Parnassus Heights campus site includes recycling containers located within public areas, and a waste diversion and recycling program could be implemented within the campus to divert all non-hazardous and non-health care related waste that can be safely recycled or composted.	Section F	NA	Yes; Considered in the GHG Inventory (see Table 4.7-3).
Water Conservation			
Water Conservation Strategies: Ongoing water conservation projects described in the UCSF Water Action Plan estimate that UCSF would reduce the existing FY 2018/19 water demand by about 20 percent.	Section I: I-1 to 5	NA	Yes.

NOTES: SPP = UC Sustainable Practices Policy; GHGRS = Greenhouse Gas Reduction Strategy; NA = not applicable or not included in the document.

SOURCE: ESA 2021.

NHPH Mitigation Measure GHG-1: Monitor emissions annually and acquire carbon offset credits in conformance with CARB guidance, prioritizing local and in-State offsets to achieve and maintain carbon neutrality for the NHPH as part of campus-wide emissions.

As part of this mitigation measure, UCSF is making the following separate, though overlapping, GHG emission reduction commitments: (1) As a CARB-covered entity, UCSF will maintain compliance with CARB's cap and trade program; (2) Per existing UC Policy, UCSF's Scope 1 and Scope 2 GHG emissions shall, commencing in 2025, be entirely

carbon neutral; (3) Also per existing UC Policy, commencing in 2025, UCSF's Scope 1 and Scope 2 emissions shall be voluntarily offset while Scope 3 emissions from commuters and air travel shall be voluntarily offset by 2050; and (4) UCSF's total GHG operational emissions from all Scope 1, 2, and 3 sources (as defined in this EIR) shall not exceed the Parnassus Heights campus's baseline emissions from these sources in 2019. Each of these commitments is described in more detail below.

***Continued Compliance with CARB's Cap and Trade Program*:** Any carbon offset credits purchased for the purpose of compliance with CARB's cap and trade program shall be purchased from an accredited carbon credit market. Such offset credits (or California Carbon Offsets) shall be registered with, and retired[22] by an Offset Project Registry, as defined in 17 California Code of Regulations § 95802(a), approved by the California Air Resources Board such as, but not limited to, Climate Action Reserve, American Carbon Registry or Verra (formerly Verified Carbon Standard). In order to demonstrate that the carbon offset credits provided are real, permanent, additional, quantifiable, verifiable, and enforceable, as those terms are defined in 17 California Code of Regulations § 95802(a), UCSF shall document in its annual report: (i) the protocol used to develop those credits, and (ii) the third-party verification report concerning those credits. As and when the credits are retired, UCSF shall document in its annual report the unique serial numbers of those credits showing that they have been retired.

***Compliance with UC Policy - Offsets for Emissions from Commuters and Air Travel*:** Compliance with UC's policies for carbon neutrality from specific Scope 3 sources (as defined by Second Nature's Carbon Commitment) by 2050 or sooner as required by UC's Policy on Sustainable Practices. (UCES, 2020). Neutrality may be achieved through reductions in direct emissions, the purchase of renewable electricity and possibly biomethane, and the purchase of carbon offset credits. UCSF will purchase voluntary carbon offset credits as the final action to reach the GHG emission reduction targets. As part of the UC Carbon Neutrality Initiative, internal guidelines have been developed to ensure that any use of offsets for this purpose will result in additional, verified GHG emissions reductions from actions that align, as much as possible, with UC's research, teaching, and public service mission. Specifically, any voluntary carbon offset credits used by UCSF to mitigate GHG emissions will:

1. Prioritize local (within the air district) and in-state offset credits over in-nation offset credits. Offset credits shall be third-party verified by a major registry recognized by CARB such as CAR (Climate Action Reserve). If sufficient local and in-state offset credits are not available, UCSF will purchase CARB conforming national offset credits registered with an approved registry.

2. Be reported publicly and tracked through the Climate Registry (TCR) as required by UC policy. TCR is a non-profit organization governed by U.S. states and Canadian provinces and territories. UCSF's TCR reports will be third-party verified and posted publicly.

Compliance with UC Policy – Carbon Neutrality: Ensure achievement of net zero greenhouse gas emissions from its buildings and vehicle fleet by 2025. For purposes of

[22] When Climate Reserve Tonnes (CRTs) are transferred to a retirement account in the Reserve System, they are considered retired. Retirement accounts are permanent and locked to prevent a retired CRT from being transferred again. CRTs are retired when they have been used to offset an equivalent ton of emissions or have been removed from further transactions on behalf of the environment.

this section, campuses shall include their related health location for all goals. GHG emissions reduction goals pertain to emissions of the six Kyoto greenhouse gasses[23] originating from all Scope 1 and Scope 2 sources as specified by the Climate Registry, and from Scope 3 emissions as specified by Second Nature's Carbon Commitment, which includes air travel paid through the institution, and commuting to and from campus by students, faculty and other academic appointees, and staff.

***Commitment to control Parnassus Heights Annual Emissions to not exceed existing baseline*:** UCSF shall monitor GHG operational emissions from all Scope 1, 2 and 3 sources annually. Upon the completion and occupancy of the NHPH, inclusive of the related improvements, in 2033, the estimated annual emissions shall be compared to the campus site year 2019 baseline of 127,083 MT CO_2e per year to determine whether the emissions have increased above the baseline level. For the identified amount of exceedance of the performance standard, UCSF shall purchase carbon offset credits sufficient to maintain carbon neutrality. These offset credits shall be purchased for the types of Scope 1 and Scope 2 emissions that are already reported to and verified by a third party verification body annually, as well as for Scope 3 emissions from patient and visitor vehicle trips, indirect emissions from water and wastewater demand, and solid waste emissions, all of which are included in the EIR analysis above as required by CEQA.

Carbon offset credits used for this purpose shall originate from a voluntary carbon credit registry that TCR recognizes such as: CAR, ACR, or Verra (other registries are also applicable). Offset credits in this case shall be registered, transferred, and retired at such registries. The protocols of each registry, and UC own internal screens, shall be used to demonstrate that the carbon offset credits provided are real, permanent, additional, and have been independently verified as adhering to its applicable project protocols. For this purpose, local (within the air district) and in-state carbon offset credits shall be prioritized over in-nation offset credits. If sufficient local and in-state offset credits are not available, UCSF will purchase CARB conforming national offset credits registered with an approved registry. As and when the credits are retired, UCSF shall document in its annual report the unique identifier of those credits showing that they have been retired and accepted by TCR.

Significance after Mitigation: Less than Significant.

Impact GHG-2: Construction and operation of the NHPH would not conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases. (*Less than Significant*)

NHPH

The 2014 LRDP included a GHGRS to ensure that the LRDP was implemented in alignment with *Sustainable Practices Policy*, and to fulfill the GHG reduction requirements of AB 32: the California Global Warming Solutions Act of 2006. Since the adoption of the 2014 LRDP by the Regents, the University of California Office of the President further identified a UC policy goal to reach climate neutrality from Scopes 1 and 2 sources by 2025, which was reflected in an update

[23] The six greenhouse gasses identified in the Kyoto Protocol are carbon dioxide, methane, nitrous oxide, sulfur hexafluoride, hydrofluorocarbons, and perfluorocarbons.

to the GHGRS in 2017. The 2017 GHGRS was further updated in July 2020 and approved by UCSF in January 2021 that incorporated CPHP construction and operations emissions, including the New Hospital.

In addition, the updated GHGRS addressed UCSF's achievement of goals set forth in the adopted Carbon Neutrality Initiative (CNI), which has goals more stringent than the statewide target of achieving 80 percent below 1990 emission levels by 2050. In compliance with the *Sustainable Practices Policy*, as well as the CNI, UCSF currently prepares annual inventories of GHG emissions for Scope 1, 2, and 3 emissions to monitor GHG reduction progress.

The Parnassus Heights campus site is making substantial efforts to develop pathways to offset carbon emissions that would contribute to achieving the CNI goals by offsetting carbon emissions. To offset the Scope 1 (direct and controlled) and Scope 2 (indirect) emissions, the first strategy is to reduce energy demand through investments in achieving deep energy efficiency of the buildings and facilities on campus. All new buildings constructed under the CPHP, including the NHPH, would meet or surpass Title 24 energy efficiency standards and attain a minimum LEED silver certification or equivalent.

A second strategy is the UC Clean Power Program's carbon-free electricity, which contributes to achieving carbon neutrality in Scope 2 (indirect) emissions. As of 2019, 92 percent of the electricity demand imported by UCSF is carbon free. UCSF has committed that by 2025, all of its purchased electricity will be carbon-free.

After implementing these strategies (maximizing energy efficiency across campus systems and operations and purchasing carbon-free electricity), annual inventories of GHG emissions for Scope 1, 2, and 3 emissions as defined for this EIR would be completed by campus staff and verified by a qualified verification process through TCR. Starting in 2025, the campus would offset any remaining Scope 1 and Scope 2 emissions by purchasing carbon credits on the accredited voluntary carbon credit market in fulfillment of the UC CNI Policy. Additionally, NHPH Mitigation Measure GHG-1 will be implemented which requires, among other things, that the operational emissions be monitored annually and that carbon offsets be acquired to achieve and maintain carbon neutrality for the Parnassus Heights campus site. This will further offset remaining emissions inclusive of emissions from natural gas usage by the CUP, visitor/patient trips and indirect emissions from water and wastewater demand and solid waste emissions to the extent these exceed existing emissions.

After validating the annual inventory, UCSF would purchase carbon credits through the Climate Action Reserve, American Carbon Registry, Verra, or other accredited voluntary markets to offset the remaining Scope 1 emissions. The Parnassus Heights campus site would be actively involved in this effort and contribute to the implementation of the UC system-wide CNI. Compliance with the *Sustainable Practices Policy* and CNI ensures that the campus is implementing the UCSF GHGRS. Therefore, the NHPH would not conflict with any adopted plans, policies, or regulations for the reduction of GHG emissions. The impact would be less than significant.

The NHPH, inclusive of the related improvements, is anticipated to reach buildout in 2033. The GHGRS was recently updated to reflect 2015 updates to the *Sustainable Practices Policy* which requires each campus to establish a goal of 30 percent of commutes by zero emissions vehicles in efforts to commit toward continued and sustained GHG reductions through 2050, which is the horizon year of State reduction goal. The Parnassus Heights campus site would continue to develop and apply the UCSF GHGRS, which would implement long-term GHG reductions through sustainable design, renewable energy generation, electrification of the transportation fleet, sustainable water use, and zero waste (for non-health care uses) programs as described in the GHGRS. In addition, UCSF will continue to report annual inventories of GHG emissions into perpetuity to monitor progress and ensure achievement of the CNI reduction targets Scope 1, 2, and 3 emissions in 2050.

Consistency with Other Plans and Policies

As noted earlier, CARB's 2017 Scoping Plan Update describes how the State plans to achieve the 2030 GHG emission reduction goal for California of 40 percent below 1990 levels by 2030 as mandated by SB 32. By continuing to implement the updated GHGRS and NHPH Mitigation Measure GHG-1, thereby achieving consistency with UCSF's CNI, the NHPH would be consistent with CARB's 2017 Scoping Plan Update and with Executive Order S-3-05, which established a goal of reducing California's GHG emissions to 80 percent below the 1990 level by the year 2050.

The NHPH would also be consistent with *Plan Bay Area 2040*, which includes the Regional Transportation Plan, and was adopted as the Bay Area's Sustainable Communities Strategy pursuant to California Senate Bill 375. P*lan Bay Area 2040*'s core strategy is encouraging growth in existing communities along the existing transportation network, focusing new development in Priority Development Areas (PDAs) and Transit Priority Areas (TPAs) within urbanized centers where there is more public transit and other mobility options available to reduce driving by cars and light trucks. In addition to significant transit and roadway performance investments to encourage focused growth, *Plan Bay Area 2040* directs funding to neighborhood active transportation and complete streets projects, climate initiatives, lifeline transportation and access initiatives, pedestrian and bicycle safety programs, and PDA planning. The proposed project is consistent with *Plan Bay Area 2040* by virtue of being located within a TPA, which is defined as an area within one-half mile of an existing or planned major transit stop (Public Resources Code Section 21099(a)(7)), where "major transit stop" is defined as a site containing any of the following: an existing rail or bus rapid transit station, a ferry terminal served by either a bus or rail transit service, or the intersection of two or more major bus routes with a frequency of service interval of 15 minutes or less during the morning and afternoon peak commute periods (Public Resources Code Section 21064.3).

Additionally, UCSF's existing TDM strategies would be implemented which include programs to encourage more employees, visitors, and patients to shift from driving to other modes of travel. These programs would consist of strategies that encourage telecommuting and telehealth; encourage non-automobile modes, such as discounted transit tickets and preferential carpool parking; and disincentivize travel by automobile by effectively managing parking permits and parking fees.

Therefore, the development of the Parnassus Heights campus site under the NHPH would be consistent with the State's efforts toward achieving 2050 reduction target. This impact would be less than significant.

Mitigation: None required.

Cumulative Impacts

Climate change is the cumulative effect of all natural and anthropogenic sources of GHGs accumulated on a global scale. The GHG emissions from an individual project, even a very large development project, would not individually generate sufficient GHG emissions to measurably influence global climate change, and thus the assessment of the project's GHG emissions impacts is inherently cumulative.

4.7.4 References

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4.8 Hazards and Hazardous Materials

This section describes and evaluates the potential for construction and operation of the New Hospital and related improvements to result in significant impacts related to hazards and hazardous materials. The section contains: a description of the existing land uses of the NHPH site and surrounding areas as they pertain to existing hazardous materials use; a discussion of handling (including transport and disposal) and storage of hazardous materials, emergency response planning and wildfire management at the campus site; a summary of the University plans and policies, and federal, State, and local laws and regulations governing these activities; an analysis of the potential impacts related to hazards and hazardous materials, emergency response planning and wildfire management associated with the implementation of the NHPH, as well as identification of potentially feasible measures that could mitigate significant impacts if needed.

The analysis of hazardous materials included in this section was developed based on publicly available information from the State Water Resources Control Board (SWRCB), California Department of Toxic Substances Control (DTSC), and California Department of Forestry and Fire Protection (CAL FIRE).

For purposes of providing distinction between the various components of this project, references made in this EIR to "New Hospital" relate only to the New Hospital portion of the overall project, whereas references made to "NHPH" relate to the overall project, including the New Hospital and its related improvements.

4.8.1 Environmental Setting

The study area for evaluation of hazards and hazardous materials impacts includes the campus site and surrounding areas. The evaluation uses an environmental database search that extends approximately 0.25 miles from the NHPH site; however, it focuses on the campus site and the immediately adjacent area. Sites beyond the immediately adjacent area would have a remote chance of affecting subsurface materials beneath the campus site since releases of hazardous materials tend to be localized.

In addition, a radius of up to 0.25 miles from the NHPH site is considered relative to proximity to schools and the radius of up to 2 miles is similarly considered relative to proximity to airports, both in accordance with the CEQA Guidelines.

Definitions and Background

Hazardous Materials

A hazardous material is defined as any material that, because of quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment (California Health and Safety Code Chapter 6.95, Section 25501(o)). The term "hazardous materials" refers to both hazardous substances and hazardous wastes. Under federal and State laws, any material, including wastes, may be considered hazardous if it is specifically listed by

statute as such or if it is toxic (causes adverse human health effects), ignitable (has the ability to burn), corrosive (causes severe burns or damage to materials), or reactive (causes explosions or generates toxic gases).

Hazardous wastes are hazardous substances that no longer have practical use, such as materials that have been spent, discarded, discharged, spilled, contaminated, or are being stored until they can be disposed of properly (Title 22 California Code of Regulations [CCR] Section 66261.10). Soil that is excavated from a site containing hazardous materials is a hazardous waste if it exceeds specific criteria established in Sections 66261.20 through 66261.24 of the CCR Title 22. Hazardous substances are regulated by multiple agencies, as described in the Regulatory Setting below, and cleanup requirements of hazardous material releases are determined on a case-by-case basis according to the agency (e.g., DTSC or SWRCB) with lead jurisdiction over a contaminated site.

Potential Receptors/Exposure

The sensitivity of potential receptors in the areas of known or potential hazardous materials contamination is dependent on several factors, the primary factor being the potential pathway for human exposure. Exposure pathways include external exposure, inhalation, and ingestion of contaminated soil, air, water, or food. The magnitude, frequency, and duration of human exposure can cause a variety of health effects, from short-term acute symptoms to long-term chronic effects. Potential health effects from exposure can be evaluated in a health risk assessment. The principal elements of health risk assessments typically include:

- Evaluation of the fate and transport processes for hazardous materials at a given site;
- Identification of potential exposure pathways;
- Identification of potential exposure scenarios;
- Calculation of representative chemical concentrations; and
- Estimation of potential chemical uptake.

Sensitive Receptors

On the Parnassus Heights campus site, existing sensitive receptors include the UCSF hospitals, and UCSF campus housing on Third and Fifth Avenues, on Irving Street, and the Aldea Housing complex located in the southeast portion of the campus site. There are also two child care centers within the Parnassus Heights campus site: the Kirkham Child Development Center at 10 Kirkham Street, and the UCSF Marilyn Reed Lucia Child Development Center at 601 Parnassus Avenue.

Off-campus receptors (residences) abut the western, northern, eastern and southern campus site boundaries. There are two public schools operated by the San Francisco Unified School District within one quarter mile of the NHPH site: Independence High School is located at 1350 7th Avenue, approximately one quarter mile to the northwest; and Grattan Elementary School (which also contains Grattan Nursery and School-Age Children's Center) is located at 165 Grattan Avenue, approximately one quarter mile east. The private Haight Ashbury Community Nursery School is located at 1180 Stanyan Street, approximately 1,000 feet to the east.

Hazardous Building Materials Associated with Demolition and Renovation

Parnassus Heights is the oldest campus site within the UCSF campus system, and as a result, the age of some of the existing buildings and structures increases the likelihood for building materials to contain hazardous components [e.g., lead-based paint (LBP), asbestos-containing materials (ACMs), mercury, and polychlorinated biphenyls (PCBs)].

Lead and Lead-Based Paint (LBP)

Among its numerous uses and sources, lead can be found in paint, water pipes, solder in plumbing systems, and in soils around buildings and structures painted with LBP. Old peeling paint can contaminate near surface soil, and exposure to residual lead can have adverse health effects, especially in children. LBP was phased out in the United States beginning with the passage of the Lead-Based Paint Poisoning Prevention Act in 1971. Prior to the US Environmental Protection Agency (US EPA) ban in 1978, LBP was commonly used on interior and exterior surfaces of buildings. Structures built prior to 1978 may have LBP and some paints manufactured after 1978 for industrial uses legally contain more than 0.06 percent lead. Pathways of exposure to lead include inhalation, ingestion, dermal absorption, or absorption from retained/embedded leaded foreign body. Exposure to lead can result in severe health effects; children are particularly susceptible to potential lead-related health problems because it is easily absorbed into developing systems and organs.

Asbestos

Asbestos, a naturally occurring fibrous material, was used as a fireproofing and insulating agent in building construction before such uses were terminated due to liability concerns in the late 1970s. From 1973 through 1990, several laws were passed banning the manufacture and use of ACM (USEPA, 2019). Some materials are still allowed to contain asbestos. The demolition of structures with ACM can result in airborne fibers. Inhalation of the tiny asbestos fibers can lead to lung disease. Structures that predate 1981 and structural materials installed before 1981 are presumed to potentially contain asbestos. Because it was widely used prior to the discovery of its health effects, asbestos can be found in a variety of building materials and components such as insulation, walls and ceilings, floor tiles, and pipe insulation. Friable (easily crumbled) materials are particularly hazardous because inhalation of airborne fibers is the primary mode of asbestos entry into the body. Non-friable asbestos is generally bound to other materials such that it does not become airborne under normal conditions. Non-friable asbestos and encapsulated friable asbestos do not pose substantial health risks. Asbestos exposure is a human respiratory hazard. Asbestos-related health problems include lung cancer and asbestosis.

Mercury

Spent fluorescent light tubes commonly contain mercury vapors, the exposure to which can have both long-term (e.g., anxiety, loss of appetite, fatigue, changes in vision or hearing) and/or short-term (e.g., sore throat, shortness of breath, chest pain, headache, vision problems) health effects. In February 2004, regulations took effect in California that classified all fluorescent lamps and tubes as hazardous waste. When these lamps or tubes are broken, mercury is released to the

environment and can become airborne. When inhaled, mercury vapors can be absorbed through the lungs and into the bloodstream. Released mercury that is not vaporized can also be washed by rain water and into waterways. Mercury switches, which contain small amounts of mercury, may also be present in some buildings.

Polychlorinated Biphenyls (PCBs)

PCBs are organic oils that were formerly used primarily as insulators in many types of electrical equipment such as transformers and capacitors. After PCBs were determined to be carcinogenic in the mid-to-late 1970s, the US EPA banned PCB use in most new equipment and began a program to phase out certain existing PCB-containing equipment (USEPA 2019b). Fluorescent lighting ballasts manufactured after January 1, 1978, do not contain PCBs and are required to have a label clearly stating that PCBs are not present in the unit. PCBs are highly persistent in the environment, and exposure to PCBs has been demonstrated to cause cancer, as well as a variety of other adverse health effects. Occupational exposure to PCBs occurs mainly through inhalation and dermal contact routes.

Soil and Groundwater Contamination

Medical offices, research facilities and hospitals as well as many commercial and light industrial businesses use materials and generate wastes that are considered hazardous by federal and State standards. Such businesses and practices are required to contain, manage, and transport their hazardous materials in conformance with established State regulations to ensure hazardous materials that can become a health hazard are not released to subsurface soils and groundwater or create exposure risks to the public.

Underground storage tanks (USTs), in particular, are a common contamination source in urban areas. Until the mid-1980s, most USTs were made of single-walled bare steel, which can corrode over time and result in leakage. Faulty installation or maintenance procedures can also lead to UST leakage, as well as to potential releases associated with spills. Recently revised UST regulations have substantially reduced the incidents of leakage and consequential soil and groundwater contamination from new UST systems.

Campus Site Use and Disposal of Hazardous Materials

The majority of existing development is located within the campus core in the north portion of the campus site. Current campus operations include the storage, use, and disposal of variable quantities of hazardous materials. Hazardous materials used at the campus site include general waste (universal waste), biohazardous materials, pharmaceutical waste, chemical materials and radioactive materials. **Table 4.8-1** presents a list of representative hazardous materials stored and used at the campus site.

TABLE 4.8-1
REPRESENTATIVE HAZARDOUS MATERIALS USED AT PARNASSUS HEIGHTS CAMPUS SITE

Substance	Examples	Uses	Hazards
Solvents	Alcohols, ether, ethers, toluenes, and hexanes	Lab chemicals, paint removers, degreasers, and pesticides	Flammable, some explosive; toxic; damage to skin and respiratory tract; systematic damage to liver, kidneys, and nervous system.
Oxidizers	Hydrogen peroxide, perchloric acid, nitric acid, silver nitrate, potassium dicholorate, and ammonium persulfate	Hazardous medications, lab chemicals	Stimulates combustion of organic materials
Compressed Gases	Carbon dioxide, nitrogen, acetylene, oxygen, compressed air, refrigerants and miscellaneous small quantities and mixtures.	Hazardous medical gases, labs, facility systems, welding, and other campus shops	Flammable, some explosive (with potential for propellant effect, and some toxic)
Corrosives	Hydrochloric, nitric, sulfuric, and acetic acid, sodium hydroxide, and ammonium hydroxide	Hazardous medications, lab chemicals, cleaning agents, paint and paint thinners, Freon refrigerants, pesticides, and herbicides	Damage to skin and respiratory tract; some react to produce fire, explosion, or toxic fumes
Reactives	Alkyl metals (sodium potassium), and hydrides	Lab chemicals	Explosive (with or without detonation); toxic fumes; and explodes with exposure to water
Toxics	Chemotherapy drugs and bulk wastes, RCRA hazardous drugs and wastes, heavy metals, chlorinated hydrocarbons, arsenic, and cyanide compounds	Hazardous medications, lab chemicals, pesticides, photographic chemicals, and paints or dyes	Capable of causing acute or chronic systemic damage or death, cancer, infertility, and birth defects
Biohazards	Waste containing blood, bodily fluids, used sharps, pharmaceutical waste, trace chemotherapy drug waste, and other potentially infectious materials, bacteria and viruses	Regulated medical waste from the hospital and clinics and research laboratories	Capable of producing diseases
Radioactivity	Radionuclides (radioisotopes)	Labs and medical center	Capable of causing acute or chronic systematic damage, cancer, infertility, and birth defects
Fuels	Gasoline, diesel, and waste oil	Campus maintenance (grounds and building) and vehicles	Flammable, some explosive; toxic; damage to skin and respiratory tract; and produces fire/explosions

SOURCE: UCSF, 2019

Table 4.8-2 summarizes the quantities of different hazardous wastes generated in Moffitt and Long Hospitals that were disposed of in 2019. Batteries are a type of hazardous waste called universal waste, which is hazardous waste that has less stringent requirements for management and disposal. Since toxic heavy metals and corrosive properties of batteries make them unsuitable for disposal in the municipal trash because they can contaminate surface and ground water, at UCSF, batteries are disposed of through its Office of Environmental Health and Safety (EH&S) to ensure proper disposal.

TABLE 4.8-2
HAZARDOUS WASTES FROM MOFFITT AND LONG HOSPITALS DISPOSED OF IN 2019

Waste Stream	Volume (Pounds)
Batteries (Universal Waste)	13,620
Hazardous Chemicals	60,400
Radioactive Waste	2,600
Medical Waste Treatment	293,219
Sharps Waste	104,655
Pathological/Trace Chemotherapy Waste	108,127
Pharmaceutical Waste	210,193
	792,813

SOURCE: UCSF, 2021

Biohazardous materials are materials that harbors a biological agent capable of causing diseases in humans, animals, or plants. Biohazardous materials include National Institutes of Health (NIH)/Centers for Disease Control and Prevention (CDC) Risk 2 and Risk 3 Group contaminated material; materials contaminated within Risk Group 1 recombinant deoxyribonucleic acid (DNA), blood, body fluids containing blood, human and animal tissues, and animal carcasses. Medical waste is a general term that includes both biohazardous and sharps waste (e.g., needles, syringes, broken glass, etc.) (California Health and Safety Code, Section 117690).

Medical waste includes pathological waste (e.g., tissues, surgical specimens and body parts), and chemotherapy waste; waste such as gloves, towels, empty bags; and intravenous tubing that contains or is contaminated with chemotherapeutic agents. Trace chemotherapeutic waste is a by-product of oncology patient care, and consists of materials that previously contained or had contact with chemotherapeutic agents. Pharmaceutical waste can include, but is not limited to, partially used or expired prescription or over-the-counter medications, and materials such as intravenous bags and tubing, narcotic patches, carpujets, and tubexes.

Chemical waste can include, but is not limited to, hazardous pharmaceutical waste, chemical waste generated from clinical and pathology laboratories, expired cleaning solutions and disinfectants, and waste oil from facilities operations.

Radioactive waste is defined as any material that has come in contact with radioactivity and may be contaminated. Radioactive atoms are called “radionuclides” or “radioisotopes.” Radiopharmaceuticals (radioisotopes or drugs containing radioisotopes) are used in medicine and research, and limited types and quantities of radioisotopes are also used in research laboratories. Radioactive waste can include, but is not limited to, dry waste, liquid waste, vials, animal carcasses, and biohazardous waste.

The Parnassus Heights campus site has five 30,000 gallon single-walled diesel fuel USTs located below Medical Center Way that serve the Central Utility Plant (CUP) generators and boilers in emergency situations when normal electrical services are interrupted. These storage tanks do not meet current code requirements and must be decommissioned by December 31, 2025.

Hazardous Materials Site Records

Campus Site

In a review of available environmental databases, there were two cases for the Parnassus Heights campus site (at the EHS building at 50 Medical Center Way, and 315 Parnassus Avenue) identified either on the Geotracker database maintained by the SWRCB, and/or the Envirostor database maintained by the DTSC (SWRCB, 2021; DTSC, 2021). Both cases were closed in accordance with applicable regulatory agency oversight, with no further action required.

Surrounding Area

The database searches indicated above were also expanded to include a quarter mile radius from the NHPH site for release sites that may have the potential to adversely affect soil and groundwater beneath the campus site. In total, there were four database listings on the Geotracker database to the north and west of the NHPH site. All these cases were closed, with no further investigation or remediation required. There were no Envirostor database listings within a quarter mile of the NHPH site (DTSC, 2021).

Naturally Occurring Asbestos

San Francisco is among the identified counties where ultramafic bedrock materials are present and have the potential for the release of naturally occurring asbestos fibers. According to statewide mapping, the campus site appears to be located east of any mapped ultramafic bedrock units for the City of San Francisco (CDMG, 2000) or where reported asbestos occurrences have been mapped (USGS, 2011). According to a previous geotechnical report for the upland slope stability within the Mount Sutro Open Space Reserve (Reserve), the bedrock of the area consists of Franciscan Complex bedrock (chert, greenstone and meta-sandstone and shale) (Rutherford & Chekene, 2006).[1] Naturally occurring asbestos fibers are more associated with the mineral chrysotile commonly found in serpentinite.

Airports

There are no public use airports within 2 miles of the City of San Francisco. San Francisco International Airport and Oakland International Airport are over 8 and 12 miles from the campus site, respectively.

Wildland Fire

A wildland fire is any non-structure fire that occurs in vegetation or natural fuels. According to CAL FIRE's Fire Hazard Severity Zone Map of San Francisco County, the Mount Sutro Open Space Reserve is designated as Local Responsibility Area (LRA) moderate fire hazard severity zone (CAL FIRE, 2007).

[1] Greenstone refers to any compact dark-green altered or low-grade metamorphosed basic igneous rock that owes to its green color. It is distinct from serpentinite which is also green and can contain naturally occurring asbestos fibers.

In September 2018, UCSF began implementing the Mount Sutro Open Space Reserve Vegetation Management Plan, a 20-year phased plan to improve ecosystem health, regenerate the forest, maintain and ensure public access to the Reserve, and minimize fire risk. In accordance with UCSF's established risk-reduction program, the Vegetation Management Plan is intended to protect the safety of Reserve users and adjacent structures with vegetation management to reduce the risk of both tree failure and fire. Under the Vegetation Management Plan, vegetation management is conducted in accordance with guidelines established by the San Francisco Fire Department and CAL FIRE to create and maintain defensible space between vegetation and buildings.

In addition, UCSF Facilities Services conducts ongoing, regular maintenance in the Reserve including: removal of storm debris, downed trees or branches, hazardous trees, trash, campsites; managing overgrown vegetation, including near roads, trails, parking areas, walkways, stairs, and buildings; scheduled tree pruning every two years or as necessary to keep buildings, roads and pathways safe.

4.8.2 Regulatory Setting

Federal

The primary federal agencies with responsibility for hazards and hazardous materials management include the US EPA, US Department of Labor Occupational Safety and Health Administration (Fed/OSHA), and the US Department of Transportation (DOT). Federal laws, regulations, and responsible agencies are summarized in **Table 4.8-3**.

State agencies often have either parallel or more stringent rules than federal agencies. In most cases, state law mirrors or overlaps federal law and enforcement of these laws is the responsibility of the state or of a local agency to which enforcement powers are delegated. For these reasons, the requirements of federal law and its enforcement are discussed under either the State or local agency subsections below.

State

California Environmental Protection Agency and Unified Program

California's Secretary for Environmental Protection has established a unified hazardous waste and hazardous materials management regulatory program (Unified Program) as required by Senate Bill 1082 (1993).

The California Environmental Protection Agency (Cal/EPA) oversees the implementation of the Unified Program. The Unified Program consolidates, coordinates, and makes consistent the administrative requirements, permits, inspection and enforcement activities of six environmental and emergency response programs. The state agencies responsible for these programs set the standards for their respective programs while local governments implement the standards.

TABLE 4.8-3
FEDERAL LAWS AND REGULATIONS RELATED TO HAZARDS AND HAZARDOUS MATERIALS MANAGEMENT

Classification	Federal Law or Responsible Federal Agency	Description
Hazardous Waste Handling	Resource Conservation and Recovery Act of 1976 (RCRA)	Under RCRA, the US EPA regulates the generation, transportation, treatment, storage, and disposal of hazardous waste from "cradle to grave."
	Hazardous and Solid Waste Act	Amended RCRA in 1984, affirming and extending the "cradle to grave" system of regulating hazardous wastes. The amendments specifically prohibit the use of certain techniques for the disposal of some hazardous wastes.
	Toxic Substances Control Act (TSCA)	Code of Federal Regulations Title 40 Chapter 1, Subchapter R – Toxic Substances Control Act – Part 761 Polychlorinated Biphenyls (PCBs) – covers the identification and sampling requirements for PCBs for disposal purposes.
Hazardous Materials Management	Community Right-to-Know Act of 1986 (also known as Title III of the Superfund Amendments and Reauthorization Act (SARA) U.S. Department of Health and Human Services	
Hazardous Materials Transportation	US Department of Transportation (DOT)	DOT has the regulatory responsibility for the safe transportation of hazardous materials. The DOT regulations govern all means of transportation except packages shipped by mail (49 CFR).
	US Postal Service (USPS)	USPS regulations govern the transportation of hazardous materials shipped by mail.
Occupational Safety	Occupational Safety and Health Act of 1970	Fed/OSHA sets standards for safe workplaces and work practices, including the reporting of accidents and occupational injuries (29 CFR).
Structural and Building Components (Lead-based paint, polychlorinated biphenyls, and asbestos)	Toxic Substances Control Act	Regulates the use and management of polychlorinated biphenyls in electrical equipment, and sets forth detailed safeguards to be followed during the disposal of such items.
	US EPA	The US EPA monitors and regulates hazardous materials used in structural and building components and their effects on human health.

The Unified Program is implemented at the local level by 86 government agencies certified by the Secretary of Cal/EPA. These Certified Unified Program Agencies (CUPAs) have typically been established as a function of a local environment health or fire agency. Some CUPAs also have contractual agreements with one or more other local agencies called "participating agencies (PAs)," which implement one or more program elements, under the oversight of the CUPA.

The state agency partners involved in the Unified Program have the responsibility of setting program element standards, working with Cal/EPA on ensuring program consistency and providing technical assistance to the CUPAs and PAs. The following state agencies are involved with the Unified Program:

- **California Environmental Protection Agency (Cal/EPA).** The Secretary of the Cal/EPA is directly responsible for coordinating the administration of the Unified Program. The Secretary certifies Unified Program Agencies. The Secretary has certified 86 CUPAs to date.

These 86 CUPAs carry out the responsibilities previously handled by approximately 1,300 state and local agencies.

- **Department of Toxic Substances Control (DTSC).** The DTSC provides technical assistance and evaluation for the hazardous waste generator program including onsite treatment (tiered permitting).
- **Governor's Office of Emergency Services (OES).** The OES is responsible for providing technical assistance and evaluation of the Hazardous Material Release Response Plan (Business Plan) Program, the California Accidental Release Response Plan (CalARP) Programs, and carrying out FEMA requirements to prepare the State Multi-Hazard Mitigation Plan also known as the State Hazard Mitigation Program.
- **Office of the State Fire Marshal (OSFM).** The OSFM is responsible for ensuring the implementation of the Aboveground Petroleum Storage Act (APSA). It is also responsible for oversight of the Hazardous Material Management Plans (HMMPs) and the Hazardous Material Inventory Statement Programs. These programs tie in closely with the Business Plan Program.
- **State Water Resources Control Board (SWRCB).** The SWRCB provides technical assistance and evaluation for the underground storage tank program.

Hazardous Waste Control Act

The hazardous waste management program enforced by DTSC was created by the Hazardous Waste Control Act (California Health and Safety Code Section 25100 et seq.), which is implemented by regulations described in CCR Title 22, Social Security, Division 4.5, Environmental Health Standards for the Management of Hazardous Waste. This act implements the RCRA "cradle-to-grave" waste management system in California, but is more stringent in its regulation of non-RCRA wastes, spent lubricating oil, small-quantity generators, transportation and permitting requirements, as well as in its penalties for violations. The act also exceeds federal requirements by mandating the recycling of certain wastes, requiring certain generators to document a hazardous waste source reduction plan, requiring permitting for federally exempt treatment of hazardous wastes by generators, and implementing stricter regulation of hazardous waste facilities.

California Department of Industrial Relations, Division of Occupational Safety and Health

The California Department of Industrial Relations, Division of Occupational Safety and Health (Cal/OSHA), assumes primary responsibility for developing and enforcing workplace safety regulations within the state. Cal/OSHA standards are more stringent than federal OSHA regulations and are presented in CCR Title 8. Standards for workers dealing with hazardous materials include practices for all industries (General Industry Safety Orders); specific practices are described for construction and hazardous waste operations and emergency response. Cal/OSHA conducts on-site evaluations and issues notices of violation to enforce necessary improvements to health and safety practices. CCR Title 8 also includes standards for the identification, abatement, and handling of asbestos containing materials (8 CCR 1529 and 5208) and lead-based paint (8 CCR 1532.1).

California Highway Patrol and Department of Transportation

The California Highway Patrol (CHP) and California Department of Transportation (Caltrans) are the enforcement agencies responsible for applicable federal (DOT) and State hazardous materials transportation regulations. Hazardous materials and waste transporters are responsible for complying with all applicable packaging, labeling, and shipping regulations. California Vehicle Code, Division 13, Chapter 5, Article 1 Sections 31303 - 31309 regulate the transport of hazardous materials. The provisions of this section apply to the highway transportation of hazardous materials and hazardous waste and include restrictions on labeling/placards, transportation routes, and other measures to ensure safe transport of regulated materials.

State Water Resources Control Board (SWRCB)

The SWRCB has primary responsibility to protect water quality and supply through the respective Regional Water Quality Control Boards (RWQCBs). As described in Section 4.9, *Hydrology and Water Quality*, RWQCBs are authorized by the Porter-Cologne Water Quality Control Act of 1969 to protect the waters of the state. The RWQCBs provide oversight for sites where the quality of groundwater or surface waters is threatened. Extraction and disposal of contaminated groundwater due to investigation/remediation activities or due to dewatering during construction require a permit from the RWQCBs if the water were discharged to storm drains, surface water, or land.

California Code of Regulations Title 23, Chapter 15, requires that non-hazardous liquid (greater than 42 gallons) or solid (greater than 10 cubic yards) waste must be reported to the RWQCB. Domestic wastewater and refuse releases are required to be reported under different non-Chapter 15 regulations.

California Fire Code

The 2019 California Fire Code is published by the California Building Standards Commission and incorporates by adoption the 2018 International Fire Code of the International Code Council. The California Fire Code is contained as Part 2 of the California Building Code and includes minimum requirements consistent with nationally recognized good practices to safeguard the public health, safety and general welfare from the hazards of fire, explosion or dangerous conditions in new and existing buildings, structures and premises, and to provide safety and assistance to fire fighters and emergency responders during emergency operations. The California Building Code is updated triennially and the 2019 version became effective on January 1, 2020.

Medical Waste Management Act

Within the regulatory framework of the Medical Waste Management Act, the Medical Waste Management Program of the California Department of Health Services (CDHS) ensures the proper handling and disposal of medical waste by permitting and inspecting medical waste offsite treatment facilities and transfer stations throughout the state. The CDHS also oversees all medical waste transporters. UCSF works with San Francisco Department of Public Health (SFDPH) to ensure the Medical Waste Management Program is enforced.

Radioactive Materials

Pursuant to the federal Atomic Energy Act, which requires states to assume responsibility for the use, transportation, and disposal of low-level radioactive material and for the protection of the public from radiation hazards, the Radiologic Health Branch (RHB) of the CDHS administers the state's Radiation Control Law, which governs the storage, use, transportation, and disposal of sources of ionizing radiation (radioactive material and radiation-producing equipment). Radioactive material regulations require registration of sources of ionizing radiation, licensing of radioactive material, and protection against radiation exposure. The RHB also regulates the transportation of radioactive materials and disposal of radioactive waste. Users of radioactive materials must maintain detailed records regarding the receipt, storage, transfer, and disposal of such materials. State regulations concerning radioactive substances are included in 17 CCR. The regulations specify appropriate use and disposal methods for radioactive substances, as well as worker safety precautions and worker health monitoring programs.

California Department of Health Care Access and Information

The California Department of Health Care Access and Information [HCAI, formerly Office of Statewide Health Planning and Development (OSHPD)] is a department of the California Health and Human Services Agency. HCAI serves as the regulatory building agency for all hospitals and nursing homes in California. Its primary goal in this regard is to ensure that patients in these facilities are safe in the event of an earthquake or other disaster, and to ensure that the facilities remain functional after such an event in order to meet the needs of the community affected by the disaster.

Aboveground and Underground Storage Tanks

The SWRCB administers the Aboveground Storage Tank (AST) Program. Facilities that store petroleum in a single tank greater than 1,320 gallons or facilities that store petroleum in ASTs or containers with a cumulative storage capacity of greater than 1,320 gallons are subject to SWRCB regulations. The AST Program requires that the owners or operators file a storage statement, pay a facility fee, and prepare and implement a federal Spill Prevention Control and Countermeasure (SPCC) Plan. The SPCC Plan must discuss the procedures, methods, and equipment in place at the facility to prevent discharges of petroleum from reaching navigable waters.

State laws governing underground storage tanks (UST) specify requirements for permitting, construction, installation, leak detection monitoring, repairs, release monitoring, corrective actions, cleanup, and closure. The State laws are codified in the Health and Safety Code Division 20, Chapter 6.7 (supplemented by California Code of Regulations (CCR) Title 23, Chapters 16 and 17). The SFDPH and the SFFD are the local agencies designated to permit and inspect USTs and ASTs and implement applicable regulations.

University of California

UCSF Safety Programs, Plans and Policies

Academic Administration

Radiation Safety (Policy 100-23)

This policy establishes guidelines and responsibilities for the use of any and all sources of ionizing radiation at UCSF facilities, including but not limited to, responsibilities of the Radiation Safety Committee (see below), Radiation Safety Officer, and Principal Investigator.

Health and Safety

Emergency Management (Policy 550-23)

This policy delineates campus, departmental, student, staff, and faculty responsibilities to ensure emergency preparedness and responsiveness. It addresses the statutory authorities and regulations related to the responsibilities of UCSF Office of Environmental Health and Safety (EH&S), UCSF Police Department and other UCSF entities in management and coordination of emergency response, and use of the California Standardized Emergency Management System (SEMS).

Chemical Safety (Policy 550-24)

This policy establishes requirements and responsibilities for the safe use of hazardous chemicals in all facilities at UCSF. It is based on federal, State, and local regulations and UCSF's commitment to providing a safe environment for all UCSF employees, students, patients, contractors, visitors and volunteers. This includes policies for training, hazard communication, Standard Operating Procedures, safe storage of hazardous chemicals, engineering controls, personal protective equipment, hazardous waste, and shipping and transportation.

Workplace Safety and Environmental Protection (Policy 550-26)

This policy requires all UCSF operations to be conducted in compliance with applicable federal, State and local regulations, and when appropriate, with accepted environmental and workplace safety standards that promote personal safety, accident and injury prevention, and environmental protection. The policy applies to all UCSF employees, contractors, students and visitors. The policy provides that EH&S will assist in ensuring safety, protecting the environment, and complying with related laws and regulations.

UCSF Office of Environment, Health and Safety

EH&S oversees UCSF's health and safety operations including the management of hazardous materials and wastes. EH&S programs include Environmental Protection, Biosafety, Chemical Safety & Industrial Hygiene, Controlled Substances, Ergonomics, Fire & Life Safety, Injury Illness and Prevention Program, Public Health, and Radiation Safety. EH&S provides key resources in the planning, development and implementation of environmental and health and safety training programs. EH&S also conducts routine surveys of campus laboratories and facilities to ensure compliance with regulatory requirements in the transport, use, storage and disposal of hazardous materials. Hazardous materials tracking and reporting is done through an online chemical inventory database system maintained by authenticated hazardous materials users. EH&S also reviews

proposed plans for new campus facilities and remodels to address health, safety, and environmental risks associated with activities conducted in the buildings, in accordance with applicable environmental and health and safety laws, codes, and regulations. Operations are guided by EH&S policies and manuals such as the Standard Operating Procedures, Chemical Safety Policy, Safe Use and Storage of Chemicals, Spill Cleanup Procedure, Medical Waste Management Plan, Radiation Safety Manual, Laboratory Design Guide, Personal Protective Equipment Policy, Disposal of Chemicals, some of which are described below.

UCSF Safety Committees

UCSF's Safety Committees are campus committees that are mandated by regulatory and policy requirements, including from the Nuclear Regulatory Commission (NRC), California Department of Health Services - Radiologic Health Branch, and NIH Guidelines for Research Involving Recombinant DNA Molecules, all of which are encompassed in the appropriate UCSF policies and manuals. In addition to a Laser Safety Committee, UCSF currently maintains the following committees:

- **Institutional Biological Safety Committee (IBC).** The IBC is responsible for 1) ensuring that research conducted at UCSF is in compliance with the NIH Guidelines for Research Involving Recombinant DNA Molecules and the CDC-NIH Biosafety in Microbiological and Biomedical Laboratories; 2) drafting campus biosafety policies and procedures; and 3) reviewing individual research proposals for biosafety concerns.
- **Chemical & Environmental Safety Committee (CESC).** The CESC 1) evaluates technical and safety related aspects of the use of chemicals with impact on the UCSF community; 2) establishes policies, procedures, and practices governing the use of chemicals at UCSF; 3) advises the Chancellor on relevant matters related to chemical safety; 4) assists in the development and implementation of a Chemical Hygiene Plan, and 5) meets regularly to review the current Chemical Safety Program and to consider chemical safety issues identified through the EH&S Campus Safety Program, employee complaints, accidents, or near miss events.
- **Radiation Safety Committee (RSC)/Radioactive Drug Research Committee (RDRC):** The RSC/RDRC 1) establishes policies and regulations governing the use of ionizing radiation at UCSF, 2) considers technical and safety related aspects of the use of ionizing radiation at UCSF, 3) advises the Chancellor on all matters related to radiation safety, and recommends such policies and procedures to protect the safety of users, patients, students, employees and the public, 4) promulgates a Radiation Safety Program (RSP) that satisfies the conditions of the UCSF License, and 5) meets regularly to review the present RSP and to consider radiation safety problems.

UCSF Biological Safety Program

The UCSF Biological Safety Program specifies the practices, procedures, and requirements for safe handling and use of biohazardous materials at UCSF, including the Parnassus Heights campus site. This includes, among other resources, a Biological Safety Program Manual (UCSF, 2020a), Biosafety Standard Operating Procedures, Medical Waste Management Plan (UCSF, 2018a), and Bloodborne Pathogens Exposure Plan (UCSF, 2018b).

UCSF Chemical Safety Program

UCSF hazardous materials storage, use, and disposal locations are subject to permitting with the State Fire Marshal, the State of California, and the SFDPH. All hazardous material inventories are reported annually to the State, along with information useful to First Responders. Hazardous material inventories are also required by The Joint Commission, Cal/OSHA, and the UCSF Chemical Safety Officer to help ensure proper hazard identification and employee safety (UCSF, 2021a).

At UCSF, Principal Investigators (PIs) are responsible for maintaining accurate chemical inventories of all hazardous chemicals used in their laboratories. EH&S maintains a chemical inventory management system called UC Chemicals that allows easy tracking and maintenance of chemical containers using a barcoding system (UCSF, 2021a).

Chemical fume hoods exhaust air through the buildings' ventilation systems and can be used to reduce airborne exposures to chemicals and radioactive materials. Fume hoods used with chemicals are required to have a minimum average face velocity of 100 feet per minute (fpm) and fume hoods used with radioactive materials are required to have a minimum face velocity of 150 fpm. All chemical fume hoods at UCSF are certified annually by EH&S (UCSF, 2021a).

UCSF Radiation Safety Program

UCSF uses radioactive materials under a Type A Broad Scope Radioactive Material License issued by the CDHS RHB. The UCSF Radiation Safety Manual (UCSF, 2021b) and accompanying Radiation Safety Training Manual (UCSF, 2015) outline the regulations and procedures governing radiation safety at UCSF, including its Parnassus Heights campus site. Implementation of the radiation safety program ensures that all sources of ionizing radiation are handled in accordance with the official policies and procedures of the campus and governmental agency requirements. The safety manual also outlines directions for the proper handling and disposal of radioactive wastes, including, but not limited to, dry radioactive waste, liquid radioactive waste, and mixed biohazardous/radioactive waste. In addition, the UCSF Radiation Protection Handbook (UCSF, 2017) serves as a reference document for workers for radiation safety policies, procedures, and general information concerning specific uses of ionizing radiation and radioactivity at UCSF.

UCOP Sustainable Practices Policy

UC Office of the President (UCOP)'s Sustainable Practices Policy establishes goals in several areas of sustainable practices, including, but not limited to, sustainable procurement. Under procedures for Sustainable Procurement, the Sustainable Practices Policy indicates the University will work to remove harmful chemicals from products brought onto campus by increasing the purchase of products and materials that disclose known hazards (e.g. in compliance with the requirements of LEED BD+C – or updated equivalent) and choosing products with reduced concentrations of chemical contaminants that can damage air quality, human health, productivity, and the environment.

UCSF Emergency Operations Plan

UCSF has developed the UCSF Emergency Operations Plan (EOP) to address specific crisis situations, such as a fire, earthquake, or hazardous materials incident. The EOP outlines immediate actions and operations required for a major disaster or emergency in which normal operations are interrupted and special measures must be taken to save and protect the lives of students, patients, employees and the public; provide essential services and operations; and manage UCSF resources effectively during the emergency response. The EOP provides the management structure, key responsibilities, emergency assignments and general procedures to follow during an emergency (UCSF, 2020b).

Emergency response management requires the establishment of a strategic Emergency Operations Center (EOC) staffed by an Incident Management Team (IMT) comprised of staff from various departments which represent critical functions of the University or have resources necessary to respond to emergencies. The EOC is activated during times of emergency, when normal operations are not sufficient to meet the immediate or overwhelming needs that occur. The EOC's critical functions are to manage and coordinate the University's immediate emergency response for life safety and protection of property and assets, resumption and continuation of University functions, and restoration of operations to normal.

During emergency declarations affecting one or more UC system campuses, UCOP may support the affected campus by coordinating UC mutual aid or CalOES assistance via the State Emergency Operations Center. Mutual aid can also come from the City of San Francisco Department of Emergency Management, and various State and federal emergency management services.

UCSF Emergency Management

UCSF Emergency Action Plan

All UCSF campus departments maintain an Emergency Action Plan that outlines each department's preparedness measures and priority actions during emergencies, from small incidents to citywide disasters. These include an inventory of emergency supplies, evacuation plan and routes, location of emergency evacuation assembly areas, emergency communication and after-hours notification plan, and list of campus emergency phone locations (UCSF, 2021c).

UCSF Emergency Notification System

UCSF maintains its WarnMe emergency notification system that is activated if there is an immediate threat to safety or health affecting all or part of the UCSF community, including: life-safety situations; providing updates on events or emergencies as they occur; instructing where to receive aid in the aftermath of an event like an earthquake; conducting occasional drills; and issuing all-clear notices for floor wardens (UCSF, 2021d).

Emergency Telephones

Emergency telephones are strategically located throughout the campus site for use in the event of an emergency.

UCSF 2014 LRDP

The UCSF 2014 LRDP included *Community Planning Principles*, which were produced in collaboration with the UCSF Community Advisory Group:

Community Planning Principles

Environmental Planning and Safety

EP1. Community health is of paramount importance to UCSF. UCSF bioscience facilities and research laboratories are designed by UCSF and inspected by outside regulatory agencies for compliance with applicable city, state, and federal regulatory requirements for environmental health and safety; use and collection of hazardous chemicals and of radioactive and bio-hazardous materials; use of animals; and waste collection.

EP2. Plan and locate UCSF's facilities to avoid hazards to the campus community and surrounding neighborhoods.

4.8.3 Impacts and Mitigation Measures

Significance Criteria

Would implementation of the NHPH:

a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;

b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment;

c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school;

d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would create a significant hazard to the public or the environment;

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area or create a hazard to navigable airspace and/or operations at a public airport;

f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan; or

g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires.

Criteria Not Analyzed

As stated in the Initial Study, there would no impact related to the following topics for the reasons described below:

- ***Airport land use plan.*** There are no airports within 2 miles of the campus site boundary and as a result no impact would occur.
- ***Emergency response or evacuation plan.*** All expansion and improvements with the proposed NHPH would adhere to building code requirements and relevant emergency access and egress measures. All designs would be subject to review and approval by State Fire Marshall. In addition, UCSF design criteria and safety measures would ensure that emergency response abilities remain fully functional. The proposed NHPH would not impair implementation of the UCSF's Emergency Operations Plan (EOP) or interfere with UCSF and/or regional emergency response plans or emergency evacuation plans. Therefore, potential impacts related to emergency response or evacuation would be less than significant.
- ***Wildland fire.*** In compliance with California Code of Regulations Title 14 Section 1299.03 and California Public Resources Code Section 4291, and consistent with the vegetation management practices listed in the Mount Sutro Open Space Reserve Vegetation Management Plan, tree and vegetation removal would occur on the hillside adjacent to the proposed new Hospital to maintain defensible space around the building, and reduce the risk of wildland fire hazard. UCSF's proposed reduction of fire hazards in the Reserve along with compliance with all California Fire Code requirements, and continued implementation of the Mount Sutro Open Space Reserve Vegetation Management Plan would ensure potential hazards from wildfires would be less than significant.

Approach to Analysis

The potential for the creation of significant impacts related to hazards and/or hazardous materials from the construction and operation of the proposed NHPH was determined by a review of the existing conditions, with particular attention paid to the known or potential presence of hazardous materials and hazardous wastes as determined through a search of the environmental databases maintained by the DTSC and SWRCB; and information regarding the types and quantities of hazardous materials used in UCSF's clinical and research activities. Also considered are the existing regulatory requirements regarding the transportation, use, storage, and disposal of hazardous materials and wastes.

In the impacts below, the proposed New Hospital and renovation of Moffitt and Long Hospitals under the NHPH are considered together due to similar environmental impacts that would be associated with transport, use and disposal of hazardous materials in all three hospitals. It should be noted that since Moffitt and Long Hospitals are existing operating uses, the majority of use, disposal and/or transport of hazardous materials effects associated with the continued operation of these hospitals following renovation are part of the existing baseline conditions, and consequently, not new impacts.

Impact Analysis

Impact HAZ-1: Construction and operation of the NHPH could create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. *(Less than Significant with Mitigation*)

New Hospital and Renovation of Moffitt and Long Hospitals

Construction

Exposure to Hazardous Building Materials

The site of the New Hospital is largely developed with the existing LPPI building, several supporting structures, and paved areas. Prior to construction of the New Hospital, as a separate planned project, these existing buildings would be removed from the site, and any related existing hazardous materials associated with those facilities (see Impact C-HAZ-1 for additional detail) would be removed pursuant to applicable federal, State and local regulations. As such there would be no impact related to exposure to existing hazardous building materials at New Hospital site.

Construction activities associated with the proposed renovation of Moffitt and Long Hospitals may involve the potential for encountering hazardous building materials in these buildings. Moffitt Hospital was constructed in 1955 and modernized in 1980; and Long Hospital was built in 1982. As such, these structures were built before certain newer regulatory requirements were enacted (1978 for lead-based paint and PCBs, 1981 for ACMs, and 2004 for mercury in fluorescent lighting) and, as a result, could contain hazardous building materials. Exposure to potential hazardous building materials in these buildings, including ACMs, LBP, PCBs, mercury and other hazardous materials, would only occur during the proposed renovation activities, but could result in adverse health effects if not managed appropriately as required by existing laws and regulations. Once the renovation of Moffitt and Long Hospitals is complete, there would be no further exposure to hazards from building materials during operation of buildings.

As described under the *Regulatory Setting*, above, existing federal, State, and local regulations require demolition or renovation activities that may disturb or require the removal of materials that consist of, contain, or are coated with ACM, LBP, PCBs, mercury, and other hazardous materials to be inspected and/or tested for the presence of hazardous materials. Further, all hazardous materials must be managed and disposed of in accordance with laws and regulations described in the *Regulatory Setting* and further described below.

The identification, removal, and disposal of ACM is regulated under 8 CCR 1529 and 5208. The identification, removal and disposal of LBP is regulated under 8 CCR 1532.1. For both ACM and LBP, all work must be conducted by a State-certified professional. If ACM and/or LBP is determined to exist onsite, a site-specific hazard control plan must be prepared and submitted to the appropriate agency detailing removal methods and specific instructions for providing protective clothing and equipment for abatement personnel (Bay Area Air Quality Management District for asbestos and Cal/OSHA for lead). If necessary, a State-certified LBP and an asbestos removal contractor would be retained to conduct the appropriate abatement measures as required by the plan. Wastes from abatement and demolition activities would be disposed of at a landfill(s) licensed to accept such waste. Once all abatement measures have been implemented, the

contractor would conduct a clearance examination and provide written documentation to UCSF that testing and abatement have been completed in accordance with all federal and State laws and regulations.

In the case of PCBs, the identification, removal, and disposal is regulated by the US EPA under the Toxic Substances Control Act (TSCA) (Title 40 Chapter 1 Subchapter R Part 761) and California regulations (22 CCR 66263.44). Electrical transformers and older fluorescent light ballasts not previously tested and verified to not contain PCBs must be tested. If PCBs are detected above action levels, the materials must be disposed of at a licensed facility permitted to accept the materials. Upon completion of abatement measures, if applicable, the contractor would provide written documentation to EH&S that testing and abatement have been completed in accordance with all federal and State laws and regulations.

In the case of mercury in fluorescent light tubes and switches, the identification, removal, and disposal is regulated under 22 CCR 67426.1 – 67428.1 and 66261.50. Under these regulations, the light tubes must be removed without breakage and disposed of at a licensed facility permitted to accept the materials. Upon completion of abatement measures, if applicable, the contractor would provide written documentation to EH&S that testing and abatement have been completed in accordance with all federal, State, and local laws and regulations.

As discussed above, pursuant to federal and State regulations, the demolition permit process would require appropriate surveying, identification and disposal of any identified hazardous building materials. Therefore, exposure to ACM, LBP and/or other hazardous building materials that would create a potentially significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials would not occur and the impact would be less than significant.

Naturally Occurring Asbestos

San Francisco is among the identified counties where ultramafic bedrock materials are present and have the potential for naturally occurring asbestos fibers, which could be encountered during excavation activities. If present, excavation activities associated with the New Hospital could disturb these fibers causing them to be airborne and potentially adversely affect workers and the public. However, implementation of **NHPH Mitigation Measure HAZ-1** (see below) would ensure that disturbance of underlying materials during any earthwork activities associated with construction of the New Hospital and/or renovation of Moffitt and Long Hospitals would not expose workers or the public to naturally occurring asbestos, if present.

Use of Hazardous Materials during Construction

Construction of the New Hospital and proposed renovation of Moffitt and Long Hospitals would likely require the use of limited quantities of hazardous materials such as fuels, oils, and lubricants for construction equipment; as well as paints, thinners, glues, solvents and cleaners. These hazardous materials are typically packaged in consumer quantities and used in accordance with manufacturer recommendations, and would be transported to and from the campus site. The improper handling and transport of hazardous materials could result in adverse health effects to workers or the public.

As discussed in the *Regulatory Setting*, transportation of hazardous materials is regulated by the DOT, CHP and Caltrans. Together, federal and State agencies determine driver-training requirements, load labeling procedures, and container specifications designed to minimize the exposure of hazardous materials.

See also Impact HAZ-2, below, for a discussion of construction best management practices (BMPs) that would be implemented as part of a Storm Water Pollution Prevention Plan, as required by the NPDES Construction General Permit which would also minimize the potential for an inadvertent release of hazardous materials during construction.

As discussed above, a comprehensive set of federal and State laws and regulations regulate the transportation, management, and disposal of hazardous materials and wastes so as to reduce the potential risks of human exposure. For these reasons, construction of the New Hospital and proposed renovation of Moffitt and Long Hospitals would not result in a significant hazard due to exposure of the public or the environment to hazardous materials or wastes through the routine transport, use, or disposal of hazardous materials during project construction.

Operation

As discussed in the *Environmental Setting*, the use of hazardous materials presently occurs in a variety of campus operations and with the proposed project, their use would be expanded as part of operation of the New Hospital and renovated Moffitt and Long Hospitals. The *Environmental Setting* summarizes the quantities of different hazardous wastes that were generated in Moffitt and Long Hospitals and required disposal in 2019 (approximately 792,800 pounds). UCSF estimates that the increase in use of hazardous materials and disposal of hazardous wastes with operation of the proposed New Hospital and renovated Moffitt and Long Hospital would be roughly proportional to the increase in inpatient beds at the campus site under the NHPH. As a result, the estimated amount of hazardous wastes that would be generated annually at the New Hospital and renovated Moffitt and Hospitals that would require disposal would be approximately 1,138,300 pounds (an increase of about 44 percent, or approximately 345,500 pounds annually, over baseline conditions).

Non clinical uses associated with these hospitals, such as office, retail, kitchen uses within the buildings, would typically include familiar hazardous materials such as toners, paints, and household cleaning products. In addition, activities such as building maintenance and landscaping commonly use fuels, oils, paints, lubricants, solvents, and pesticides. These common types of hazardous materials are typically stored and used in small quantities, and used in accordance with manufacturer recommendations. As such, the routine transport, use, storage or disposal of these materials associated with the hospitals would not be reasonably expected to cause an adverse impact to the public and the environment.

The hospitals would require transport, handling, storage and disposal of other varied and larger quantities of hazardous materials, including biohazardous materials, chemical materials and low level radioactive materials.

Various chemicals that may be used may pose different levels of hazards in their use from acute to chronic illnesses if not managed appropriately. In general, the properties and health effects of chemical substances are unique to the individual materials, although they often can be grouped by chemical types. Operations would continue to comply with all hazardous materials regulatory requirements and UCSF protocols for the campus as detailed above in the *Regulatory Setting* section. UCSF's Chemical Safety Policy establishes requirements and responsibilities for the safe use of hazardous chemicals in UCSF laboratories and clinical facilities. It is based on federal, State, and local regulations, as well as UCSF's commitment to providing a safe environment for the entire UCSF community. The policy covers training requirements, hazard communication, standard operating procedures, safe storage, engineering controls, hazardous waste, security, shipping and transportation, lab close-outs, enforcement, and other aspects of safe and compliant chemical management. UCSF's related Workplace Safety and Environmental Protection Policy addresses various responsibilities for ensuring a safe and compliant workplace, including reporting hazards, inspecting workplaces, and interfacing with regulatory agencies. Current chemical handling training programs used to educate staff would continue with development of the new and renovated hospitals.

To minimize exposure to chemicals in the air, staff would continue to receive required training, take prescribed procedural precautions in accordance with existing regulatory and UCSF handling requirements, such as working under fume hoods and wearing appropriate personal protective equipment, when using chemicals likely to present inhalation exposure hazards. Fume hoods and other engineering controls would be required to meet Cal/OSHA requirements and fume hood ventilation rates would continue to be checked annually by EH&S.

The operation of the hospitals would also require transport, handling, storage and disposal of medical/biological waste. As discussed in the *Regulatory Setting*, UCSF has established policies and procedures and implements a comprehensive system for management of hazardous materials at its facilities, including medical/biological wastes, as overseen by EH&S. UCSF's EH&S is responsible for ensuring compliance with applicable laws and regulations governing the transport, use, storage and disposal of all hazardous materials. The hospitals would comply with existing health and safety practices as well as those federal and State regulations, which would minimize the potential for adverse health effects related to biohazardous waste. Generated wastes would be segregated, handled, labeled, stored and transported to minimize direct or indirect exposure of personnel in accordance with federal and State regulations. Therefore, the impact of generation of biohazardous waste at the hospitals would be less than significant.

Radioactive materials at UCSF are managed in accordance with its Broad Scope Radioactive Materials License. UCSF's radiation safety program, which is required by CDHS RHB and documented in UCSF's Radiation Safety Manual, is designed to provide adequate protective measures against exposure for visitors, students, staff and the community at large. EH&S maintenance processes for radioactive equipment would be extended to the new and renovated hospital facilities under the NHPH, and the Radiation Safety Manual would be implemented and updated, as necessary, to reflect the types, quantities and locations of radioactive materials. Continued implementation of these measures as mandated by State and federal law would occur under the NHPH. Given that adequate safety controls, programs, plans and procedures are

mandated and in place to limit exposure to radiation from radioisotopes and radiation producing machines, the potential for operation of the hospitals to expose persons to significant health or safety risks from radioactive materials is low.

Compliance with hazardous storage and transportation regulations, and continuation of the programs and controls currently in place to manage hazardous materials, as mandated by State and federal laws, would minimize the hazards to workers, the public, and the environment. Therefore, operation of the New Hospital and renovated Moffitt and Long Hospitals would result in a less than significant impact related to the use and disposal of hazardous materials and wastes.

> **NHPH Mitigation Measure HAZ-1:** An Excavation Management Plan shall be prepared by a qualified consultant to include the California Air Resource Board (CARB) Asbestos Airborne Toxic Control Measure (ATCM) for Construction, Grading, Quarrying and Surface Mining Operations to minimize naturally occurring asbestos through the application of best management practices for fugitive dust from construction, grading and excavation operations. Unless site specific testing by a certified laboratory can demonstrate the absence of naturally occurring asbestos in materials to be excavated, construction specifications shall include implementation of this CARB ATCM.
>
> **Significance after Mitigation:** Implementation of an Excavation Management Plan would ensure that if naturally occurring asbestos is present in areas that would be disturbed, exposure risks would be reduced and this impact would be less than significant.

Related Improvements

Widening of Medical Center Way, Replacement of Diesel Fuel Tanks and Medical Gas Tanks, Vegetation Management and Slope Stabilization Improvements, and Parnassus Avenue Pedestrian Bridge and Tunnel

The potential exposure to hazards from the routine transport, use, and disposal of hazardous materials during construction of these related improvements would be similar to that described above for the construction of the New Hospital and renovation of Moffitt and Long Hospitals. As with all construction under the NHPH, construction activities associated with these related improvements would also be required to adhere to the NPDES Construction General Permit and implement appropriate BMPs that would control hazardous materials transport, handling, and disposal. Furthermore, as applicable, the proposed Parnassus Avenue bridge and tunnel, which would be constructed outside the campus site boundary, would be subject to construction site runoff requirements in accordance with the City Public Works Code to minimize construction-related water quality impacts. As such, the construction phase effects from the routine transport, use and disposal of hazardous materials would be less than significant.

As discussed in the *Environmental Setting*, diesel fuel is currently stored on the campus site for use at the CUP for its generators and boilers in emergency situations. The diesel fuel USTs will be replaced with new code-compliant tanks prior to the end of 2025. As such, under the NHPH, the continued storage and use of diesel fuel at the campus site would be carried out in compliance with all applicable State regulations to ensure any potential exposure risks would remain less than significant. Furthermore, any proposed repurposing of the existing diesel tanks for other use (e.g.,

stormwater storage, as described in the *Project Description*, would also be carried out pursuant to all applicable regulations.

In regards to the potential for encountering naturally occurring asbestos during construction associated with those improvements that would involve excavation, the impact would be potentially significant. However, implementation of **NHPH Mitigation Measure HAZ-1** would ensure that disturbance of underlying materials would not expose workers or the public to naturally occurring asbestos, if present. Furthermore, as applicable, improvements that would be constructed outside the campus site boundary would be subject to the requirements of City Health Code Article 22B, San Francisco's Dust Control Ordinance, including implementation of Dust Control Plan. As such, potential effects related to naturally occurring asbestos during construction would be less than significant.

Mitigation: Implement NHPH Mitigation Measure HAZ-1.

Significance after Mitigation: Less than Significant.

Impact HAZ-2: Construction and operation of NHPH would not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. (*Less than Significant*)

New Hospital and Renovation of Moffitt and Long Hospitals

Construction

As noted above in Impact HAZ-1, construction activities associated with the New Hospital and renovation of Moffitt and Long Hospitals would require the use of limited quantities of hazardous materials typically used in the construction process, including fuels, oils, and lubricants for construction equipment; paints and thinners; and solvents and cleaners. These materials would be transported to and from the campus site for use during construction activities. The improper handling and transport of hazardous materials could result in accidental release of hazardous materials, thereby exposing the public or the environment to hazardous materials.

Construction activities that would disturb more than one acre are required to comply with the NPDES Construction General Permit. This permit requires implementation of best management practices (BMPs) that would include measures to address the safe handling of hazardous materials, and in the unlikely event of an inadvertent release, also requires spill response measures to contain any release of hazardous materials. The use of construction BMPs implemented as part of a Storm Water Pollution Prevention Plan (discussed further in Section 4.9, *Hydrology and Water Quality*) as required by the NPDES Construction General Permit would minimize the potential adverse effects from accidental release of hazardous materials or wastes. These BMPs could include, but are not necessarily limited to, the following:

- Establishment of a dedicated area for fuel storage and refueling activities that includes secondary containment protection measures and spill control supplies;

- Requirements to follow manufacturer's recommendations on use, storage and disposal of chemical products used in construction;
- Avoidance of overtopping construction equipment fuel gas tanks;
- Proper containment and removal of grease and oils during routine maintenance of construction equipment; or
- Proper disposal of discarded containers of fuels and other chemicals.

In general, aside from refueling needs for heavy equipment, the hazardous materials typically used on a construction site would be brought onto the site by the construction contractor, packaged in consumer quantities, and used in accordance with manufacturer recommendations. The overall quantities of these materials on the site at any one time would not result in large bulk amounts that, if spilled, could cause significant soil or groundwater contamination. If a spill of hazardous materials on the construction sites were to occur, the spilled materials would be localized because of the relatively small quantities involved, and would be cleaned up in a timely manner in accordance with identified BMPs. See Impact HAZ-4 for a discussion of potential impacts related to encountering previously released (i.e., legacy contamination) hazardous materials or wastes.

As described above, refueling activities of heavy equipment would be conducted in a dedicated and controlled area with secondary containment and protective barriers to minimize any potential hazards that might occur with an inadvertent release. Given the required protective measures (i.e., BMPs) and the quantities of hazardous materials typically needed for construction projects, such as those that would be constructed under the proposed New Hospital and renovation of Moffitt and Long Hospitals, the impact to the public or the environment from an accidental release of hazardous materials during construction would be less than significant.

Operation

Operation of the proposed New Hospital and renovated Moffitt and Long Hospitals under the NHPH would involve continued and expanded use of hazardous materials, as described above in Impact HAZ-1. UCSF would continue to implement existing campus health and safety practices and comply with federal and State regulations related to the use, transport, and disposal of hazardous materials, thus minimizing the potential for an accidental release and providing for prompt and effective cleanup in the unlikely event that an accidental release would occur. Furthermore, UCSF has prepared an Emergency Operations Plan for the campus, which addresses the campus community's planned response to various levels of human-made or natural emergency situations, including the release of hazardous materials. UCSF's hazardous materials safety programs, plans and protocols for the campus site also addresses spill response procedures that include, but are not limited to, specific emergency response instructions, locations of personnel and equipment resources, specialty hazard instructions, and appropriate training. The existing Emergency Operations Plan and safety programs, plans and protocols s would be revised to include the expanded operations that would occur at the three hospitals under the proposed NHPH. Thus, the proposed NHPH would not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials during project operations.

Therefore, because a comprehensive set of enforced laws and regulations as well as existing UCSF policies and procedures govern the transportation and management of hazardous materials to reduce the potential hazards to the public and environment from upset and accident conditions, this impact would be less than significant.

Mitigation: None required.

Related Improvements

Widening of Medical Center Way, Replacement of Diesel Fuel Tanks and Medical Gas Tanks, Vegetation Management and Slope Stabilization Improvements, and Parnassus Avenue Pedestrian Bridge and Tunnel

Construction

The potential for upset and accidental releases of hazardous materials during construction of these related improvements would be similar to that described above for construction associated with the hospitals. Construction activities with these related improvements would be required to adhere to the NPDES Construction General Permit and implement appropriate BMPs that would control hazardous materials transport, handling, and disposal such that the impact under upset and accident conditions would be less than significant.

Operation

Just as with the hospitals, operation of these related improvements would adhere to existing regulatory requirements and/or UCSF policies such that the impact under upset and accidental release conditions would be less than significant.

Mitigation: None required.

Impact HAZ-3: Construction and operation of the proposed NHPH would not emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school. (*Less than Significant*)

As noted above in *Environmental Setting*, there are two public schools, Independence High School, and Grattan Elementary School (which also contains Grattan Nursery and School-Age Children's Center) located within a quarter mile of the NHPH site, as is the Haight Ashbury Community Nursery School. In addition, two child care centers are located within the Parnassus Heights campus site (Kirkham Child Development Center and the UCSF Marilyn Reed Lucia Child Development Center). The Kirkham Child Care Center and Lucia Child Care Center are planned by UCSF to be demolished, and those operations will likely be relocated to a new child care facility at the Proctor building location in the campus site.

New Hospital and Renovation of Moffitt and Long Hospitals

Construction

The potential for emissions of hazardous materials during construction of the New Hospital and renovation of Moffitt and Long Hospitals to adversely affect any of the schools or day care

centers would be relatively low for the same reasons described above in Impact HAZ-1. Construction activities would be required to adhere to the NPDES Construction General Permit and implement appropriate BMPs that would control hazardous materials transport, handling, and disposal such that the potential for emissions to adversely affect existing or proposed schools or daycare centers would be minimized and the impact would be less than significant.

Operation

During operation of the New Hospital and renovated Moffitt and Long Hospitals, these facilities would continue to adhere to existing regulatory requirements and UCSF policies. And, as discussed in Impact HAZ-1, while these new and renovated facilities would increase the total quantities of hazardous materials used at the campus site, there would not likely be a substantive change in hazardous emissions since all transportation, use, storage, and disposal of hazardous materials would be conducted in accordance with applicable federal, State, and UCSF requirements which are designed to minimize exposure. Therefore, operation of these hospitals under the NHPH would not expose existing or future schools and daycare centers near the campus site to hazardous emissions and the impact would be considered less than significant. Please also refer to a health risk assessment associated with implementation of the NHPH presented in Section 4.2, *Air Quality*.

Mitigation: None required.

Related Improvements

Widening of Medical Center Way, Replacement of Diesel Fuel Tanks and Medical Gas Tanks, Vegetation Management and Slope Stabilization Improvements, and Parnassus Avenue Pedestrian Bridge and Tunnel

Construction

The potential for emissions of hazardous materials during construction of these related improvements to adversely affect existing or proposed schools or daycare centers would be similar to that described above for the New Hospital and renovation of Moffitt and Long Hospitals. Construction activities for these related improvements would be required to adhere to the NPDES Construction General Permit and implement appropriate BMPs that would control hazardous materials transport, handling, and disposal such that the potential for adverse effects associated with emissions would be less than significant. Furthermore, any off-site construction would be subject, as applicable, to the City of San Francisco Health Code article 22B and the San Francisco Building Code, which together are the City's Construction Dust Control Ordinance.

Operation

Just as with the New Hospital and renovated Moffitt and Long Hospitals, operation of the related improvements would adhere to existing regulatory requirements and/or UCSF policies such that the impact related to potential exposure of existing or proposed schools or daycare centers to hazardous material emissions would be less than significant.

Mitigation: None required.

Impact HAZ-4: The NHPH would not be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5. However, previously unknown contamination could be encountered during construction and could have the potential to create a significant hazard to the public or the environment. (*Less than Significant with Mitigation*)

New Hospital and Renovation of Moffitt and Long Hospitals

As described above under *Environmental Setting*, in a review of DTSC and SWRCB environmental databases, two cases were identified within the campus site, although neither were within the NHPH site. Both of these cases were closed in accordance with the applicable requirements of regulatory agencies, required no further action, and there is no indication that any known threat to human health or the environment remains.

While there are no database records that would indicate a high probability of legacy contamination to be present at the project site that could adversely affect construction workers or future occupants of the proposed improvements, the possibility exists for future improvements associated with the New Hospital and renovation of Moffitt and Long Hospitals to encounter previously unidentified contamination. If not identified and managed appropriately, future visitors or workers at these sites could be exposed to legacy contaminants. Construction activities could come in contact with contaminated soils, groundwater, or soil vapor that could adversely affect workers, the public or future occupants through soil vapor intrusion.

Preparation and implementation of a Soil Management Plan in accordance with Cal/OSHA standards, as required by **NHPH Mitigation Measure HAZ-4,** would ensure that workers would have the training to identify suspected contamination, and implement protocols for notification and isolation of suspected materials until laboratory confirmation can assess the potential exposure risks.

> **NHPH Mitigation Measure HAZ-4:** Prior to development on the NHPH sites, a Soil Management Plan shall be prepared by a qualified environmental consulting firm to reflect current regulatory requirements and risk management protocols that are in accordance with Regional Water Quality Control Board oversight. The Plan shall include measures to address protocols for identifying, handling, and characterizing suspect contaminated soils. On-site personnel shall attend mandatory pre-project training regarding the Plan. Notification and sampling requirements for adequate characterization shall be in accordance with the overseeing agency (RWQCB or SFDPH) requirements and any required removal or remediation work shall be completed to the overseeing agency's standards prior to occupancy of the new structure.
>
> **Level of Significance after Mitigation:** With the implementation of NHPH Mitigation Measure HAZ-4, the NHPH would not create a significant hazard to the public or the environment as a result of exposure to previously unknown contamination or hazardous release sites. Thus, this impact would be considered less than significant.

Related Improvements

Widening of Medical Center Way, Replacement of Diesel Fuel Tanks and Medical Gas Tanks, Vegetation Management and Slope Stabilization Improvements, and Parnassus Avenue Pedestrian Bridge and Tunnel

Just as with the New Hospital and renovation of Moffitt and Long Hospitals, these related improvements at the campus site that include ground disturbing activities would have the potential to encounter previously unidentified contamination. Implementation of **NHPH Mitigation Measure HAZ-4** would also ensure that suspected contamination at the construction site is appropriately isolated and characterized to protect workers, the public and the environment. Furthermore, the proposed Parnassus Avenue pedestrian bridge and tunnel would be constructed outside the campus site boundary; would involve moving more than 50 cubic yards of soil; and would be located in an area subject to City Health Code Article 22A. Compliance with City Health Code Article 22A, as overseen by the SFDPH, would ensure the potential effect associated with exposure to hazardous materials in soil or groundwater would be less than significant.

Mitigation: Implement NHPH Mitigation Measure HAZ-4.

Significance after Mitigation: Less than Significant.

Cumulative Impacts

This section presents an analysis of the cumulative effects of the NHPH when considered with other past, present, and reasonably foreseeable projects. The geographic scope of potential cumulative hazards and hazardous materials impacts encompasses the NHPH site and immediate surrounding area. Hazardous materials and hazard impacts are generally localized to specific sites/incidents and do not combine with one another in a way to create a greater or more severe hazard, because of the relative infrequencies, the variances in timing, and the existing response measures that tend to contain the vast majority of incidents and releases to very localized areas. Impacts relative to hazardous materials usually depend on the nature and extent of the hazardous materials release, and existing and future soil and groundwater conditions. For example, hazardous materials incidents tend to be limited to a smaller more localized area surrounding the immediate location and extent of a release, and could cause a cumulative impact only if two or more hazardous materials releases overlapped spatially and contemporaneously in a way that could be considered cumulatively considerable.

Impact C-HAZ-1: Construction and operation of the proposed NHPH, in conjunction with other cumulative development within the City of San Francisco, would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials or from risk of upset and accident conditions involving hazardous materials. (*Less than Significant*)

As explained above, construction, demolition and renovation activities proposed under the NHPH would comply with all applicable regulations governing hazardous materials, and subject to those mitigation measures identified in this EIR (Excavation and Soil Management Plans). Similarly,

other on-campus demolition and construction activities (i.e., those planned in the CPHP, and/or previously authorized under the 2014 LRDP that have not yet been implemented), and off-campus demolition and construction activities, would be carried out in accordance all applicable regulations governing hazardous materials and subject to any specific hazardous materials mitigation measures identified for those projects.

As indicated in Impact HAZ-1, the site of the New Hospital contains the existing LPPI building, several supporting structures, and paved areas. A preliminary hazardous materials survey of the existing buildings at the site was conducted, which identified the presence of former commonly-used hazardous materials in the building materials (e.g., asbestos, lead, PCBs, and mercury); and a separate sampling study of soils at the site detected asbestos content (SCA Environmental, 2020). Prior to construction of the New Hospital, as a separate planned project, these existing buildings would be removed from the site, and any existing hazardous materials associated with those facilities and soils would be removed pursuant to applicable federal, State and local regulations.

As discussed above, all potential hazardous materials impacts associated with operation New Hospital and related improvements would be less than significant with compliance with applicable State and federal regulations, and the management of hazardous materials and the continued oversight, guidance and compliance monitoring that would be conducted by UCSF's EH&S. Similarly, other existing or planned clinical and/or research facilities at the campus site would be subject to similar applicable regulations and oversight from EH&S. Off-campus land uses throughout the City of San Francisco include various light industrial and commercial land uses which are subject to similar regulations and internal standard operating procedures which control the use, storage, and disposal of hazardous materials such that routine exposure and release risks from upset and accident conditions are minimized. As a result of these existing regulatory requirements, the potential hazardous materials and hazard impacts would not combine to become cumulatively considerable.

Cumulative health and safety impacts could also occur if NHPH-related off-site hazards were to interact or combine with those of existing and/or planned off-campus hazards. Cumulative health and safety impacts could only occur through the following mechanisms: air emissions; transport of hazardous materials and waste to or from the campus site; inadvertent release of hazardous materials to the sanitary sewer, storm drain, or non-hazardous waste landfill; and potential accidents that require hazardous materials emergency response capabilities. Air emissions are addressed in Section 4.2, *Air Quality*. The NHPH as well as other past, present, and future projects would be required to adhere to existing regulatory requirements for the appropriate handling, storage, and disposal of hazardous materials that are designed to minimize exposure and protect human health and the environment. These requirements include that businesses in the city that handle hazardous materials or wastes would be required to submit business information and hazardous materials inventory forms contained in a Hazardous Materials Management Plan and Hazardous Materials Business Plan. Cumulative increases in the transportation of hazardous materials and wastes would cause a less than significant impact because the probability of accidents is relatively low, and the use of legally required packaging minimizes the consequences of potential accidents. In addition, all cumulative projects in the area would be required to comply with the same laws and regulations as

the NHPH. This includes federal and state regulatory requirements for transporting (Cal/EPA and Caltrans) hazardous materials or cargo (including fuel and other materials used in all motor vehicles) on public roads or disposing of hazardous materials (Cal/EPA, DTSC, SFDPH). The cumulative impact related to hazards and hazardous materials would be less than significant.

Mitigation: None required.

4.8.4 References

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4.9 Hydrology and Water Quality

This section assesses the potential for construction and operation of the New Hospital at Parnassus Heights (NHPH), including the related improvements, to result in significant impacts related to hydrology and water quality. In contrast to the program-level hydrology and water quality impact analysis previously conducted for the CPHP Final EIR, this section provides a project-level impact analysis of the proposed NHPH on those resources. The section contains a description of the existing hydrology and water quality conditions of the campus site and the surrounding areas; describes the regulatory framework, including University plans and policies, and federal, State and local regulations, related to hydrology and water quality; identifies criteria used to determine impact significance, and provides an analysis of the changes in hydrology and water quality associated with the implementation of the NHPH, as well as the identification of feasible measures that could mitigate significant impacts. The section relies in part on the results of a storm drainage design report prepared by Arup in support of the NHPH, and modeling of the NHPH's off-campus downstream effects conducted by Hydroconsult Engineers, Inc. for this EIR (see **Appendix HYD**).

4.9.1 Environmental Setting

Climate

The Bay Area has a Mediterranean climate, with cool, dry summers and mild, wet winters. The mean annual precipitation in San Francisco is approximately 24 inches per year with most of the rainfall occurring between November and March. The average annual temperature in San Francisco is 57.3 degrees Fahrenheit, with the minimum average monthly temperature occurring in December and January (46 degrees Fahrenheit) and maximum average monthly temperature occurring during September (70 degrees Fahrenheit) (U.S. Climate Data, 2021).

Watershed Drainage Basins

The majority of the City of San Francisco is urbanized and covered in impermeable surfaces with few daylighted surface waters, though topographic drainages in some park and open space areas may have ephemeral surface flows during storms. **Figure 4.9-1** presents existing watershed drainage basins in San Francisco. As shown in Figure 4.9-1, the Parnassus Heights campus site straddles two City watershed basins. The west side of the Parnassus Heights campus site is located in the City's Sunset drainage basin within the larger Western Basin; and east side of the campus site - including the NHPH site - is in the City's Channel drainage basin within the larger Eastern Basin.

City of San Francisco Stormwater and Sewage Collection and Treatment

The City's combined sewer system (CSS) is a network of pipes and tunnels that convey combined stormwater and sanitary sewage flows, referred to as combined sewer discharge (CSD), to City wastewater treatment plants.

SFO/D190291.00 - UCSF CPHP EIR/2. Graphics/Illustrator

SOURCE: City of San Francisco, 2011

UCSF New Hospital Parnassus Heights EIR

Figure 4.9-1
San Francisco Drainage Basins

The CSS is roughly divided into two major drainages: the Bayside and the Westside drainage basins. The Bayside drainage basin covers the eastern side of San Francisco and consists of three distinct sewer discharge basins and their associated urban watersheds: North Shore (North Shore watershed); Central (Channel watershed in its entirety - which includes the NHPH site - and a portion of the Islais Creek watershed), and South (remainder of the Islais Creek watershed and the entirety of Yosemite and Sunnydale watersheds).

As discussed further in Section 4.9.3, *Impacts and Mitigation Measures*, all NHPH project flows discharged to the City's CSS would be conveyed east to the City's Bayside treatment, storage and discharge facilities, this EIR focuses the environmental setting on the Bayside collection and treatment facilities and presents a detailed description below. Combined stormwater and wastewater flows from the Bayside drainage basin are conveyed for treatment to the Southeast Water Pollution Control Plant (SEP), located on Phelps Street. The SEP includes facilities that provide both primary and secondary treatment of the combined wastewater and stormwater flows. Primary treatment is the first stage in treatment and includes physical methods to remove floating and settleable solids from raw flows. Secondary treatment at the SEP involves aeration with oxygen to enhance the biological breakdown of the combined flows, followed by secondary clarification for further solids removal. All discharges from the SEP, whether treated to a primary or secondary level, are disinfected using sodium hypochlorite and then dechlorinated using sodium bisulfite to remove any chlorine residual prior to discharge into receiving waters.

On average, the SEP treats approximately 60 million gallons per day (mgd) of combined flows each day. The average dry-weather design flow capacity of the SEP is 84.5 mgd. Consequently, all dry-weather wastewater flow is treated to a secondary level at the SEP. During dry weather, the treated effluent is discharged to San Francisco Bay through the deep water outfall at Pier 80.

During wet weather (generally October through April), the CSS collects large volumes of stormwater runoff in addition to wastewater, and together, they are referred to as wet-weather flows. Depending on the amount of rainfall, wet-weather flows are treated to varying levels before being discharged to the Bay. Up to 150 mgd of wet-weather flows receive secondary treatment at the SEP. The SEP can also treat up to an additional 100 mgd to a primary treatment standard plus disinfection, for a total wet-weather treatment capacity of 250 mgd. Treated wet-weather discharges are discharged to the receiving waters through the Pier 80 outfall or through the Quint Street outfall. Up to an additional 150 mgd of wet-weather flows receive primary treatment plus disinfection at the North Point Wet Weather Facility (NPF), located in the northern side of the city. Primary treated effluent from this facility is discharged through four deep water outfalls on the Bay shore.

The City's CSS also includes underground concrete storage and transport boxes that, during wet weather, temporarily retain the combined stormwater and wastewater flows that exceed the total 400-mgd capacity of the SEP and the NPF for later treatment. When rainfall intensity results in combined flows that exceed the total 400-mgd capacity of the SEP and NPF, and the 125-million-gallon capacity of the storage and transport structures, the excess flows are discharged through 29 CSD structures located along the City's bayside waterfront from the Marina Green to Candlestick Point. Discharges from these structures receive flow-through treatment, which is

equivalent to primary treatment, to remove settleable solids and floatable materials. Wet-weather flows are intermittent throughout the rainy season, and CSD events vary in nature and duration, depending largely on the intensity of individual rainstorms.

All discharges from the City's CSS to San Francisco Bay, through either the outfalls or the CSD structures, are conducted in compliance with the federal Clean Water Act and the State Porter-Cologne Water Quality Control Act by meeting the requirements set forth in the City's National Pollutant Discharge Elimination System (NPDES) permit (RWQCB Order No. R2-2013-0029) for discharges from the SEP, NPF, Bayside Wet Weather Facilities, and Wastewater Collection System (see Section 4.9.2, *Regulatory Framework*, below).

The SFPUC Wastewater Enterprise manages the City's CSS, treatment, and discharge system, and is currently implementing the Sewer System Improvement Program, a 20-year city-wide program to repair and seismically upgrade aging sewer infrastructure. The Sewer System Improvement Program focuses on providing reliable, efficient, sustainable, and environmentally acceptable operation and management of the CSS, and address both critical near-term needs and long-term issues. The plan incorporates adaptations for climate change. The SFPUC is also implementing the Southeast Treatment Plant Improvements Project at the SEP, including improvements to meet current seismic standards, improve operational reliability and flexibility, increase efficiency of treatment processes and protect critical equipment in anticipation of sea level rise.

Campus Site Drainage and Stormwater Collection

The majority of rainfall runoff within the developed areas of the campus site, including the campus core in the north portion of the campus site, and the Aldea Housing complex in the southeast area of the campus site, is captured and routed to UCSF's owned- and maintained stormwater infrastructure within the campus site, and then discharged to the City's CSS collection lines in Parnassus Avenue, Kirkham Street, Irving Street, and Clarendon Avenue. Rainfall that occurs within the campus site (including portions of the Reserve) that is not captured and directed to the CSS either infiltrates into the ground (in landscaped and other pervious areas) or flows overland off-site.

The main existing UCSF collection lines that extend through the New Hospital site are located west of the LPPI building, and along Medical Center Way. These lines are comprised of up to 15-inch-diameter pipes; pipe materials are vitrified clay, polyvinyl chloride, cast iron and steel. A UCSF CSS line that extends west of the LPPI conveys storm and sanitary flows collected west of Medical Center Way, while a storm drain that extends along Medical Center Way collects and conveys stormwater flows from this roadway, and areas to the east from the hillside within the Reserve. These collection lines connect and discharge flows to the City CSS main in Parnassus Avenue. Separate CSS lines serving Moffitt/Long Hospital connect to the City CSS main in Parnassus Avenue (Arup, 2021).

As discussed in greater detail in Section 4.9.3, *Impacts and Mitigation Measures* below, a stormwater subwatershed of approximately 21.6 acres was evaluated for changes in stormwater

and wastewater flows; this includes the NHPH site and the adjacent upstream area within the campus site that contributes storm flows that pass through the NHPH site and are discharged into the City CSS main in Parnassus Avenue. While the area encompassing the NHPH site is largely impervious, when considering the larger study area, approximately two-thirds of the subwatershed consists of pervious surfaces, including forest (i.e., undeveloped land within the Reserve), and landscaping; and approximately one-third of the subwatershed consists of impervious surfaces, including roads, roofs and other paved areas (Arup, 2021).

Groundwater

There are seven groundwater basins in San Francisco. The Parnassus Heights campus site is located within the Westside Groundwater Basin which extends beneath the Sunset District from Golden Gate Park to the San Francisco/San Mateo County line, and from the Pacific Ocean to inland bedrock exposures generally associated with Mount Sutro and Mount Davidson. The principal aquifers for water supply in the basin are the Merced and Colma Formations. Several thousand feet in total thickness, the Merced Formation has been developed for water supply in its upper and middle units which are on the order of 500 and 600 feet thick, respectively. The shallower Colma Formation is near the surface, and is not clearly distinguishable from the upper Merced Formation (SFPUC, 2005).

In April, 2017, the San Francisco Public Utilities Commission (SFPUC) began pumping groundwater from the Westside Groundwater Basin aquifer from approximately 270 feet to 460 feet below the surface. The groundwater is treated and blended with regional drinking water supplies before delivery to consumers for potable use. To date, four groundwater wells have been completed, with two more wells still under construction. The SFPUC plans to continue to add groundwater in order to reach its goal of blending 4 million mgd of treated groundwater with regional water supplies (SFPUC, 2019b).

The Westside Groundwater Basin is routinely monitored for water quality parameters as part of the Groundwater Monitoring Program that provides information summarizing basin-wide groundwater pumping, groundwater levels and quality in the different aquifer systems within the basin, and surface water conditions, most notably in Lake Merced.

Flooding

The Federal Emergency Management Agency (FEMA) administers the National Flood Insurance Program (NFIP) that delineates areas subject to flood hazards on Flood Insurance Rate Maps (FIRMs) for each community participating in the NFIP. The FIRMs show the areas subject to inundation by a flood that has a one percent chance or greater of being equaled or exceeded in any given year. This type of flood is commonly referred to as the 100-year or base flood. Areas on FIRMs are divided into geographic areas, or zones, that FEMA has defined according to varying levels of flood risk. The entire campus site is located in an area that is above the one percent annual chance (100-year) and the 0.2 percent chance (500-year) flood level (FEMA, 2015).

The City, in coordination with the SFPUC, has also developed a 100-Year Storm Flood Risk Map that shows areas of San Francisco where significant flooding from storm runoff is highly likely to

occur during a 100-year storm.[1] This flood map also shows the Parnassus Heights campus site is outside of the 100-year flood zone (SF, 2019).

Water Quality

As described below under "Clean Water Act Section 303(d) and Total Maximum Daily Loads," all states must present the United States Environmental Protection Agency (USEPA) with a list of impaired water bodies, defined as those water bodies that do not meet water quality standards.

Central and Lower San Francisco Bay, and the Central Basin and Islais Creek in San Francisco, are all listed as impaired water bodies. The Regional Water Quality Control Board (RWQCB) has listed the Lower and Central San Francisco Bay as impaired water bodies for the following pollutants: chlordane, dichloro-diphenyl-trichloroethane (DDT), dieldrin, dioxins, furan compounds, mercury, polychlorinated biphenyls (PCBs), invasive species, and trash; with the Central Bay additionally listed for selenium. The RWQCB has listed the Central Basin as an impaired water body for chlordane, DDT, dieldrin, dioxins, furan compounds, mercury, PCBs, selenium, polycyclic aromatic hydrocarbons (PAHs), and invasive species. The RWQCB has listed Islais Creek as an impaired water body for ammonia, chlordane, dieldrin, hydrogen sulfide, PAHs, and sediment toxicity.[2]

In addition, certain San Francisco Bay beaches, including Candlestick Point Beaches, Aquatic Park Beach, and Crissy Field, are listed as impaired for fecal indicator bacteria.[3]

4.9.2 Regulatory Framework

Federal

Clean Water Act

Water quality objectives for all waters of the United States are established under applicable provisions of Section 303 of the federal Clean Water Act (CWA). The CWA prohibits the discharge of pollutants to navigable waters from a point source unless authorized by a NPDES permit. Point sources are defined as any discernible, confined, and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, well, or vessel from which pollutants are discharged. Nonpoint sources come from many diffuse sources, including land runoff, precipitation, drainage, seepage, or hydrologic modification. Because implementation of these regulations has been delegated to the State, additional information regarding this permit is presented under the "State" subheading, below.

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1 In contrast to the preliminary FEMA flood hazards map for San Francisco which show inland flood hazards associated with San Francisco Bay and the Pacific Ocean, SFPUC's Flood Risk Map focuses on flooding that would be attributed to peak storm flows during a 100-year storm event.

2 State Water Resources Control Board, 2010 Integrated Report (Clean Water Act Section 303(d) List/305(b) Report) — Statewide, *http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml*, accessed October 14, 2021.

3 *Ibid.*

Clean Water Act Section 303(d) and Total Maximum Daily Loads

In accordance with Section 303(d) of the Clean Water Act, states must present the USEPA with a list of impaired water bodies, defined as those water bodies that do not meet water quality standards. The Clean Water Act requires the development of total maximum daily loads (TMDLs)[4] to improve the water quality of impaired water bodies. The TMDLs for the San Francisco Bay are presented in the San Francisco Bay Water Quality Control Plan (Basin Plan), which is discussed in more detail below under State regulations. Implementation of this program in the project area is conducted by the RWQCB.

National Pollutant Discharge Elimination System Permits

The NPDES permit system was established in the CWA to regulate municipal and industrial point discharges to surface waters of the U.S. Each NPDES permit for point discharges contains limits on allowable concentrations of pollutants contained in discharges. CWA Sections 401 and 402 contain general requirements regarding NPDES permits. CWA Section 307 describes the factors that the USEPA must consider in setting effluent limits for priority pollutants.

The regulations initially focused on municipal and industrial wastewater discharges in 1972, followed by stormwater discharge regulations, which became effective in November 1990. NPDES permits for wastewater and industrial discharges specify discharge prohibitions and effluent limitations and also include other provisions (such as monitoring and reporting programs) deemed necessary to protect water quality. In California, the State Water Resources Control Board (SWRCB) and the RWQCB implement and enforce the NPDES program. Stormwater sources are diffuse and originate over a wide area rather than from a definable point. The goal of NPDES stormwater regulations is to improve the quality of stormwater discharged to receiving waters to the "maximum extent practicable" through the use of structural and non-structural best management practices (BMPs). BMPs can include the development and implementation of various practices, including educational measures (e.g., workshops informing public of what impacts results when household chemicals are dumped into storm drains), regulatory measures (e.g., local authority of drainage facility design), public policy measures, and structural measures (e.g., filter strips, grass swales, and detention ponds).

For the NHPH site, all stormwater runoff that is not infiltrated onsite is collected and discharged into the existing City infrastructure, which directs the runoff to the SEP described above. The SEP discharges treated effluent to the San Francisco Bay in accordance with its NPDES permit.

Federal Combined Sewer Overflow Control Policy

In 1994, the USEPA adopted the Combined Sewer Overflow (CSO) Control Policy,[5] which became part of the Clean Water Act in December 2000. This policy establishes a consistent national approach for controlling discharges from combined sewers to the nation's waters. Using the NPDES permit program, the permittee is required to implement the following nine minimum

[4] A TMDL is a regulatory term in the U.S. Clean Water Act that describes a plan for restoring impaired waters. The TMDL identifies the maximum amount of a pollutant that a body of water can receive while still meeting water quality standards.

[5] USEPA, Federal Register, Part VII, CSO Control Policy; Notice, April 19, 1994.

controls that constitute the technology-based requirements of the Clean Water Act and can reduce the frequency of CSDs and their effects on receiving water quality.

1. Conduct proper operation and regular maintenance programs for the CSS and CSD structures
2. Maximize the use of the collection system for storage
3. Review and modify pretreatment programs to minimize the effect of non-domestic discharges to the collection system
4. Maximize flow to the SEP and NPF for treatment
5. Prohibit CSDs during dry weather
6. Control solids and floatable materials in CSDs
7. Develop and implement a pollution prevention program focused on reducing the effect of CSDs on receiving waters
8. Notify the public of CSDs
9. Monitor to effectively characterize CSD effects and the efficacy of CSD controls

The City of San Francisco is currently implementing these controls as required by the CSO Control Policy and has also developed a long-term control plan (LTCP) for each drainage basin to optimize operations of the City's CSS collection and treatment system and maximize pollutant removal during wet weather. The LTCP specifies operational parameters that must be met in each drainage basin before a CSD can occur, and includes the following long-term average annual design goals for CSDs.

- Ten CSD events from the Central Sewer Discharge Basin (which includes the NHPH site);
- Four CSD events along the North Shore Sewer Discharge Basin; and
- One CSD event along the Southeast Sector Sewer Discharge Basin.

The CSO Control Policy allows for this annual average to be exceeded in any particular year as long as the long-term average is maintained at the appropriate level. For additional information, see below, under *SEP, NPF, Bayside Wet Weather Facilities and Wastewater Collection System NPDES Permit.*

Executive Order 11988 and National Flood Insurance Program

Under Executive Order 11988, FEMA is responsible for management of floodplain areas, which are defined as the lowland and relatively flat areas adjoining inland and coastal waters subject to a one percent or greater chance of flooding in any given year. Also, FEMA administers the National Flood Insurance Program, which requires that local governments covered by federal flood insurance pass and enforce a floodplain management ordinance that specifies minimum requirements for any construction within the one percent annual chance flood zone. FEMA prepares FIRMs that are used to identify areas prone to flooding.

State

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (Division 7 of the California Water Code) provides for protection of the quality of all waters of the State of California for use and enjoyment by the people of California. The act also establishes provisions for a statewide program for the control of water quality, recognizing that waters of the State are increasingly influenced by inter-basin water development projects and other statewide considerations, and that factors such as precipitation, topography, population, recreation, agriculture, industry, and economic development vary regionally within the State. The statewide program for water quality control is therefore administered most effectively on a local level with statewide oversight. Within this framework, the act authorizes the SWRCB and RWQCBs to oversee the coordination and control of water quality within California.

San Francisco Bay Water Quality Control Plan (Basin Plan)

San Francisco Bay waters are under the jurisdiction of the RWQCB, which established regulatory standards and objectives for water quality in San Francisco Bay in its Water Quality Control Plan for the San Francisco Bay Basin, commonly referred to as the Basin Plan.[6] The Basin Plan is reviewed on a triennial basis and the current plan includes amendments that have been adopted up through April 2018. The Basin Plan identifies existing and potential beneficial uses for surface waters and provides numerical and narrative water quality objectives designed to protect those uses. Identified beneficial uses for Central and Lower San Francisco Bay are industrial service supply, commercial and sport fishing, shellfish harvesting, estuarine habitat, fish migration, preservation of rare and endangered species, fish spawning, wildlife habitat, water contact recreation, noncontact water recreation, and navigation; additionally, processing supply is listed as a beneficial use for Central San Francisco Bay. Identified beneficial uses for the Central Basin and the tidal portions of Islais Creek are commercial and sport fishing, estuarine habitat, wildlife habitat, water contact recreation, noncontact water recreation, and navigation.

Impaired Water Bodies and TMDLs

The USEPA has approved TMDLs for PCBs and mercury in San Francisco Bay, and they have been officially incorporated into the Basin Plan. The RWQCB adopted the San Francisco Bay Watershed Permit (Order No. R2-2017-0041), which addresses mercury and PCBs in municipal and industrial wastewater discharges.[7]

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6 San Francisco Bay RWQCB, *San Francisco Bay Basin (Region 2) Water Quality Control Plan (Basin Plan),* May 4, 2017, as amended, https://www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/planningtmdls/basinplan/web/docs/ADA_compliant/BP_all_chapters.pdf, accessed October 14, 2021.

7 San Francisco Bay RWQCB, *Waste Discharge Requirements for Mercury and PCBs from Municipal and Industrial Wastewater Discharges to San Francisco Bay, Order No. R2-2017-0041, NPDES No. CA0038849*, adopted November 13, 2017, *https://www.waterboards.ca.gov/sanfranciscobay/board_info/agendas/2017/November/5b_final_to.pdf*, accessed October 14, 2021.

The USEPA has also approved TMDLs for bacteria in certain San Francisco Bay beaches (including Candlestick Point Beaches, Aquatic Park Beach, and Crissy Field in San Francisco), and they have been officially incorporated into the Basin Plan. The RWQCB adopted Order No. R2-2016-0021, which amended the Basin Plan for the San Francisco Bay Basin to establish TMDL and Implementation Plan for bacteria in these San Francisco Bay beaches.[8]

General Construction Activity Stormwater Permit

In accordance with NPDES regulations, to minimize the potential effects of construction runoff on receiving water quality, the State requires that any construction activity affecting one acre or more obtain coverage under a General Construction Activity Stormwater Permit (Construction General Permit). The current Construction General Permit is the modified 2017 NPDES Construction General Permit (CGP) for Storm Water Discharges from Construction Activities, effective June 27, 2019. CGP applicants are required to prepare and implement a SWPPP which includes implementing BMPs to reduce construction effects on receiving water quality, including erosion and sediment control measures and measures to reduce or eliminate non-stormwater discharges. Examples of typical construction BMPs in SWPPPs include, but are not limited to: using temporary mulching, seeding, or other suitable stabilization measures to protect uncovered soils; storing materials and equipment so as to ensure that spills or leaks cannot enter the storm drain system or surface water; developing and implementing a spill prevention and cleanup plan; and installing sediment control devices such as gravel bags, inlet filters, fiber rolls, or silt fences to reduce or eliminate sediment and other pollutants from discharging to the City drainage system or receiving waters.

The CGP includes what are known as Construction and Development rule requirements which have non-numeric effluent limitations that apply to all permitted discharges from construction sites (40 CFR 450.21). The effluent limitations are structured to require construction operators to first prevent the discharge of sediment and other pollutants through the use of effective planning and erosion control measures; and second, to control discharges that do occur through the use of effective sediment control measures. Operators must implement a range of pollution control and prevention measures to limit or prevent discharges of pollutants, including those from dry weather discharges as well as wet weather (i.e., stormwater).

Phase II General Stormwater Permit (SWRCB Order Nos. 2003-0005-DWQ and 2013-0001-DWQ)

In 2003, the SWRCB adopted the General Permit for the Discharge of Storm Water from Small Municipal Separate Storm Sewer System (MS4s), SWRCB Order No. 2003-0005-DWQ (Phase II General Stormwater Permit), which applies to small municipal separate stormwater systems, including systems owned and operated by the University of California. A revised permit applying to the MS4 at UCSF was approved in 2013 (Order No. 2013-0001-DWQ). The revised Phase II

[8] San Francisco Bay RWQCB, *Amending the Water Quality Control Plan for the San Francisco Bay Basin to Establish a Total Maximum Daily Load and Implementation Plan for Bacteria in San Francisco Bay Beaches, Order No. R2-2016-0021,* adopted April 13, 2016, *https://www.waterboards.ca.gov/sanfranciscobay/board_decisions/adopted_orders/2016/R2-2016-0021.pdf,* accessed October 14, 2021.

General Permit required UCSF to develop, implement and enforce a Storm Water Management Program designed to minimize the discharge of pollutants into receiving waters; identify appropriate stormwater treatment practices with measurable performance criteria; and ensure that the program includes provisions to address six minimum measures to promote pollutant load reduction. These measures are: public education, public participation and involvement, illicit discharge detection and elimination, construction site runoff control, post-construction runoff control, and pollution prevention and good housekeeping.

The revised Phase II permit also required that plans for UCSF projects that create and/or replace (including projects with no net increase in impervious footprint) more than 5,000 square feet of impervious surface include the following:

- Site design measures such as porous pavement, setbacks, and impervious area disconnections to reduce project site runoff
- Low-Impact Design (LID) standards to effectively reduce runoff and pollutants from the project site, including:
  - Source control measures such as permanent and/or operational source control measures at loading docks, fuel dispensing areas, pools, and other areas;
  - Numeric sizing criteria for stormwater retention and treatment; and
  - Stormwater treatment measures and baseline hydromodification management measures.

SEP, NPF, Bayside Wet Weather Facilities and Wastewater Collection System NPDES Permit

The City maintains waste discharge requirements and NPDES permits for its SEP and its related transport and outfall facilities. The City holds an NPDES permit (RWQCB Order No. R2-2013-0029) issued by the RWQCB in August 2013 that covers the SEP, the NPF, and all of the Bayside wet-weather facilities, and wastewater collection system, including CSDs to San Francisco Bay.[9] The permit specifies discharge prohibitions, dry-weather effluent limitations, wet-weather effluent performance criteria, receiving water limitations, sludge management practices, and monitoring and reporting requirements. The NPDES permit prohibits overflows from the CSD structures during dry weather, and require wet-weather overflows to comply with the nine minimum controls specified in the federal CSO Control Policy, described above, and the City's LTCP.

The SEP NPDES permit does not explicitly regulate the number, volume, duration, or frequency of CSDs from the CSS, but instead requires that the system meets the long-term average annual design goals for CSDs from each applicable sub-basin. The permit also requires the City to monitor the water quality of all CSDs and the efficacy of wet-weather discharge controls. If the CSDs cause a violation of water quality standards in the receiving water, the City must evaluate the LTCP and CSS operation to ensure compliance with applicable water quality standards.

[9] San Francisco Bay Regional Water Quality Control Board, NPDES Permit No. CA0037664, Order No. R2-2013-0029, for City and County of San Francisco Southeast Water Pollution Control Plant, North Point Wet Weather Facility, Bayside Wet Weather Facilities and Wastewater Collection System, adopted August 19, 2013.

Public comments received on prior environmental review of new development at the Parnassus Heights campus site included assertions about observed non-compliance and permit violations related to CSDs from SFPUC facilities. While UCSF is not in a position to verify observed non-compliance, it is acknowledged that existing water quality in the Bay and the Ocean has been negatively affected, on occasions, by CSD discharges, which has affected the beneficial uses of San Francisco Bay waters, and the use of beaches.

University of California

UCOP Sustainable Practices Policy

UCOP's Sustainable Practices Policy establishes goals in several areas of sustainable practices, including, but not limited to, green building, climate protection, sustainable operations, and sustainable water systems. Under procedures for Sustainable Water Systems, the Sustainable Practices Policy indicates that each campus will develop and maintain a Water Action Plan that identifies long term strategies for achieving sustainable water systems. Each Water Action Plan includes a section on Stormwater Management developed in conjunction with the location stormwater regulatory specialist that:

a. Addresses stormwater management from a watershed perspective in a location-wide, comprehensive way that recognizes stormwater as a resource and aims to protect and restore the integrity of the local watershed(s);

b. References the location's best management practices for preventing stormwater pollution from activities that have the potential to pollute the watershed (e.g., construction; trenching; storage of outdoor equipment, materials, and waste; landscaping maintenance; outdoor cleaning practices; vehicle parking);

c. Encourages stormwater quality elements such as appropriate source control, site design (low impact development), and stormwater treatment measures to be considered during the planning stages of projects in order to most efficiently incorporate measures to protect stormwater quality;

d. If feasible, cites relevant and current location stormwater-related plans and permits;

e. Includes, to the extent feasible, full cost evaluation of stormwater management initiatives.

City of San Francisco

Pursuant to the University of California's constitutional autonomy, development and uses on property under the control of the University that are in furtherance of the University's educational purposes are not subject to local land use regulation. However, as discussed further in the Approach to Analysis in Section 4.9.3, below, UCSF has committed to design all new projects and other improvements at the Parnassus Heights campus site to be consistent with requirements of the City's Stormwater Management Ordinance (Article 4.2 of the San Francisco Public Works Code), and the San Francisco Stormwater Management Requirements and Design Guidelines, which are described below.

San Francisco Stormwater Management Requirements and Design Guidelines

The City's Stormwater Management Requirements and Design Guidelines describe the regulatory context for post-construction stormwater control and provide tools to help achieve compliance with its stormwater management requirements, including but not limited to:

- A set of stormwater BMPs;
- A vegetation palette to assist in bioretention best management practice;
- Sizing calculators to determine the required size of each BMP; and
- Examples of green infrastructure.

In accordance with the Stormwater Management Requirements and Design Guidelines, projects that create and/or replace 5,000 square feet or more of impervious surface and discharge to the CSS must implement BMPs to manage the flow rate and volume of stormwater going into the CSS by achieving Leadership in Energy and Environmental Design (LEED®) Sustainable Sites Credit 6.1 (Stormwater Design: Quantity Control).

The Stormwater Management Requirements and Design Guidelines require low-impact development measures to reduce the rate of stormwater runoff and to reduce and delay the volumes of discharge entering the CSS, thereby reducing the frequency of combined sewer overflows, minimizing flooding effects, and protecting water quality. Examples of BMPS that may be implemented include rainwater harvesting, rain gardens, green roofs, and permeable paving.

In addition, the Stormwater Management Requirements and Design Guidelines require use of certain preferred BMPs to the maximum extent feasible before considering use of remaining BMPs. The preferred BMP hierarchy prioritizes infiltration-based BMPs, rainwater harvesting, and vegetated roofs followed by lined bioretention. If none of these BMPs are feasible on site, projects in combined sewer areas can use detention-based BMPs that do not incorporate biotreatment (i.e., detention tanks and ponds) in their site design.

San Francisco Beach Water Quality Monitoring Program

The SFPUC and San Francisco Department of Public Health collaborate to monitor beach water quality in the City. Seventeen beach sites along the perimeter of San Francisco are monitored weekly year-round where water contact recreation is common, including those City beach locations that are identified in the Basin Plan. Water samples are collected and analyzed for three different bacterial indicators of impaired water quality (total coliform, Escherichia coli/fecal coliform, and enterococcus) to determine compliance with the California Sanitation, Healthfulness and Safety of Ocean Water-Contact Sports Areas Regulations, Title 17, California Code of Regulations. When water quality does not meet California standards for water contact recreation, or whenever a CSS discharge occurs that affects a recreational beach, the beach is posted for public notification.[10]

[10] SFPUC Programs, Ocean and Beach Monitoring, https://sfpuc.org/programs/ocean-and-beach-monitoring.

4.9.3 Impacts and Mitigation Measures

Significance Criteria

Would implementation of the NHPH:

a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality;

b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin;

c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:

   i. Result in substantial erosion or siltation on or off site;

   ii. Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on or off site;

   iii. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or

   iv. Impede or redirect flow.

d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation; or

e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

Criteria Not Analyzed

As stated in the Initial Study, there would no impact related to the following topics for the reasons described below:

- ***Decrease groundwater supplies or interfere with groundwater recharge*.** Development under the proposed NHPH could increase impervious surfaces but not enough to interfere with groundwater recharge and the NHPH would not require use of groundwater for construction or operation. Therefore, the proposed NHPH would not substantially deplete groundwater supplies or interfere substantially with recharge.

- ***Risk of release of pollutants due to inundation*.** Based on the location of the campus site outside of a 100-year flood zone, and its elevation and distance to the nearest major body of water, there would be no impact related to risk of release of pollutants due to inundation from a flood, tsunami or seiche.

- ***Conflict with or obstruct implementation of a sustainable groundwater management plan.*** The campus site is not within a medium- or high-priority groundwater basin which requires preparation or implementation of a Groundwater Sustainability Plan. Given these factors, and the additional analyses for other topics in this EIR section, the proposed NHPH would not conflict with or obstruct implementation of a sustainable groundwater management plan, and no impact would occur.

Approach to Analysis

NHPH Stormwater and Wastewater Standards

UCSF has established stormwater and wastewater performance standards that the NHPH must meet to avoid off-site impacts. Accordingly, the NHPH shall:

- Avoid increasing the likelihood of surcharges by exceeding the capacity of the pipes in the City CSS;
- Avoid increasing the extent or duration of ponding or overland flow; and
- Avoid discharges to the City's CSS that could increase the frequency or volume of CSDs to the receiving waters.

To meet the first two (hydraulic) performance standards, UCSF has committed to designing all new projects at the Parnassus Heights campus site that may generate additional stormwater to be consistent with requirements of the City's Stormwater Management Ordinance (Article 4.2 of the San Francisco Public Works Code). In addition, when connections to the City's CSS are being designed, UCSF has committed to analyze the capacity of the adjoining sewer system to ensure that the system can accommodate UCSF's increased flows and/or modified connection points. UCSF may choose to conduct this modeling analysis on its own and submit the analysis to the SFPUC for review, or request that the SFPUC conduct the analysis on UCSF's behalf, subject to reimbursement of the SFPUC's costs by UCSF. If the analysis determines that increased flows may exceed the conveyance capacity of the adjoining downstream CSS, UCSF shall pay its proportional share of the costs of expanding the sewer system to accommodate the increased flows from the Parnassus Heights campus site.

To meet the third (hydrologic) performance standard, UCSF has committed to ensure that the total volume of stormwater discharges from the Parnassus Heights campus site in wet weather is decreased by an amount sufficient to offset flows from any increase in impervious surfaces and any increases in wastewater discharges as a result of the proposed new development. Necessary reductions may be achieved via LID, on-site detention and re-use, on-site detention for discharge, and/or other strategies in conformance with the City's Stormwater Management Ordinance, and may be less than the unmitigated total wet weather discharges from Parnassus Heights campus site if modeling demonstrates there is sufficient storage, pumping, and treatment capacity in the City's CSS to avoid increased discharges to the receiving waters from the CSS discharge structures.

Impact Analysis

Impact HYD-1: Implementation of the NHPH would not have the potential to violate water quality standards or waste discharge requirements, or otherwise substantially degrade surface or groundwater quality. *(Less than Significant)*

NHPH

Construction

Over the course of construction of the NHPH, including the related improvements, the use of construction equipment and other vehicles could result in spills of oil, grease, gasoline, brake

fluid, antifreeze, or other vehicle-related fluids and pollutants. Improper handling, storage, or disposal of fuels and materials or improper cleaning of machinery could result in accidental spills or discharges that could degrade water quality. In addition, the use of equipment and ground disturbing activities could increase erosion, in turn potentially increasing sediment discharged into stormwater that could degrade water quality. As discussed in the Section 4.9.2, *Regulatory Framework*, above, construction of the NHPH would be required to comply with existing regulations designed to reduce or eliminate construction-related water quality effects, including the NPDES CGP and the UCSF Storm Water Program for construction projects on UCSF-owned property.

Before any construction activities commence for any individual project, an application for coverage under the NPDES CGP would be submitted to the San Francisco Bay RWQCB. Before construction could begin, a Stormwater Pollution Prevention Plan (SWPPP) would be developed and a Notice of Intent (NOI) filed with the RWQCB. After the RWQCB confirms the applicability of the CGP, and approves the SWPPP, construction could commence. In accordance with the CGP, UCSF would be required to implement the SWPPP for proposed project to minimize water quality impacts during construction and demolition. The SWPPP would identify pollutant sources within the construction area and recommend site-specific BMPs for the control of sediments in runoff and storage and use of hazardous materials to prevent discharge of pollutants into stormwater. Likely BMPs include, but are not limited to:

- Erosion control practices
- Sediment control practices
- Practices to reduce the tracking of sediment onto public and private roads
- Practices to prevent or minimize wind erosion
- Practices to minimize contact with stormwater
- Construction material loading and unloading
- Waste management and disposal
- Stormwater run-on and run-off controls
- Non-stormwater discharges and management
- Maintenance, inspection, and repair of structural controls
- Spill prevention and control
- Post-construction stormwater management
- Development of a Rain Event Action Plan (REAP)
- Construction site monitoring and reporting
- Water quality sampling and analysis

As a project that would create and/or replace more than 2,500 square feet of impervious surfaces, NHPH would also be required to submit an Erosion Control Plan to UCSF Project Management and Office of Environmental Health and Safety (EH&S) seven days prior to the start of work. Compliance with the NPDES CGP regulations and the UCSF Storm Water Program would prevent the substantial degradation of water quality during construction of the NHPH. These regulatory requirements are designed to ensure that construction projects result in water quality

discharges that are not in violation of water quality objectives, and as such would be effective in ensuring that construction activities result in less than significant impacts related to water quality.

Furthermore, as applicable, any off-site improvements that would be constructed outside the campus site boundary would be subject to construction site runoff requirements in accordance with the City Public Works Code and in compliance with the City's Stormwater Management Ordinance. As such, any off-site construction impacts to water quality would similarly be less than significant.

Operation

The NHPH would result in an increase in peak stormflows generated on the NHPH site, and an increase in wastewater generation associated with increased hospital operations, that would be collected in the University's on-campus CSS and stormdrain system, and hence, discharged off-site into the City's CSS system in Parnassus Avenue, and ultimately, conveyed to City treatment facilities prior to discharge to receiving waters.

In support of the NHPH, Arup prepared a storm drainage design report for UCSF that estimated the increases in stormwater and wastewater that would result from NHPH implementation and developed an estimate of the storage needed to detain peak flows and volumes so that the stormwater and wastewater performance standards established for the project would be met (Arup, 2021). The storm drainage design report used InfoWorks ICM 9.5 hydraulic modeling software to assess baseline and NHPH condition under several design storm events. The stormwater drainage study area included the NHPH site and the adjacent upstream area within the campus site that contributes storm flows through the NHPH site, amounting to an approximate 21.6-acre study area. Stormflows from this study area currently discharge to the City's existing CSS main in Parnassus Avenue, and hence, conveyed east to the SEP for treatment.[11]

As discussed in Section 4.9.1, *Environmental Setting*, approximately two-thirds of the study stormwater subwatershed area currently consists of pervious surfaces, and about one-third consists of impervious surfaces. Under the NHPH, with the proposed New Hospital and related improvements, Arup estimated there would be a small improvement in surface permeability within the watershed study area (i.e., forest acreage would be reduced by approximately 0.2 acres; landscaping/green roof acreage would increase by about 0.3 acres, and roads/roofs would decrease by approximately 0.1 acres, such that there would be a small decrease in impervious surfaces of about 0.1 acres).

Under the NHPH, UCSF's existing 15-inch CSS line on the NHPH site that extends west of LPPI would be removed, and flows would be rerouted via a new 15-inch CSS line east to Medical Center Way, and hence north in Medical Center Way. The routing of UCSF's existing 15-inch CSS within Medical Center Way would remain and be largely unchanged, aside from a proposed replacement of a short pipe section that is aging. Both the existing and new UCSF 15-inch CSS

[11] Please note that within this study area, there may be small areas of incidental exterior drainage that discharge to the City CSS and conveyed stormwater west for treatment at Oceanside Treatment Plant (OSP). However, since these are impervious areas, and would remain impervious under the NHPH, there would be no change in stormflows to the OSP.

lines in Medical Center Way would discharge flows from the NHPH site to the City's existing CSS main in Parnassus Avenue, and hence east to the SEP.

The proposed NHPH would also result in an increase in hospital operations over existing conditions, and consequently, would increase the amount of wastewater generated on the campus site. The storm drainage design report estimated the increase in wastewater flows generated by the New Hospital would be approximately 0.193 cubic feet per second (87 gallons per minute).

To avoid increases in peak CSS flows and volume that would occur with the NHPH (including the increased wastewater flows), the analysis in the storm drainage design report determined that approximately 150,000 gallons of on-campus stormwater storage capacity would be needed. The preferred proposal is to re-purpose the existing underground diesel fuel tanks in Medical Center Way to provide approximately 120,000 gallons of stormwater storage, and install a new underground tank at the Ammonia House site to store an additional 30,000 gallons of stormwater. The storage facilities would provide both retention and detention storage uses, with collected stormwater to be either pumped out to the existing CSS system, and/or re-used for irrigation purposes on the campus site, as appropriate. The proposed on-campus stormwater storage facilities would serve to reduce and/or delay the discharge of NHPH stormwater flows from the campus site into the City CSS system.

In support of this EIR, Hydroconsult Engineers, Inc. conducted modeling using InfoWorks ICM 8.0 modeling software to determine what, if any, impacts would result from the NHPH-related combined flows to the City's CSS system downstream of the proposed NHPH project site (Hydroconsult Engineers, 2021). Specifically, analysis was conducted to determine whether the proposed NHPH, as designed, would meet the NHPH stormwater and wastewater performance standards listed under *Approach to Analysis*, above. The modeling effort considered applicable information from the Arup storm drainage design report, including the proposed NHPH land use changes, proposed on-campus CSS collection and stormwater storage systems, and estimated increases in stormwater and sanitary flows from the campus site.[12]

Water Quality Effects Related to the Capacity of the City CSS

Potential impacts to the capacity of the City's CSS pipes - both immediately downstream of the NHPH project, and downstream of the Channel and North Shore basins - were modeled based on runoff resulting from a 5-year, 3-hour storm under both existing and with project conditions. Modeling showed that as a result of the on-campus storage included in the project, the NHPH project would not measurably increase peak flows and would only slightly increase total flows (by approximately 3,000 gallons) immediately downstream of the NHPH project; and would not result in a measurable increase in peak or total flows downstream of the North Shore and Channel basins. Because of the unmeasurable increase in peak flows and minor increase in total flows, the NHPH project would not increase the likelihood of surcharges or manhole overflows by exceeding the capacity of the pipes in the City's CSS. Therefore, water quality effects related to manhole overflows would be less than significant.

[12] It should be noted that the modeling effort conducted in support of this EIR assumed a higher sanitary flow rate (0.3 cfs) associated with the NHPH than reported in the Arup report (0.193 cfs); and as such, this modeling effort is considered conservative.

Water Quality Effects Related to Flooding or Ponding

Potential impacts related to flooding or ponding - both immediately downstream of the NHPH project, and downstream of the Channel and North Shore basins - were modeled based on runoff resulting from a 100-year, 24-hour storm under both existing and with project conditions. Modeling revealed that as a result of the on-campus storage included in the project, the NHPH project would not measurably increase peak flows or total flows immediately downstream of the NHPH project, or downstream of the North Shore and Channel basins. Because of the unmeasurable increase in peak flows and minor increase in total flows, the NHPH project would not increase the extent or duration of downstream ponding or overland flow. Therefore, water quality effects related to increases in downstream flooding or ponding would be less than significant.

Water Quality Effects Related to Changes in CSDs to Receiving Waters

As discussed in Section 4.9.1, *Environmental Setting*, during wet weather, CSS flows in excess of the combined 400 mgd capacity of the SEP and NPF are discharged through CSD structures. These excess flows receive flow-through treatment (equivalent to primary treatment) in the City's storage and transport boxes and at the CSD structures. A violation of water quality standards or waste discharge requirements, or degradation of surface water quality could potentially result if the project caused an increase in the number and/or volume of CSDs to receiving water.

For potential impacts related to increases in the frequency or volume of CSDs to receiving waters, the modeling analysis considered flows from a typical year, 24-hour storm under both existing and with project conditions. Modeling demonstrates that the NHPH would not result in a measurable increase in the frequency of CSD events or CSD volumes at the study CSD outfall locations within the Channel and North Shore basins. Because stormwater and wastewater discharges from the NHPH would not result in an increase in the frequency or an increase in the volume of CSDs, the impact of the NHPH related to changes in CSDs would be less than significant.

Based on the modeling analysis discussed above, the NHPH would meet each of stormwater and wastewater performance standards UCSF established for the NHPH in order to avoid or minimize off-site flooding and water quality impacts.

Water Quality Effects Related to Additional Sources of Polluted Runoff

As under existing conditions, stormwater runoff from the project site under the NHPH would potentially contain pollutants common in urban runoff, including metals, oils and grease, pesticides, herbicides, nutrients, pet waste, and garbage/litter with no substantive change in the type of pollutants associated with the proposed development.

Consistent with post-development BMP requirements, including LID measures, contained within the NPDES Phase II MS4 permit which are incorporated into UCSF's Storm Water Program; and consistent with the SFPUC's stormwater management requirements, the NHPH would include additional operational stormwater features that would minimize discharge of pollutants and eliminate prohibited non-stormwater discharges as part of the final drainage design. Implementation of LID site design measures such as green roofs, permeable paving, and/or biofiltration features (e.g., biofiltration planters) would be required in the project design and would effectively reduce the amount of impervious surfaces on the project site. Incorporation of these design features would also be effective in minimizing the offsite discharge of stormwater pollutants.

As described above, stormwater runoff would be collected by existing and new on-site stormwater collection infrastructure that would direct the runoff off-site to the City's CSS infrastructure, and convey to the City's SEP, NPF and/or Bayside wet weather facilities for treatment and discharge in compliance with the City's NPDES permit for those facilities.

Given these factors, NHPH discharges would not violate water quality standards, otherwise degrade water quality, or result in additional sources of stormwater pollutants, and the impact would be less than significant.

Summary

Impact HYD-1 discusses the water quality impacts associated with construction and operation of the NHPH. Modeling performed in support of the project demonstrates that with the designed stormwater storage included in the project, the NHPH would avoid increasing the likelihood of surcharges by exceeding the capacity of the pipes in the City CSS, avoid increasing the extent or duration of ponding or overland flow; and avoid discharges to the City's CSS that could increase the frequency or volume of CSDs to receiving waters. Furthermore, compliance with numerous permits would ensure potential impacts related to construction and operational increases in pollutants would be less than significant. Therefore, the construction and operation of the proposed NHPH would not result in discharges that would violate water quality standards or waste discharge requirements, or otherwise substantially degrade surface or groundwater quality.

Furthermore, as applicable, any off-site improvements that would be constructed outside the campus site boundary would be subject to post-construction stormwater controls in accordance with the City Public Works Code and in compliance with the City's Stormwater Management Ordinance. As such, the potential for any off-site improvements to affect water quality would similarly be less than significant.

Mitigation: None required.

Impact HYD-2: Construction and operation of the NHPH would not substantially alter the existing drainage patterns of the site or area, in a manner that has the potential to result in substantial erosion or siltation on- or off- site; would not substantially increase the rate or amount of surface runoff in a manner that would result in flooding on or off site; and would not create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or impede or redirect flow. *(Less than Significant)*

NHPH

Construction

Erosion or Siltation

Ground disturbing activities associated with construction of the NHPH, including clearing, excavation and grading, would temporarily expose underlying soils and has the potential to result in erosion or siltation on- or off-site. There are no natural water or drainage features on the

campus site in the vicinity of where construction would occur under the NHPH, and current flow of stormwater runoff within the NHPH site is largely directed to existing on-site storm drain facilities and discharged to the City's CSS for treatment at the City's SEP treatment plant.

As described above under Impact HYD-1, construction activities associated with the NHPH would be required to comply with the NPDES CGP and UCSF's Storm Water Program. The contractor would be required to prepare and implement a SWPPP that includes erosion and sediment control BMPs to minimize the potential for erosion and sedimentation. BMPs would include, but would not necessarily be limited to, filtering runoff during construction, avoiding heavy grading and earthwork operations during the rainy season, and incorporating landscaping as early as possible. Therefore, with implementation of erosion and sedimentation control BMPs as required by the NPDES CGP, the potential changes to drainage patterns during NHPH construction would have a less than significant impact related to erosion or siltation.

Furthermore, as applicable, any off-site improvements that would be constructed outside the campus site boundary would be subject to construction erosion and sediment control requirements in accordance with the City Public Works Code. Implementation of these requirements, therefore, would minimize the potential for erosion or siltation associated with off-site construction and the impact would be less than significant.

Operation

Erosion or Siltation

As indicated under Impact HYD1, construction of the New Hospital, widening of Medical Center Way, and the installation of new medical gas storage tanks under the NHPH would incrementally change impervious surfaces on the NHPH site over existing conditions, and would result in localized alteration of existing drainage patterns, including the rerouting of a storm drain from its present alignment to an alignment within Medical Center Way. However, the minor changes in drainage patterns would not have the potential to increase erosion or siltation because upon completion of construction, the entire site would be either under buildings, other paved surfaces or under landscaping. Furthermore, UCSF, as a non-traditional municipal discharger, is required to adhere to the NPDES Phase II MS4 permit which includes LID stormwater requirements. The LID stormwater features that could be used to meet these requirements could include green roofs permeable paving and biofiltration planters which can effectively limit the amount and rate of stormwater runoff such that it also reduces the potential for erosion or sedimentation. Incorporating these design measures into the final project designs would not only reduce peak storm flows but would also ensure that the potential for erosion or sedimentation is minimized. Therefore, with adherence to the design measures and LID stormwater requirements of the NPDES Phase II MS4 permit, the potential NHPH long-term impacts related to erosion and sedimentation would be less than significant.

Furthermore, as applicable, any construction outside the campus site boundary would be subject to post-construction stormwater controls in accordance with the City Public Works Code and in compliance with the City's Stormwater Management Ordinance. Therefore, the potential impact for off-site improvements on long-term erosion and siltation would be less than significant.

Flooding and Stormwater Drainage Capacity

As indicated above, the development under the NHPH would incrementally change impervious surfaces over existing conditions, and would result in localized alteration of existing drainage patterns within the NHPH site.

As discussed in Section 4.9.1, *Environmental Setting*, the campus site is not considered susceptible to flooding from 100-year storm events. As under existing conditions, with the completion of the NHPH, stormwater runoff within developed areas of the project site would continue to be collected by on-site stormwater collection facilities and routed off-site to the City's CSS. As described in Impact HYD-1, stormwater drainage improvements would be implemented under the NHPH to adequately collect and convey stormwater water flows through the site. In addition, proposed on-site stormwater storage facilities would ensure that peak flows and total volume of stormwater discharged from the NHPH site to the City's CSS system would be consistent with the performance standards established by UCSF for the NHPH; these stormwater storage facilities would also avoid increasing the likelihood of downstream surcharges and the extent and/or duration of ponding or overland stormflow.

Consistent with post-development BMP requirements, including LID measures, contained in the NPDES Phase II MS4 permit which are incorporated into UCSF's Storm Water Program; and in conformance with the SFPUC's stormwater management requirements, the NHPH would include additional operational stormwater features that minimize discharge of pollutants and eliminate prohibited non-stormwater discharges as part of the final drainage design. Considering the above factors, the potential for impacts related to flooding on- or off-site, stormwater drainage capacity, or additional sources of polluted runoff would be less than significant.

Furthermore, as applicable, any off-site improvements that would be constructed outside the campus site boundary would be subject to stormwater management and design guidelines in accordance with the City Public Works Code. The potential impact related to off-site flooding, stormwater drainage capacity, or additional sources of polluted runoff associated with any off-site improvements would be less than significant.

Impede or Redirect Flow

As noted above, the campus site is not located in a 100-year flood hazard area nor is it identified by SFPUC as an area subject to flooding from 100-year peak storm events. The NHPH site is already developed with stormwater collection facilities, and proposed new stormwater collection facilities at the NHPH site would ensure new development would not impede or redirect flood flows. Consequently, this potential impact would be less than significant.

Mitigation: None required.

Cumulative Impacts

The geographic scope of analysis for cumulative impacts related to hydrology and water quality is the areas of the City of San Francisco that are served by the City's CSS. Potential cumulative impacts would be associated with the off-site discharge of pollutants, including sediment, with construction activities; and operational increases in discharge of stormwater and wastewater flows to the CSS and potential degradation in water quality associated with increases in CSDs to receiving waters.

Impact C-HYD-1: Construction and operation of the NHPH, in conjunction with other cumulative development within the City of San Francisco, would not cumulatively violate water quality standards or waste discharge requirements, or otherwise substantially degrade water quality. ***(Less than Significant)***

Cumulative projects have the potential to discharge pollutants, including sediment, off-site during construction and operational activities, which could degrade runoff directed into the CSS. In addition, cumulative development that would increase flows to the City's CSS without increasing capacity to address the frequency or volume of wet weather overflows could result in water quality impacts.

Other than the development planned on the Parnassus Heights campus site under the CPHP, there is no other notable cumulative development anticipated in the project site vicinity that would contribute construction related discharges of pollutants, or operational increases in wastewater and stormwater flows to the City CSS. CPHP Initial Phase development anticipated by 2030 (e.g., Research and Academic Building, Irving Street Arrival), and CPHP Future Phase development anticipated by 2050, would implement water conservation measures, construction-phase controls and long-term stormwater management controls as needed to meet the hydrologic and hydraulic performance standards established in CPHP Mitigation Measure HYD-1 in the CPHP Final EIR; and subject to the same construction and operational regulatory requirements as those identified for the NHPH, and consistency with the City's Stormwater Management Ordinance. It should be noted that the great majority of new development that would occur on the campus site under the CPHP would be developed in existing developed areas of the campus site, which would limit substantial increases in stormwater flows to the CSS system associated with increases in impervious surfaces.

Other reasonably foreseeable cumulative within the City downstream of the NHPH would also contribute construction and/or operational pollutant discharges in wastewater and stormwater flows to the City CSS. Similar to the NHPH, cumulative projects would be required to implement project-specific BMPs and comply with federal, State, as well as local regulations related to stormwater water quality. These regulations include, but are not limited to, the NPDES CGP and the City's Stormwater Management Ordinance. All projects that disturb more than one acre would include preparation and implementation of a SWPPP to reduce pollutants in stormwater and other non-point source runoff during construction. Projects that create or replace 5,000 square feet or more of impervious surfaces and have existing impervious surfaces greater than 50 percent must decrease the stormwater runoff rate and volume in accordance with the standards in the City's stormwater management requirements. These regulatory requirements also include LID design measures which

must be implemented as part of project design and are intended to minimize off-site discharges of stormwater and reduce pollutant loading.

As discussed in Section 4.9.1, *Environmental Setting*, the SFPUC will continue to implement its Sewer System Improvement Program and Southeast Treatment Plant Improvements Project, which will serve to meet current seismic standards, improve system reliability and further protect water quality.

As discussed in Impact HYD-1, the NHPH would provide on-campus stormwater storage to fully offset project increases in peak stormwater flows and volume and the increased wastewater flows that would be occur under the NHPH. Modeling performed in support of the project demonstrates the NHPH would not increase the likelihood of surcharges by exceeding the capacity of the pipes in the City CSS; would avoid increasing the extent or duration of ponding or overland flow; and would avoid discharges to the City's CSS that could increase the frequency or volume of CSDs to receiving waters. Accordingly, the NHPH project's contribution to any cumulative increases in combined flows to the CSS and via the CSDs to receiving waters would not be cumulatively considerable.

With adherence to these existing regulatory requirements and implementation by UCSF of the proposed stormwater improvements under the NHPH, the NHPH's contribution to the potential cumulative impact related to a violation of water quality standards or waste discharge requirements would not be considerable.

Mitigation: None required.

Impact C-HYD-2: Construction and operation of the NHPH, in conjunction with other cumulative development in the City of San Francisco, would not to cumulatively alter the drainage pattern of the site or area, through the addition of impervious surfaces, in a manner which would result in substantial erosion or siltation on or off site; would not substantially increase the rate or amount of surface runoff in a manner which would result in flooding on or off site; would not create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or impede or redirect flow. *(Less than Significant)*

Erosion or Siltation

Cumulative projects would likely have ground disturbing activities that would locally alter drainage patterns, which, in turn, could result in erosion or siltation in runoff collected by the City's CSS.

However, similar to the NHPH, construction and operation of cumulative projects would be required to implement project-specific BMPs and comply with federal, state, and local regulations related to water quality of stormwater runoff. These regulations include, but are not necessarily limited to, the NPDES CGP and the City's Stormwater Management Ordinance which require that BMPs during construction and operation minimize the potential for erosion or siltation.

Therefore, with adherence to these existing regulatory requirements, the potential cumulative impact related to erosion or siltation would be less than significant.

Flooding and Stormwater Drainage Capacity

Cumulative projects would involve redevelopment and development within what is already a densely developed area with a relatively high percentage of impervious surfaces. However, these cumulative projects could result in increases in impervious surfaces providing additional stormwater runoff that could create or exacerbate flooding and/or exceed the capacity of existing stormwater infrastructure.

As previously discussed, cumulative projects would be required to comply with applicable stormwater runoff regulations, including the City's Stormwater Management Ordinance. The ordinance includes drainage control requirements that address management of peak stormwater flows and even require reducing stormwater flows from existing conditions, in many cases, such that there could be potential reductions in stormwater volumes compared to existing conditions. In addition, like the NHPH, other redevelopment projects could include updates to outdated or undersized stormwater infrastructure that no longer meets current demands or City requirements. Older infrastructure would be replaced with newer infrastructure that could provide increased capacity to accommodate higher volume flows during peak storm events.

Since the NHPH would include upgrades to existing infrastructure, address any increases in impervious surfaces with proposed on-site stormwater storage and implementation of LID stormwater features, similar to what would be required for other current and future cumulative projects, the potential for flooding or exceedances of stormwater infrastructure capacity would be minimized and the cumulative impact would be less than significant.

Impede or Redirect Flow

As noted above, the campus site is located in an upland portion of the City that is not within a 100-year flood hazard area, and is not identified by SFPUC as an area subject to flooding from 100-year peak storm events. As a result, there is no means for the NHPH to combine with other cumulative projects and create adverse effects related to impeding or redirecting flood flows. Accordingly, the NHPH would not result in a considerable contribution to cumulative effects on impedance or redirection of flood flows.

Mitigation: None required.

4.9.4 References

Arup, 2021. *Final UCSF New Hospital at Parnassus Heights Storm Drainage Design Report*. December 6, 2021.

Hydroconsult Engineers, Inc., 2021. *UCSF New Hospital at Parnassus Heights (NHPH) Modeling to Evaluate NHPH Impacts on Downstream Flooding, Sewer Capacity, and Combined Sewer Discharges (CSDs).* December 3, 2021.

Federal Emergency Management Agency (FEMA), 2015. *San Francisco Interim Floodplain Map, NW San Francisco*. November 12, 2015.

San Francisco Water Power and Water (SF), 2019. 100-Year Storm Flood Risk Map. Available at: https://sfplanninggis.org/floodmap/. Accessed August 11, 2021.

San Francisco Public Utilities Commission (SFPUC), 2005. *North Westside Groundwater Basin Management Plan*. April 2005.

SFPUC, 2016. *San Francisco Stormwater Management Requirements and Design Guidelines*. May 2016.

SFPUC, 2019a. Treatment Plant Factsheet*: San Francisco's Wastewater Treatment Facilities*. July 2019.

SFPUC, 2019b. San Francisco Groundwater Supply Project. Available at: https://www.sfwater.org/index.aspx?page=1136. Accessed September 26, 2019

U.S. Climate Data, 2019. *http://www.usclimatedata.com/climate/san-francisco/california/united-states/usca0987.* Accessed August 11, 2021.

4.10 Land Use and Planning

This section assesses the potential for construction and operation of the proposed NHPH to result in significant land use and planning impacts. The section includes a description of the existing environmental setting as it relates to land use and planning, and also provides a regulatory framework that discusses applicable University and local plans and policies. The section presents the significance criteria used to evaluate impacts on land use and planning, and the results of the impact assessment, including any significant impacts and associated mitigation measures.

For purposes of providing distinction between the various components of this project, references made in this EIR to "New Hospital" relate only to the New Hospital portion of the overall project, whereas references made to "NHPH" relate to the overall project, including the New Hospital and its related improvements.

4.10.1 Environmental Setting

Regional Setting

The regional setting for the proposed NHPH is the City and County of San Francisco, a relatively densely developed urban environment that is built out in most areas. Few large tracts of vacant or underused land are available for new development. San Francisco consists of a number of neighborhoods, each with its own unique physical characteristics and mix of land uses.

Local Setting

The Parnassus Heights campus site occupies about 107 acres of land on and at the base of Mount Sutro in the Inner Sunset mixed-use neighborhood. As illustrated in Figure 3-1 in Chapter 3, *Project Description*, the campus site is bounded by Carl and Irving Streets to the north, Third Avenue and Fifth Avenue to the west, the Cole Valley/Ashbury Heights neighborhoods and the City's Interior Greenbelt Natural Area to the east, and Clarendon Avenue, Christopher Drive and Crestmont Drive in the City's Forest Knolls neighborhood to the south.

As shown in Figure 3-2, the site of the NHPH is located in the northern portion of the campus site and surrounded largely by medical facilities. Existing buildings occupying the footprint of the proposed New Hospital are the Langley Porter Psychiatric Institute (LPPI) at 401 Parnassus Avenue, and three small support structures (Butler Building, paint shed, and outpatient clinic). LPPI services include an adult inpatient unit, an adult partial hospitalization program, and an adult intensive outpatient program.

Existing buildings immediately west of LPPI include Long and Moffitt Hospitals. Long Hospital (505 Parnassus Avenue) adjoins the south end of the LPPI and extends west and connects to Moffitt Hospital. Moffitt Hospital fronts on Parnassus Avenue and connects to UCSF's Medical Sciences Building to the west. Together, the Long and Moffitt buildings comprise the UCSF Helen Diller Medical Center (Medical Center), which provides inpatient and outpatient services, as well as research and educational facilities. Existing buildings on the north side of Parnassus Avenue across from the NHPH site include Medical Building 1 (400 Parnassus Avenue) and off-campus Medical

Building 2 (350 Parnassus Avenue). Medical Building 1 services include radiology and adult eye care departments. Medical Building 2 services include inpatient and outpatient services.

Off-site moderate and medium-density residential areas are located along Edgewood Avenue to the east, on Parnassus Avenue and Hillpoint Avenue to the northeast, and on Hillway Avenue to the north.

The Mount Sutro Open Space Reserve (Reserve) occupies the central and southern portion of the campus site, with a portion that extends north to Parnassus Avenue along the east side of the NHPH site. Several off-campus parks and open space areas of varying scales are located near the campus site. Golden Gate Park, an approximate 1,000-acre facility housing a variety of local and regional attractions, is located approximately 800 feet north of the NHPH site while the Interior Greenbelt, a 21-acre urban forest, is located immediately adjacent to the eastern boundary of the Reserve.

4.10.2 Regulatory Framework

UCSF

UCSF 2014 LRDP

Each campus within the University of California system is required periodically to prepare a Long Range Development Plan (LRDP), which sets forth concepts, principles, and plans intended to guide future physical growth and development of the campus. Current development at UCSF is guided by the 2014 LRDP, which includes specific policies related to future program development and space needs at all UCSF campus sites, including the Parnassus Heights campus site (UCSF, 2014). Since its adoption, there have been numerous amendments to the 2014 LRDP. The most recent amendment to the 2014 LRDP pertaining to the Parnassus Heights campus site, Amendment #7, was approved in January 2021 to incorporate the Comprehensive Parnassus Heights Plan (CPHP) planning concepts and proposals, and make other necessary conforming changes, including: changes to functional zones; revisions to the Parnassus Heights campus site space program; update to the projected population; revisions to existing planning agreements, including revisions to the Regents' Resolution; and an update to the UCSF Greenhouse Gas Reduction Strategy (UCSF, 2021).

The 2014 LRDP identifies campus-wide objectives and objectives specific to the Parnassus Heights campus site. The following 2014 LRDP objectives relate to land use as it pertains to the proposed NHPH:

Campus Wide Objectives[1]

1. **Respond to the City and Community Context**

   B. Acknowledge and respond to local zoning and height and bulk limitations to the extent possible.

[1] Amendment #7 included a revision to the campus wide objectives that states "In recognition of the substantial space need associated with the NHPH, and the need for proximity to existing hospitals, Objectives 1B and 1C do not apply to the NHPH. However, efforts will be made during the design process to come as close as possible to meeting these objectives, where feasible. Please refer to site-specific objectives for the Parnassus Heights campus site and to the Physical Design Framework for applicable objectives and design guidelines." (Amended by 2014 LRDP Amendment #7).

C. Design new buildings to be sensitive to the surrounding neighborhood and landscape, taking into account use, scale, potential noise generation, and density.

D. Incorporate pedestrian-friendly urban design principles to relate campus buildings to surrounding streetscape and neighborhoods.

2. Accommodate UCSF's Growth Through 2035

A. Meet physical needs for growth in research, clinical, and instructional programs at appropriate locations.

D. Locate programs and activities at campus sites where they are suitable and compatible with UCSF's missions, and best foster collaboration, accommodate interdependent programs and reinforce academic and operational relationships.

E. Locate buildings in accordance with campus site-specific objectives, functional zones, and other LRDP elements related to open space, transportation, and utilities.

F. Site and design buildings and develop open space in accordance with the universal planning and design principles contained in UCSF's *Physical Design Framework.*

3. Ensure UCSF'S Facilities are Seismically Safe

A. Ensure inpatient facilities meet state seismic requirements, as set forth in the *Alquist Seismic Safety Act* (SB 1953), by constructing and maintaining modern, seismically safe hospitals and facilities that will remain operational in the event of a major earthquake.

B. Plan new facilities and implement improvements to comply with UC's Seismic Safety Policy, to ensure a seismically safe environment for UCSF patients, visitors, physicians and staff.

C. Designate buildings for renovation, demolition, and replacement as warranted.

4. Promote Environmental Sustainability

A. Optimize the use of existing facilities, sites, and campus space through repurposing, renovation, densification and consolidation where appropriate.

Site Specific Objectives

1. Parnassus Heights

A. Continue to promote excellence and leadership in health science education, maintaining the Parnassus Heights campus site as the central location for classroom instruction.

B. Ensure that adequate space is provided to foster collaboration and to facilitate the inter-dependence and connectivity for operational efficiency and effectiveness of instruction, clinical, research and support uses in close physical proximity to each other.

C. Ensure that Long Hospital and the New Hospital Addition have adequate clinical and administrative support and are aligned with education, research and specialized care programs and support that remain at the campus site.

E. Conform to the space limits and population estimates established in the Regents' Resolution Regarding the Parnassus Heights Campus Site, as amended.

F. Preserve the Mount Sutro Open Space Reserve as permanent open space, and serve as the steward of the Reserve by maintaining and expanding the trail system and by ensuring the safety of visitors and neighboring structures.

UCSF Functional Zones

The Land Use element of the 2014 LRDP includes functional zone maps for all UCSF campus sites, including the Parnassus Heights campus site, to provide guidance for where certain types of uses are best located based on desired land use adjacencies and other geographic considerations. **Figure 4.10-1** presents the existing functional zones at the Parnassus Heights campus site. The 2014 LRDP includes seven categories of functional zones for the Parnassus Heights campus site: Research, Clinical, Support, Housing, Open Space, Open Space Reserve, and Parking. As shown in Figure 4.10-1, the site for the proposed New Hospital is located in the Clinical zone, and the existing Moffitt and Long Hospitals are located in the Clinical and/or Support zones. The sites for the proposed related improvements under the NHPH are also located in Clinical and/or Support zones, with the exception of the proposed medical gas tank replacement project, and vegetation management and slope stabilization improvements, which are partially located in the Open Space Reserve zone.

CPHP

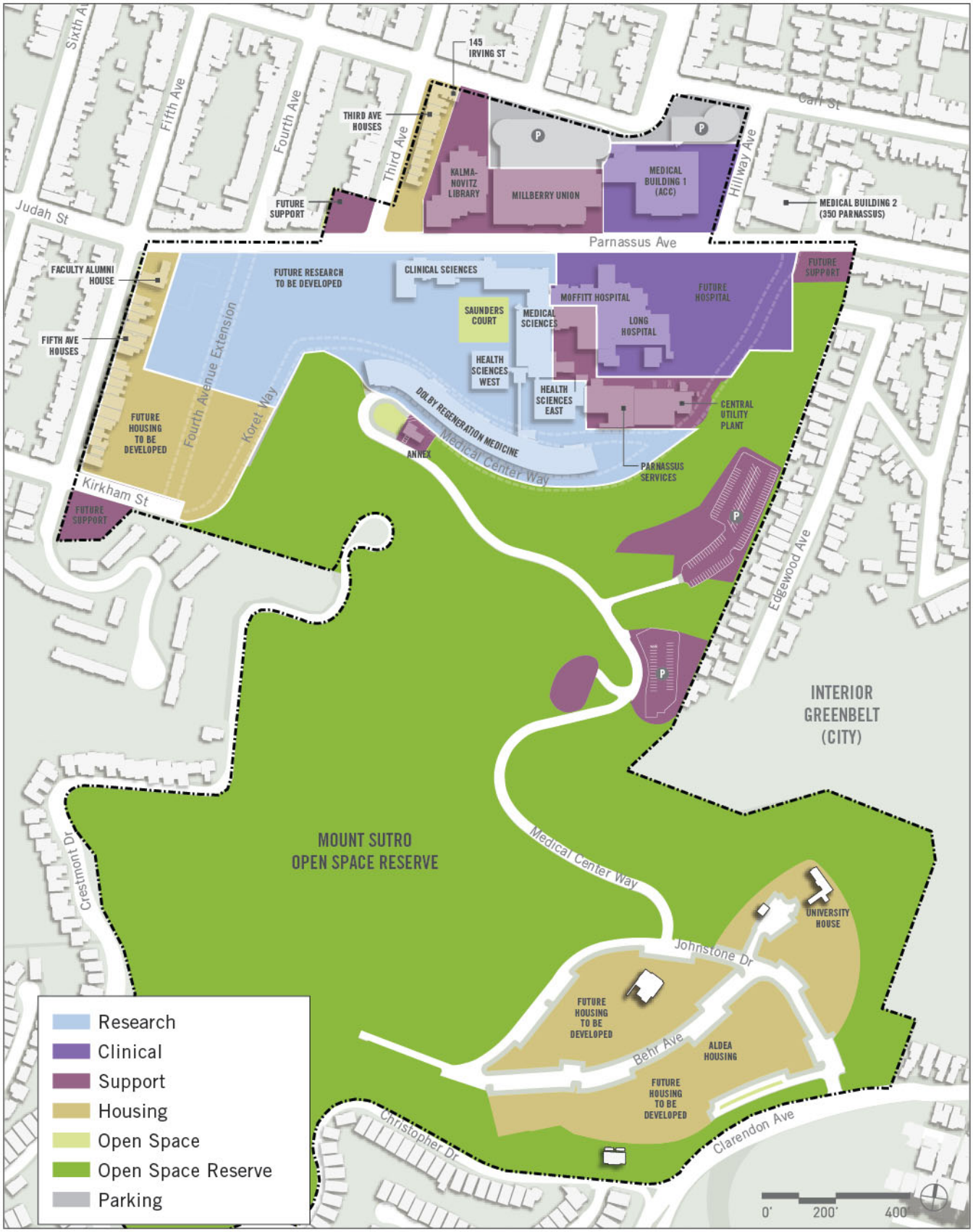
The CPHP objectives for the New Hospital are presented in Chapter 3, *Project Description*. The following additional campus wide CPHP objectives are specific to space and urban design objectives that relate to the NHPH (UCSF, 2020a):

Space

- Revitalize the aging Parnassus Heights campus to enhance its place as a premier educational, research, and clinical institution -- one that draws in research and clinical faculty, staff, students, and trainees.
- Fulfill the need for contemporary research, educational, clinical, and support spaces that have been lacking at Parnassus Heights for decades.
- Connect buildings and spaces at multiple levels to foster collaboration that facilitates learning and scientific discoveries.
- Facilitate patient/pedestrian safety and functional efficiency by connecting campus buildings across and under Parnassus Avenue.

Urban Design

- Improve the campus's functional organization and foster intuitive wayfinding.
- Develop a framework of open spaces that enhance the campus environment by connecting people to nature.
- Create welcoming spaces for enhancing the patient/visitor experience throughout the campus site.
- Enhance connectivity between the campus site and the surrounding community.



SFO/19xxxx/D190291.01 - UCSF NHPH ER/06 Graphics-GIS-Modeling/Illustrator

SOURCE: UCSF, 2020

UCSF New Hospital Parnassus Heights EIR

Figure 4.10-1
Existing Functional Zones at Parnassus Heights

UCSF Physical Design Framework

The UCSF Physical Design Framework as amended in December 2020 sets forth a vision for the physical development of UCSF campus sites in the City consistent with its mission of "Advancing Health Worldwide" (UCSF, 2020b). It serves as the foundation for UCSF to plan and design future projects according to a clear and consistent set of planning and design principles, guidelines and strategies. The Physical Design Framework, together with the Parnassus Heights Design Guidelines (described below) and Facilities Design Guidelines provide guidance to ensure that future projects at the Parnassus Heights campus site enhance the physical environment; and enable UCSF to determine if those future project designs are consistent with these principles, guidelines and strategies.

The following are universal planning and design guidelines applicable to the Parnassus Heights campus site and the NHPH:

Respond to Context While Reinforcing Identity

Guideline 1: Each campus site should be planned and designed to reflect, and in turn shape, its specific urban context.

d. Design improvements to campus streets that are complementary to that of surrounding neighborhoods.

e. Locate active ground floor uses on the street.

f. Ensure that each campus building and open space reinforces a cohesive campus identity.

Guideline 2: …(C)ampus edges should respond to their specific urban context.

a. Bridge campus development and the surrounding city through a transition of building height, massing and use and public open spaces.

Guideline 3: The design of campus buildings should respond contextually to both the immediate campus as well as the surrounding city.

b. Design buildings to respond to site conditions, such as topography by terracing buildings up slopes.

g. Use harmonious horizontal and vertical façade components to reduce the appearance of mass of very large buildings.

h. Integrate rooftop mechanical equipment as part of a building's architecture (e.g., as sculptural rooftop elements), or screen from view behind parapets or other devices.

Welcome the Community

Guideline 1: Special attention should be given to how buildings meet the ground in order to ensure that buildings successfully relate to pedestrians, are scaled to human activity and provide visual interest.

a. Design buildings, especially at the ground level, with consideration to human scale through building articulation, the use of color and materials, the scale and placement

of doors and windows, and the use of building overhangs, arcades or other architectural techniques.

f. Locate loading docks and ground level service bays to be minimally visible but accessible by appropriate vehicles, and screen them as much as possible.

Ensure Connectivity to and Within the Campus

Guideline 1: Campus edges at the public interface should connect the campus to the city in a positive way.

a. Provide neighborhood connectivity to, around, and through campus site where appropriate.

Create Spaces to Promote Collegiality

Guideline 1: Campus open spaces should be comfortable, active, safe and attractive places that are extensions of the public realm of the city.

a. Site and mass campus buildings and their entries to shape and activate sunny and welcoming open space areas, and to minimize shade and wind effects on important campus outdoor spaces.

b. Provide a variety of outdoor spaces on each campus site to meet the different needs of the campus population and community at large.

Lead Through Conservation and Sustainability

Guideline 1: …(B)uildings should be designed according to the following sustainability guidelines.

d. Prepare shade diagrams, wind studies and noise assessments to ensure the comfort and health of pedestrians and open space users.

Parnassus Heights Design Guidelines

The Parnassus Heights Design Guidelines were completed in 2020 to build upon the CPHP to ensure landscape and architectural excellence, strengthen the UCSF identity, and ensure a cohesive human experience on the campus (UCSF, 2020c). These design guidelines outline design goals and guidelines for all future building and landscape projects at the Parnassus Heights campus site. The design guidelines are based on the following design principles, intended to serve as filters incorporated into the design of future buildings and open space on the campus site: 1) Be distinctly local; 2) Create a healing place; 3) Connect Park to Peak; 4) Be welcoming; 5) Enable intuitive wayfinding; 6) Design for human comfort; and 7) Present cohesive identity and unique design.

The Parnassus Heights Design Guidelines address sustainability, design process, and site design, and provide architectural guidelines for campus form and building design, and landscape guidelines that address landscape materials, site furnishings, exterior lighting and planting approach.

1976 Regents' Resolution

The 1976 Regents' Resolution adopted a limit on the amount of built space at the Parnassus Heights campus site (with some housing excluded), commonly referred to as the "space ceiling," within the newly designated campus site boundaries. The resolution set the space ceiling at 3.55 million gross square feet (gsf). The 2014 LRDP amended the Regents' Resolution to exclude other residential square footage within the campus site from the space ceiling. The 2014 LRDP, as amended in 2021, increased the space ceiling to 5.05 million gsf in recognition of the need for program space at the Parnassus Heights campus site, including the New Hospital. Currently, Parnassus Heights campus site contains approximately 3.68 million gsf of space (excluding housing).

The 1976 Regents' Resolution also recognized the principle of limiting the average daily population at the Parnassus Heights campus site to be substantially in accordance with the level projected in the 1976 LRDP (13,400 persons). The 2014 LRDP amended the Regents' Resolution to tie the average daily population goal for the Parnassus Heights campus site to population projections contained in the 2014 LRDP EIR. At the time of adoption of the 2014 LRDP, the average daily population at Parnassus Heights campus site was estimated at approximately 17,950 persons. The 2014 LRDP as amended in 2021, revised the projected estimated daily population estimate from approximately 18,500 persons in 2035 to approximately 25,300 persons in 2050 to reflect changes in the types and uses of space at the campus. The average daily population at the Parnassus Heights campus site in January 2020 was estimated at approximately 17,700 persons.

The amended Regents' Resolution in 2021 also reaffirmed the designation of the Reserve as permanent open space with a minimum size of 61 acres. However, in order to accommodate the New Hospital design under consideration at that time, the boundary of the Reserve was modified to remove an approximate 0.15-acre area east of Medical Center Way, and in exchange an approximate 0.4-acre area within the Surge/Woods parking area was added to the Reserve.

City of San Francisco

Pursuant to the University of California's constitutional autonomy, development and uses on property under the control of the University that are in furtherance of the University's educational purposes are not subject to local land use regulation. However, UCSF reviews local land use policies as planning guidelines and has included those policies that are germane to the analysis of land use impacts in this Draft EIR.

In 1987, the City and UCSF entered into a *Memorandum of Understanding* (MOU) to foster harmonious relations between the City and UCSF regarding the growth and development of UCSF facilities within the City's boundaries. The MOU describes the responsibilities of the City and UCSF for the oversight of their respective land uses and the development, maintenance and use of physical facilities, including methods of communication and consultation regarding UCSF's proposed development.

In January 2021, the City and UCSF entered into a MOU in connection with UCSF's implementation of the CPHP to recognize their mutual interests and goals; address community concerns expressed during the community input process with respect to the CPHP; and to advance investment in UCSF's facilities and programs in research, patient care, education, and community service while improving the aesthetic and functional design of the campus environment. The MOU discusses coordination with the City in implementing the CPHP, and ongoing engagement with the community and small businesses. Further, the MOU focuses on UCSF's future investments in expansive community benefits that were identified with community partners and aligned with City priorities. Such community benefits include additional housing, transit improvements, and workforce training opportunities, among other benefits.

UCSF consults with the City when planning new development, and obtains approvals, such as encroachment permits, if improvements are proposed within City rights-of-way adjacent to campus sites. In addition, it is UCSF's intent to adhere to the extent practicable, to City zoning codes related to building use, height, and bulk limitations; floor area ratios; and parking requirements or restrictions for the purpose of ensuring compatibility with the surrounding areas.

The major land use planning documents of the City are briefly described below.

San Francisco General Plan

The *San Francisco General Plan* provides general policies and objectives to guide land use decisions and includes policies that relate to environmental issues. Although the University is constitutionally exempt from local land use regulation whenever using properties under its control in furtherance of its educational mission, the University strives to be substantially consistent with local policies where feasible. The General Plan contains 10 elements (Commerce and Industry, Recreation and Open Space, Housing, Community Facilities, Urban Design, Environmental Protection, Transportation, Air Quality, Community Safety and Arts) that set forth goals, policies and objectives for the physical development of the City. Two General Plan elements that are particularly relevant to the proposed NHPH are the Urban Design and Transportation elements.

The Urban Design Element seeks to protect and enhance the aesthetic character of San Francisco. Objectives and policies that are relevant to the proposed street improvements along Parnassus Avenue include the following:

> **Objective 1:** Emphasis of the characteristic pattern which gives to the city and its neighborhoods an image, a sense of purpose, and a means of orientation.
>
> > ***Policy 1.5*:** Emphasize the special nature of each district through distinctive landscaping and other features.
> >
> > ***Policy 1.6*:** Make centers of activity more prominent through design of street features and by other means.
> >
> > ***Policy 1.9*:** Increase the clarity of routes for travelers.
>
> **Objective 2:** Conservation of resources which provide a sense of nature, continuity with the past, and freedom from overcrowding.

***Policy 2.2*:** Limit improvements in other open spaces having an established sense of nature to those that are necessary, and unlikely to detract from the primary values of the open space.

The Transportation Element of the General Plan provides policies and objectives related to transportation, congestion management, circulation, transit, alternative modes of transit (bicycles and walking), parking, and movement of goods. Objectives and policies that are relevant to the proposed pedestrian and vehicle circulation improvements along Parnassus Avenue as part of the proposed NHPH include the following:

Objective 23: Improve the City's pedestrian circulation system to provide for efficient, pleasant, and safe movement.

***Policy 23.1*:** Provide sufficient pedestrian movement space with a minimum of pedestrian congestion in accordance with a pedestrian street classification system.

***Policy 23.2*:** Widen sidewalks where intensive commercial, recreational, or institutional activity is present, sidewalks are congested, where sidewalks are less than adequately wide to provide appropriate pedestrian amenities, or where residential densities are high.

***Policy 23.5*:** Establish and enforce a set of sidewalk zones that provides guidance for the location of all pedestrian and streetscape elements, maintains sufficient unobstructed width for passage of people, strollers and wheelchairs, consolidates raised elements in distinct areas to activate the pedestrian environment, and allows sufficient access to buildings, vehicles, and streetscape amenities.

***Policy 23.6*:** Ensure convenient and safe pedestrian crossings by minimizing the distance pedestrians must walk to cross a street.

San Francisco Planning Code

The San Francisco Planning Code regulates development in the City by prescribing the permitted uses and development standards consistent with the land use designations and policies in the *San Francisco General Plan*. The San Francisco Zoning Map defines the locations and boundaries of zoning use, building height and bulk limit districts. Zoning in San Francisco generally consists of multiple layers of districts. Use Districts are the base zoning districts that prescribe permitted land uses and most development standards (except height and bulk). Height and Bulk Districts are mapped separately from Use Districts and prescribe the permitted heights and bulk of buildings.

The site of the New Hospital and related improvements are located in the City's P (Public) Zoning District. P districts refer to land owned by a governmental agency that is in public use, including open space.

The site of the New Hospital and majority of related improvements are within the City's Height and Bulk Districts 65-D and 220-F. The "D" designation limits floor plans above 40 feet to a maximum plan length of 110 feet and a maximum diagonal plan dimension of 140 feet. The "F" designation limits floor plans above 80 feet to a maximum plan length of 110 feet and a maximum diagonal plan dimension of 140 feet. The sites of the proposed medical gas tanks replacement project, and vegetation management and slope stabilization improvements are partially located within the City's Open Space Height and Bulk District; and the proposed

Parnassus Avenue pedestrian bridge and tunnel which are located within the City's Height and Bulk District 80D. In the Open Space Height and Bulk District, the height and bulk of buildings and structures are determined in accordance with the objectives, principles and policies of the General Plan, and where no building or structure or addition thereto is permitted unless it is in conformity with the General Plan.

San Francisco Better Streets Plan

The Better Streets Plan focuses on creating a positive pedestrian environment through measures such as careful streetscape design and traffic calming measures to increase pedestrian safety. The Better Streets Plan includes guidelines for the pedestrian environment, which it defines as the areas of the street where people walk, sit, shop, play, or interact. Generally speaking, the guidelines are for design of sidewalks and crosswalks; however, in some cases, the Better Streets Plan includes guidelines for certain areas of the roadway, particularly at intersections.

4.10.3 Impacts and Mitigation Measures

Significance Criteria

Would implementation of the NHPH:

a) Physically divide an established community?

b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

c) Exceed an LRDP EIR standard of significance by conflicting with local land use regulations such that a significant incompatibility is created with adjacent land uses?

Criterion Not Analyzed

As stated in the Initial Study, there would no impact related to the following topic for the reasons described below:

- ***Physically divide an established communit*y.** No development outside of the established campus boundary is proposed, and no intrusion into, or division of, surrounding residential communities would occur under the proposed NHPH. The campus site would continue to remain as a distinct entity, consisting of educational and medical land uses that are woven into the fabric of the surrounding neighborhood, and the boundary of the campus site would not change as a result of the proposed New Hospital and related improvements. The components of the NHPH that would occur within the Reserve, including the medical gas tanks replacement project, and vegetation management and slope stabilization, would not alter existing trail connections to or within the Reserve. As the proposed NHPH would not physically divide an established community, this topic will not be evaluated further in this section.

Approach to Analysis

The evaluation of land use impacts in this section is based on information obtained from UCSF about the proposed NHPH; review of published environmental documentation and land use

studies of the Parnassus Heights campus site; and review of documents pertaining to land use published by the City and County of San Francisco, including pertinent elements of the General Plan. The analysis discusses whether the proposed NHPH would be consistent with applicable land use plans and policies that were adopted for the purpose of avoiding or mitigating an environmental effect. Land use policies are policies that pertain to the type, location and physical form of new development. For this analysis, policies "adopted for the purpose of avoiding or mitigating an environmental effect" are considered those that, if implemented and adhered to, would avoid or mitigate physical impacts on the environment. For each potential impact, the analysis compares the impact to the standards of significance listed above and determines the impact's level of significance under CEQA.

Impact Analysis

Impact LU-1: Implementation of the NHPH would not cause a significant environmental impact due to a conflict with land use plans, policies and regulations adopted for the purpose of avoiding or mitigating an environmental effect. (*Less than Significant*)

As noted above, pursuant to the University of California's constitutional autonomy, development and uses on property under the control of the University that are in furtherance of the University's educational purposes are not subject to local land use regulation. The University is the only agency with land use jurisdiction over programs and projects proposed on the Parnassus Heights campus site, and the 2014 LRDP, as amended, is the applicable land use plan adopted by the University for guiding the development of the campus site while avoiding or mitigating its environmental impacts. The proposed NHPH is evaluated below for its potential to conflict with the 2014 LRDP, as amended. The proposed NHPH is also evaluated for potential conflict with the 1976 Regents' Resolution, as amended. The proposed NHPH include pedestrian and vehicular circulation access improvements to and from Parnassus Avenue, and accordingly, an evaluation of the potential for those improvements to conflict with City policies that pertain to streets is also provided below.

Consistency with UC Plans and Policies

New Hospital and Renovation of Moffitt and Long Hospitals

Consistency with the 2014 LRDP as Amended

The proposed New Hospital and renovation of Moffitt and Long Hospitals under the NHPH are considered together in this discussion due to the proposed physical connection of these buildings, and their proposed related and interdependent operational activities.

As discussed in Chapter 3, *Project Description*, on January 20, 2021, the Regents approved Amendment #7 to the 2014 LRDP, which incorporated the CPHP planning concepts and proposals and other necessary conforming changes into the 2014 LRDP. The 2014 LRDP, as amended, is the primary planning document for the Parnassus Heights campus site, and will be used by UCSF to guide the development of the campus site. The 2014 LRDP, as amended, sets forth general types of campus development and land uses to support the projected population, and clinical and research growth at the Parnassus Heights campus site. It also sets forth objectives to guide

decisions for future facilities to meet needs over the next 30 years, and it projects the amounts and types of uses of new and/or renovated building space needed during this time frame.

Subsequent to the approval of Amendment #7 to the 2014 LRDP, in support of the NHPH, the University reexamined the hospital program at Parnassus Heights, including the proposed size of the New Hospital, and proposed use of Moffitt and Long Hospitals. Under the proposed NHPH, the size of the New Hospital would be reduced to a proposed 900,000 gsf, and relatedly, the proposed inpatient bed count in the New Hospital would be reduced to 336 beds. However, under the NHPH, Moffitt Hospital and Long Hospital would provide additional inpatient beds, such that the total inpatient bed count at the campus site under the NHPH would be up to 682 beds (a slight increase over that included in the 2014 LRDP, as amended by the CPHP); these beds would be online by December 2030. (See additional discussion under *Consistency with Space Ceiling and Population Estimates*, below.)

The proposed New Hospital and renovation of Moffitt and Long Hospitals would be generally consistent with the applicable planning principles and concepts set forth in the 2014 LRDP, as amended. The 2014 LRDP includes Campus Wide Growth Objective 2.E to locate buildings in accordance with campus site-specific objectives, functional zones, and other elements related to open space, transportation, and utilities. The New Hospital would not require further changes to UCSF's functional zone map; and would be located in the area designated as "future hospital" as shown in Figure 4.10-1. The proposed New Hospital would be located in the Clinical functional zone, which designates clinical activities as the predominant use, with secondary uses including offices, research activities, instruction space, support uses, open space, and parking. The proposed New Hospital would include inpatient services, diagnostic and treatment facilities, clinical support, logistic support uses, and public areas including open space, all of which would be consistent with the Clinical functional zone designation of the project site. Similarly, the uses that would be present in Moffitt and Long Hospitals under the NHPH would be consistent with the Clinical and Support functional zones these hospitals are located within. The New Hospital and renovation of Moffitt and Long Hospitals would also not result in land use conflicts with adjacent existing land uses on the site because these uses are consistent with the planning principles of the 2014 LRDP and the Clinical functional zone.

The New Hospital would connect to the adjacent renovated Moffitt and Long Hospitals, and together, would effectively function as one hospital under the NHPH. As such, the New Hospital and renovation of Moffitt and Long Hospitals would be consistent with 2014 LRDP Parnassus Heights Objective 1.B for facilitating the interdependence and connectivity for operational efficiency and effectiveness of uses in close proximity to each other; and consistent with 2014 LRDP Parnassus Heights Objective 1.C for ensuring the New Hospital Addition has adequate clinical and administrative support and is aligned with other campus site programs that remain at the campus site.

In addition, and in contrast to the preliminary New Hospital design included in the CPHP, the reduced New Hospital size proposed under the NHPH would provide for the building footprint to avoid encroachment into the adjacent hillside in the Reserve east of Medical Center Way. However, encroachment would occur for related improvements – specifically, the proposed

replacement of medical gas tanks as discussed below. As such, the New Hospital would be consistent with 2014 LRDP Parnassus Heights Objective 1.F for preserving the Mount Sutro Open Reserve as open space.

Also, as discussed in Chapter 3, *Project Description*, as part of the renovation of Moffitt and Long Hospitals, pursuant to Senate Bill (SB) 1953, Moffitt Hospital would undergo a seismic retrofit (to bring the building into SPC-4D code compliance) to remain an acute care facility past 2030. Accordingly, this seismic retrofit would be consistent with 2014 LRDP Campus Wide Seismic Objective 3.A, which provides that inpatient facilities meet applicable state seismic requirements. Furthermore, the renovation of Moffitt and Long Hospitals would be consistent with 2014 LRDP Campus Wide Environmental Sustainability Objective 4.A, which promotes the use of existing facilities, sites, and campus space through repurposing, renovation, densification, and consolidation where appropriate.

Given these factors, the proposed New Hospital and renovation of Moffitt and Long Hospitals would have a less-than-significant impact regarding conflict with land use plans and policies adopted for the purpose of avoiding or mitigating an environmental effect.

Consistency with Space Ceiling and Population Estimates

The 1976 Regent's Resolution as amended in 2021 increased the space ceiling limit at the Parnassus Heights campus site from 3.55 million gsf to 5.05 million gsf, and the projected daily population estimate at the campus site was revised from approximately 18,500 in 2035 to approximately 25,300 persons by 2050.

Under the proposed NHPH, the New Hospital would be 900,000 gsf, which is approximately 9 percent less than the 955,000 gsf included in the 2014 LRDP as amended by the CPHP. The proposed renovation of Moffitt and Long Hospitals would increase the net size of these two buildings (by 4,500 gsf for Moffitt Hospital, and up to 5,000 gsf for Long Hospital). The combined building space in the three hospitals under the proposed NHPH would be 1,668,900 gsf, which is approximately two percent less than the 1,709,400 gsf included in the 2014 LRDP as amended by the CPHP. Consequently, the building program at Parnassus Heights with the New Hospital and renovated Moffitt and Long Hospitals under the NHPH would be within the space ceiling limit set in the Regent's Resolution, as amended.

Under the NHPH, there would also be a slight net increase in inpatient beds at Parnassus Heights over that included in the 2014 LRDP as amended by the CPHP (i.e., increase from 675 to 682). This slight increase in the number of inpatient beds would not have a meaningful effect on the projected daily population estimates at the campus site in the Regent's Resolution, as amended.

The proposed building program and population associated with the New Hospital and renovation of Moffitt and Long Hospitals under the NHPH would therefore be consistent with the 2014 LRDP Parnassus Heights Objective 1.E related to conformance with the space limits and population estimates established in the Regents' Resolution as amended; and the impact would therefore be less than significant.

Consistency with the UCSF Physical Design Framework

The proposed New Hospital and renovation of Moffitt and Long Hospitals, would be generally consistent with the applicable universal planning and design guidelines set forth in the UCSF Physical Design Framework, as amended.

Consistent with the Physical Design Framework guideline to respond to topography by terracing buildings up slopes,[2] along the east face of the New Hospital's podium, each ascending floor of the podium would progressively step out to follow the contours of the adjacent hillside in the Reserve. Consistent with the Physical Design Framework guideline to reduce the appearance of the building mass,[3] the New Hospital would be divided into three distinct stacked horizontal layers, and incorporate terracing to break up the overall mass of the building (see Impact LU-2 for additional detail). Consistent with the Physical Design Framework guideline to integrate rooftop mechanical equipment as part of a building's architecture,[4] rooftop mechanical equipment would be hidden from view behind perimeter screening. Consistent with the Physical Design Framework guideline to screen loading docks from view,[5] the loading docks for the New Hospital would be located behind Moffitt and Long Hospitals, as under existing conditions. Consistent with the Physical Design Framework guideline to provide outdoor space,[6] the New Hospital would include an elevated outdoor publicly accessible terrace on Level 6, including a garden public seating. Consistent with the Physical Design Framework guideline regarding shade, wind and noise assessment in its design,[7] the proposed New Hospital design reflects the results of wind and shade analyses to ensure that potential effects on pedestrian wind hazards and shading effects on public open spaces are minimized to the extent feasible; and the building design incorporates measures such as screening and enclosures to attenuate noise from the building's stationary noise sources.

Related Improvements

Widening of Medical Center Way

The site of the Medical Center Way widening is located within the Clinical and Support functional zones on the campus site. The proposed widening would occur on the west side of this roadway; as such, this improvement would not encroach into the Reserve and therefore, would not require any changes to UCSF's functional zones to accommodate this improvement. Further, the roadway improvement would not increase the amount of building space or the population on the campus site. Lastly, the improvement would not require further amendment of the 2014 LRDP. Based on the above, the proposed widening of Medical Center Way would not conflict with UCSF land use plans and policies and would have a less than significant impact related to land use planning.

Replacement of Diesel Fuel Tanks

The two potential sites for the proposed replacement of diesel fuel tanks are located within the Research functional zone on the campus site. The proposed replacement of diesel fuel tanks

2 Universal planning and design guideline: Respond to Context While Reinforcing Identity, Guideline 3.b.
3 Universal planning and design guideline: Respond to Context While Reinforcing Identity, Guideline 3.g.
4 Universal planning and design guideline: Respond to Context While Reinforcing Identity, Guideline 3.h.
5 Universal planning and design guideline: Welcome the Community, Guideline 1.f.
6 Universal planning and design guideline: Lead through Conservation and Sustainability, Guideline 1.d.
7 Universal planning and design guideline: Create Spaces to Promote Collegiality, Guideline 1.b.

would not encroach into the Reserve at either potential site and therefore, would not require any changes to UCSF's functional zones to accommodate this improvement. Further, the improvements would not increase the amount of building space or the population on the campus site. Lastly, the improvement would not require further amendment of the 2014 LRDP. Based on the above, the proposed replacement of diesel fuel tanks would not conflict with UCSF land use plans and policies and would have a less than significant impact related to land use planning.

Replacement of Medical Gas Tanks

The site for the proposed replacement of medical gas tanks is located within the Reserve functional zone on the campus site. The proposed improvement would encroach within the Reserve, and consequently, would require modification of the adjacent Reserve boundary. However, the area previously removed from the Reserve under 2014 LRDP Amendment #7 to accommodate the New Hospital footprint is now proposed to be returned to the Reserve. In addition, the area between the Surge and Woods parking lots that was added to the Reserve under 2014 LRDP Amendment #7 would remain as Reserve land. These changes would result in no net change to the amount of Reserve land and would maintain the Reserve at a minimum of 61 acres. With the modification of the adjacent Reserve boundary and related minor amendment to the 2014 LRDP, the proposed replacement of medical gas tanks would not conflict with UCSF land use plans and policies and would have a less than significant impact related to land use planning.

Vegetation Management and Slope Stabilization Improvements

The sites for the proposed vegetation management and/or slope stabilization activities are located partially within the Clinical and Reserve functional zones on the campus site. The proposed vegetation management and/or slope stabilization activities within the Reserve would not require modification of the adjacent Reserve boundary, or require further change to UCSF's functional zones to accommodate these improvements. The proposed vegetation management activities would be implemented in compliance with California Code of Regulations Title 14 Section 1299.03 and California Public Resources Code Section 4291, and consistent with UCSF's Mount Sutro Open Space Reserve Vegetation Management Plan. The specific technique(s) of slope stabilization on the hillside east of Medical Center Way are being determined, and such improvements would be the subject of site specific design level geotechnical evaluation and be conducted in compliance with the applicable State seismic regulations and guidelines prior to final design and implementation. The proposed improvements would not increase the amount of building space or the population on the campus site; or require further amendment of the 2014 LRDP. Based on the above, with compliance with applicable regulations governing the proposed activities, the proposed vegetation management and slope stabilization improvements would have a less than significant impact related to conflicts with UCSF land use plans and policies.

Parnassus Avenue Pedestrian Bridge and Tunnel

The proposed Parnassus Avenue pedestrian bridge and tunnel would be largely constructed off-campus within the Parnassus Avenue right-of-way; would not require further change to UCSF's functional zones to accommodate this improvement; would not substantially increase the amount of building space or campus site population; or require further amendment of the 2014 LRDP. As

such, the proposed Parnassus Avenue pedestrian bridge and tunnel would have a less than significant impact related to conflicts with UCSF land use plans and policies.

Consistency with San Francisco Plans and Policies

New Hospital and Renovation of Moffitt and Long Hospitals

The 2014 LRDP as amended included the Parnassus Streetscape Plan, which included improvements (e.g., new paving, street furniture, lighting, and street trees, as well as sidewalk and crosswalk widening) along Parnassus Avenue generally between Fifth Avenue and Medical Center Way, and was slightly modified in 2021 to bring the plan into conformance with the development proposals fronting on Parnassus Avenue. The proposed New Hospital would provide improved pedestrian access and vehicular circulation from Parnassus Avenue, including vehicular turnarounds located beneath the New Hospital building podium on the street level to provide a drop-off for patients. The New Hospital and its circulation improvements would strengthen the presence of the campus along Parnassus Avenue, thus further establishing the corridor as a distinct medical services district (General Plan Urban Design Element Policy 1.5); and further establish the corridor as a center of activity (General Plan Urban Design Element Policy 1.6). Wayfinding improvements would be provided to increase the clarity of routes for travelers using all modes of transportation to the New Hospital and renovated Moffitt and Long Hospitals (General Plan Urban Design Element Policy 1.9).

With regard to pedestrian circulation, the sidewalks along Parnassus Avenue adjacent to the New Hospital and the renovated Moffitt and Long Hospitals would be improved to provide a minimum width of eight feet, thus providing sufficient space for pedestrian travel (General Plan Transportation Element Policy 23.1) and provide adequate sidewalk width where intensive institutional activity is present (General Plan Transportation Element Policy 23.2). In addition, this minimum sidewalk width would also provide sufficient unobstructed passage for people, strollers and wheelchairs and allow for sufficient access to the New Hospital and renovated Moffitt and Long Hospitals (General Plan Transportation Element Policy 23.6).

The Better Streets Plan contains a range of guidelines relating to streetscape and pedestrian facilities, including for use of street trees. Better Streets Policy 10.1 is to maximize opportunities for street trees and other plantings. As discussed in Chapter 3, *Project Description*, under the NHPH, certain tree and vegetation removal would be required under the NHPH as a result of clearing, excavation, regrading, and/or other activities, including within the Parnassus Avenue public right of way adjacent to the project site. However, UCSF would replace trees in the public right-of-way along Parnassus Avenue on a 1:1 basis, or potentially on a 2:1 basis, if feasible.

In summary, the proposed improvements on Parnassus Avenue associated with the proposed New Hospital and renovated Moffitt and Long Hospitals would not conflict with City of San Francisco policies for streets found in the General Plan and the Better Streets Plan. The impact would be less than significant.

Mitigation: None required.

Related Improvements

Widening of Medical Center Way

The proposed widening of Medical Center Way would not involve modifications to the adjacent Parnassus Avenue cross-street. There would be no effect of the widening of Medical Center Way related to conflict with the City plans and policies.

Replacement of Diesel Fuel Tanks

The proposed replacement of diesel fuel tanks would not involve modifications to off-campus areas. There would be no effect of this improvement related to conflict with the City plans and policies.

Replacement of Medical Gas Tanks

The proposed replacement of medical gas tanks would not involve modifications to off-campus areas. There would be no effect of this improvement related to conflict with the City plans and policies.

Vegetation Management and Slope Stabilization Improvements

The proposed vegetation management and slope stabilization improvements would not involve modifications to off-campus areas. There would be no effect of this improvement related to conflict with the City plans and policies.

Proposed Parnassus Avenue Pedestrian Bridge and Tunnel

The proposed Parnassus Avenue pedestrian bridge and tunnel would be built primarily within the Parnassus Avenue right-of-way. These improvements could conflict with the recommendations listed in the City's Better Streets Plan. The City's Better Streets Plan favors safe, convenient crossings on surface streets wherever possible instead of using pedestrian bridges and tunnels; pedestrian connections such as pedestrian bridges should only be installed where at-grade crossings are not feasible, such as freeways or rail lines (Policy 7.2). While the Better Streets Plan policy favors crossings on surface streets, the tunnel is needed to provide a below-grade pathway facilitating movement of UCSF personnel, goods, and materials between the New Hospital and Medical Building 1, to minimize effects on Parnassus Avenue. In addition, the tunnel is needed to provide a private setting for the transport of patients that are admitted in Medical Building 1 north of Parnassus Avenue to Moffitt Hospital south of Parnassus Avenue. Currently, patients admitted in the Medical Building 1 have to be transported across Parnassus Avenue by ambulance to Moffitt Hospital, thus increasing traffic and congestion along the roadway. The proposed pedestrian bridge crossing over Parnassus Avenue and tunnel underneath Parnassus Avenue if constructed would be required to conform to applicable City standards. In addition, the pedestrian bridge would be situated up to 30 feet above grade, providing enough clearance so that the overhead catenary wires for the electric bus system have enough clearance to allow for safe operation. The Better Streets Plan's overarching goal related to convenient connections are to design streets to "facilitate safe, accessible, and convenient connections among major destinations such as transit centers and land use and activity centers." Therefore, while tunnel and pedestrian bridge crossings in general are not the favored types of crossings, they are needed in this instance to facilitate and support safe UCSF operations and would reduce congestion along the roadway. Given this unique circumstance and

that UCSF plans on improving pedestrian access across Parnassus Avenue, the proposed pedestrian bridge and tunnel would not substantially conflict with this policy.

Mitigation: None required.

Impact LU-2: Development under the proposed NHPH would not conflict with local land use regulations such that a significant incompatibility with adjacent land uses is created. (*Less than Significant*)

New Hospital and Renovation of Moffitt and Long Hospitals

The proposed New Hospital would primarily occupy the area currently occupied by the five-story LPPI building. The site for the New Hospital is located within two City height and bulk districts. A large portion of the building site is located within the City's 65-D Height and Bulk District, which restricts building heights to 65 feet and limits floor plans above 40 feet to a maximum plan length of 110 feet and a maximum diagonal plan dimension of 140 feet. A portion of the New Hospital building site would extend within the City's 220-F Height and Bulk District to the west, which restricts building heights to 220 feet and limits floor plans above 80 feet to a maximum plan length of 110 feet and a maximum diagonal plan dimension of 140 feet.

The proposed New Hospital would be 15 stories plus rooftop mechanical equipment and a full basement, and up to 294 feet in height above ground level.[8] The New Hospital would exceed the City's height limits within the 65-D and 220-F Height and Bulk Districts. The proposed New Hospital would also be located closer to nearby off-site residences on Edgewood Avenue to the east (located within a 40-X Height and Bulk District) than the existing LPPI building.

As noted above in Impact LU-1, the University is exempt from local zoning whenever using property under its control in furtherance of its educational mission. However, UCSF strives to respond to City zoning codes to the extent possible in accordance with LRDP Objective 1: Respond to the City and Community Context. With respect to the New Hospital, this would be achieved in part through the design of the New Hospital consistent with the UCSF's Physical Design Framework and Parnassus Heights Design Guidelines. As discussed in Chapter 3, *Project Description*, several concepts are incorporated into New Hospital design to reduce its perceived height and mass. The New Hospital would be divided into three distinct stacked horizontal layers which would serve to break up the overall mass of the building. The podium layer would articulate on ascending floors to break up the overall mass of the podium, and provide a more pedestrian scale on the ground floor. The middle layer of the New Hospital would be recessed, creating an outdoor publicly accessible terrace along the perimeter of Level 6. The upper layer of the New Hospital would have a stepped form with expressed slabs, where the east and west faces of these floors would step back to reduce the perceived scale and volume of the building.

8 The height of the building above ground level would be approximately 269 feet to the roof level, and approximately 294 feet to top of rooftop perimeter screening. Portion of mechanical equipment and antennas located on the roof would exceed the 294 feet in height.

Furthermore, the New Hospital would physically connect to, and operate with, the adjacent Moffitt and Long Hospitals, to optimize operational activities between these facilities.

As indicated above, in contrast to the preliminary conceptual New Hospital design included in the CPHP, the reduced size of the New Hospital proposed under the NHPH would avoid encroachment into the adjacent hillside in the Reserve east of Medical Center Way. Furthermore, the proposed street level landscaping along Parnassus Avenue and Medical Center Way, and elevated and substantially landscaped terrace on Level 6, would serve to complement the natural open space within the Reserve to the east.

The New Hospital has been designed to avoid or minimize the effects of the conflict with the City's Planning Code, however, it would not be possible to replace clinical uses currently in Moffitt Hospital with a new hospital that complies with the City's height and bulk district regulations that pertain to the site. Chapter 3, *Project Description*, under *NHPH Project Need*, discusses the reasons necessitating a New Hospital of the size and at the location it is proposed at the Parnassus Heights campus site, in conjunction with a proposed renovation of Moffitt and Long Hospitals. Given current code requirements, modern clinical space needs, and physical limitations of the existing Moffitt Hospital, it is neither possible, nor cost effective to retrofit Moffitt Hospital to provide the number of inpatient beds needed at the Parnassus Heights campus site. Based on observed shortages in the current availability of beds, especially intensive care unit (ICU) and acute care beds; an analysis of demographic trends that indicate that Parnassus Heights will need to serve not only a larger population but also a population that includes more elderly patients; an analysis of the demand/need for private rooms (versus shared rooms/wards); and an analysis of trends in health care which show an increased need for tertiary and quaternary health care, UCSF has determined that a new hospital is needed that would provide inpatient beds, along with other necessary facilities that include additional operating rooms, additional emergency room bays and spaces, additional interventional labs, and ambulance bays. The proposed renovation of Moffitt and Long Hospitals would provide inpatient beds to augment those proposed at the New Hospital, and would address the inpatient clinical and support program needs for the increased patient capacity at Parnassus Heights.

Under the NHPH, the New Hospital would provide 336 beds, Long Hospital would provide 297 inpatient beds, and Moffitt Hospital would provide 49 inpatient beds. As a result, the total inpatient bed count at the campus site under the NHPH would be 682 beds, which is an additional 207 beds from existing conditions. This co-location of clinical uses would allow UCSF to operate more efficiently, allow the hospitals to share resources, and also minimize travel for patients and staff. In addition, the New Hospital would replace an existing building (LPPI) on the campus site, and in an area already built out with other similar UCSF facilities, such as Moffitt Hospital and Long Hospital. For these reasons, on balance, the proposed New Hospital would be compatible with adjacent land uses and would not create a significant land use impact.

However, the introduction of the New Hospital would result in certain aesthetic, wind and noise effects at nearby residential land uses, as addressed in Sections 4.1 and 4.11 in this EIR. As described in Section 4.1, *Aesthetics, Wind, and Shadow*, Impact AES-2 finds that the New Hospital would be a noticeable visual change, and would contrast sharply both in height and scale

with the nearby residential development; however, the building would be consistent with the 2014 LRDP as amended, and would not conflict with applicable zoning and other regulations governing scenic quality. Impact AES-3 finds that with implementation of appropriate design standards, guidelines and exterior materials and lighting for the new building either proposed as part of NHPH or identified in NHPH Mitigation Measure AES-3, potential light and glare impacts of the New Hospital would be reduced to a less-than-significant level. Section 4.1, Impact AES-4 determines that the New Hospital would generate winds that would exceed the wind hazard criterion at locations in the project vicinity, including both adjacent to and downwind of the New Hospital on Parnassus Avenue, and would increase the annual hours the wind hazard criterion would be exceeded in the site vicinity. NHPH Mitigation Measure AES-4 identifies a process to identify potential further feasible design alterations and to evaluate potential other wind reduction measures to reduce the exceedance of the wind hazard criterion to the extent feasible. Section 4.11, *Noise and Vibration*, finds that increases in operational noise levels from the New Hospital would be mitigated to a less-than-significant level through implementation of NHPH Mitigation Measure NOI-2 to ensure compliance with the applicable noise code.

The proposed renovation of Moffitt and Long Hospitals would not increase the height of these buildings, and would result in only a minor increase in the building space (by 4,500 gsf for Moffitt Hospital, and up to 5,000 gsf for Long Hospital). As discussed above, under the NHPH, these two hospitals would continue their existing operation of clinical and support uses. As such, the proposed renovation of Moffitt and Long Hospitals would not conflict with local land use regulations such that a significant incompatibility with adjacent land uses would be created.

Related Improvements

Widening of Medical Center Way

The proposed widening of Medical Center Way would improve the roadway to meet San Francisco Fire Department's required fire truck access standards, and provide sidewalks on both sides of the roadway. The additional width required for the widening of Medical Center Way would be captured on the west side of this roadway; consequently, this improvement would not extend into the adjacent City's Open Space Height and Bulk district. The proposed renovation of widening of Medical Center Way would not conflict with local land use regulations such that a significant incompatibility with adjacent land uses would be created.

Replacement of Diesel Fuel Tanks

The proposed replacement of diesel fuel tanks would result in the replacement of existing non-code-compliant diesel fuel tanks with new code-compliant tanks, and an increase in storage of diesel fuel (from 150,000 to 210,000 gallons). The two optional locations for the replacement diesel fuel tanks are south of the Central Utility Plant, in approximately the same location on campus as the existing diesel fuel tanks, and as such, would remain within the City's 65D Height and Bulk district. The proposed heights of the diesel fuel tanks under either option would be within the height requirements of this district. As discussed in Section 4.8, *Hazards and Hazardous Materials*, compliance with applicable hazardous materials regulatory requirements and UCSF protocols would ensure that potential exposure risks would remain less than significant.

Consequently, this improvement would not conflict with local land use regulations such that a significant incompatibility with adjacent land uses would be created.

Replacement of Medical Gas Tanks

The proposed replacement of medical gas tanks would involve the removal of the existing medical fuel tanks and installation of new code-compliant tanks. The proposed replacement site is located just off Medical Center Way, approximately 100 feet east of the location of the existing medical gas tanks. The tanks would also be contained within a secured enclosure. The replacement site is within the City's OS Height and Bulk district. As discussed in Section 4.8, *Hazards and Hazardous Materials*, compliance with applicable hazardous materials regulatory requirements and UCSF protocols would ensure that potential exposure risks would remain less than significant. Given these factors, the improvement would not conflict with local land use regulations such that a significant incompatibility with adjacent land uses would be created.

Vegetation Management and Slope Stabilization Improvements

The sites for the proposed vegetation management and/or slope stabilization activities are located primarily within the City's OS Height and Bulk District. The proposed vegetation management are intended to reduce risk of fire hazards to the New Hospital and would be implemented in compliance with applicable State regulations and guidelines for defensible space. The potential slope stabilization improvements would be the subject of site-specific design level geotechnical evaluation and would be designed in compliance with the applicable State seismic regulations and guidelines prior to implementation. Based on the above, the proposed vegetation management and slope stabilization improvements would not conflict with local land use regulations such that a significant incompatibility with adjacent land uses would be created.

Parnassus Avenue Pedestrian Bridge and Tunnel

The proposed bridge across Parnassus Avenue would facilitate pedestrian safety, ease of crossing Parnassus Avenue, and patient transport. The proposed tunnel beneath Parnassus Avenue would accommodate UCSF employees, utility lines, and patient transport; and the movement of goods and materials. The proposed Parnassus Avenue pedestrian bridge and tunnel would be built primarily within the Parnassus Avenue right-of-way. All work within the City right-of-way would be subject to all applicable City review and permits. As described above, these improvements would not conflict with the recommendations listed in the City's Better Streets Plan. With appropriate City permits and approvals, these proposed improvements would not conflict with local land use regulations such that a significant incompatibility with adjacent land uses would be created.

Cumulative Impacts

Impact C-LU-1: The proposed NHPH, in combination with past, present, and reasonably foreseeable future projects, would not result in a conflict with land use plans, policies, and regulations adopted for the purpose of avoiding or mitigating an environmental effect or a conflict with local land use regulations such that a significant incompatibility with adjacent land uses is created. (*Less than Significant*)

The Parnassus Heights campus site is situated in a built-out urban area surrounded by a mix of land uses. The cumulative projects considered in this analysis include: future projects on the campus site identified in the 2014 LRDP as amended, including the development program planned in the CPHP, and development projects at the campus site that were previously approved under the 2014 LRDP, but not yet implemented, and off-campus development in the campus site vicinity. Generally, opportunities for new development are limited due to the constrained nature of the campus site, and future campus growth would require building replacements and renovations rather than new construction on undeveloped tracts of land. Potential growth in the vicinity of the campus site would also be limited to the intensification of existing uses rather than a substantial change from established land uses. Future development on the campus site would comply with the amended 2014 LRDP, space ceiling limit, and average daily population commitment. Anticipated development in the campus vicinity would generally conform with objectives and policies found in the San Francisco General Plan and permitted uses and height and bulk requirements found in the San Francisco Planning Code. Therefore, cumulative development would not result in a conflict with land use plans and policies adopted by the University and the City for the purpose of avoiding or mitigating environmental impacts. The cumulative impact would be less than significant.

The proposed NHPH components would not conflict with the City's campus site P (Public) zoning designation. While, as discussed above under Impact LU-2, the proposed New Hospital and medical gas tanks replacement project would not conform to the City's height and/or bulk standards for their respective sites (65-D/220-F, and OS, respectively), UCSF would design the projects to avoid or minimize the effects of this conflict with the City's Planning Code to the extent feasible. With regard to proposed off-campus development (Parnassus Avenue pedestrian bridge and tunnel), it would be subject to City review and approval, and would be expected to comply with local land use regulations such that a significant incompatibility is not created. For these reasons, the cumulative impact of the proposed NHPH and future development with regard to land use compatibility would be less than significant.

Mitigation: None required.

4.10.4 References

University of California San Francisco (UCSF), 2014. *UCSF 2014 Long Range Development Plan*. November 2014.

UCSF, 2020a, *UCSF Comprehensive Parnassus Heights Plan, Final Report*. June 2020.

UCSF, 2020b. *Physical Design Framework*. Amended December 2020.

UCSF, 2020c. *Parnassus Heights Design Guidelines*. May 2020.

UCSF, 2021. *UCSF 2014 Long Range Development Plan*. Amended January 2021.

4.11 Noise and Vibration

4.11.1 Environmental Setting

This section describes and evaluates the potential for the construction and operation of the New Hospital Parnassus Heights (NHPH) to result in significant noise and vibration impacts. The section contains a description of the existing local conditions of the NHPH site and the surrounding area; includes a summary of the applicable regulations related to noise and vibration; identifies criteria used to determine impact significance, provides an analysis of the potential noise and vibration impacts associated with the construction and operations of the NHPH, and identifies feasible mitigation measures that could mitigate potentially significant impacts.

For purposes of providing distinction between the various components of this project, references made in this EIR to "New Hospital" relate only to the New Hospital portion of the overall project, whereas references made to "NHPH" relate to the overall project, including the New Hospital and its related improvements.

4.11.2 Environmental Setting

Noise Background

Sound is characterized by various parameters that describe the rate of oscillation (frequency) of sound waves, the distance between successive troughs or crests in the wave, the speed that the sound wave travels, and the pressure level or energy content of a given sound. The sound pressure level has become the most common descriptor used to characterize the loudness of an ambient sound, and the decibel (dB) scale is used to quantify sound intensity. Because sound can vary in intensity by over one million times within the range of human hearing, a logarithmic loudness scale is used to keep sound intensity numbers at a convenient and manageable level. Since the human ear is not equally sensitive to all sound frequencies within the entire spectrum, human response is factored into sound descriptions in a process called "A-weighting," expressed as "dBA." The dBA, or A-weighted decibel, refers to a scale of noise measurement that approximates the range of sensitivity of the human ear to sounds of different frequencies. On this scale, the normal range of human hearing extends from about 0 dBA to about 140 dBA. An increase of 10 dBA in the level of a continuous noise represents a perceived doubling of loudness. The noise levels presented herein are expressed in terms of dBA, unless otherwise indicated. **Table 4.11-1** shows some representative noise sources and their corresponding noise levels in dBA (Caltrans, 2013).

Planning for acceptable noise exposure must take into account the types of activities and corresponding noise sensitivity in a specified location for a generalized land use type. Some general guidelines are as follows: sleep disturbance can occur at noise levels above 35 dBA; interference with human speech begins at about 60 dBA (FICON, 1992). Hearing damage can result from prolonged exposure to noise levels in excess of 85 to 90 dBA as an 8-hour time weighted average (NIOSH, 2018).

TABLE 4.11-1
TYPICAL SOUND LEVELS MEASURED IN THE ENVIRONMENT

Common Outdoor Activities	Decibels (dBA)	Common Indoor Activities
Jet Flyover at 1,000 feet	110	Rock Band
Gas Lawnmower at 3 feet	100	Very Loud
	90	
Diesel Truck at 50 feet at 50 mph	85	Food Blender at 3 feet
Near Freeway Auto Traffic	80	Garbage Disposal at 3 feet
Noisy Urban Area, Daytime	75	
Gas Lawnmower at 100 feet	70	Vacuum Cleaner at 10 feet
	65	Normal Speech at 3 feet
Commercial Area Heavy Traffic at 300 feet	60	
	55	Large Business Office
Quiet Urban Daytime	50	Dishwasher in next room
Quiet Urban Nighttime	40	Theater, Large Conference Room Background
	30	Library
Quiet Rural Nighttime	25	Bedroom at Night

SOURCE: Caltrans, 2013.

Attenuation of Noise

Noise from line sources, such as roadway traffic, attenuates (lessens) at a rate of 3.0 to 4.5 dBA per doubling of distance from the source, based on the inverse square law and the equation for cylindrical spreading of noise waves over hard and soft surfaces.

Noise from point sources, including stationary mobile sources such as idling vehicles or onsite construction equipment, attenuates at a rate of 6.0 to 7.5 dBA per doubling of distance from the source, based on the inverse square law and the equations for spherical spreading of noise waves over hard and soft surfaces. For the purposes of this analysis, it is assumed that noise from line and point sources to a distance of 200 feet attenuates at rates of between 3.0 and 6.0 dBA per doubling of distance, and the noise from line and point sources at a distance greater than 200 feet attenuates at a rate of 4.5 to 7.5 dBA per doubling of distance, to account for the absorption of noise waves due to ground surfaces such as soft dirt, grass, bushes, and intervening structures (Caltrans, 2009).

Noise Descriptors

An individual's noise exposure is a measure of noise over a period of time. A noise level is a measure of noise at a given period of time. Community noise varies continuously over a period of time with respect to the contributing sound sources of the community noise environment.

Community noise is primarily the product of many distant noise sources, which constitute a relatively stable background noise exposure, with the individual contributors unidentifiable. The background noise level changes throughout a typical day, but does so gradually, corresponding with the addition and subtraction of distant noise sources such as traffic. What makes community noise variable throughout a day, besides the slowly changing background noise, is the addition of short-duration, single-event noise sources (e.g., aircraft flyovers, motor vehicles, sirens), which are readily identifiable to the individual. These successive additions of sound to the community noise environment change the community noise level from instant to instant, requiring the measurement of noise exposure over a period of time to legitimately characterize a community noise environment and evaluate cumulative noise effects. This time-varying characteristic of environmental noise is described using statistical noise descriptors. The most frequently used noise descriptors are summarized below:

L_{eq}: The L_{eq}, or equivalent sound level, is used to describe noise over a specified period of time in terms of a single numerical value; the L_{eq} of a time-varying signal and that of a steady signal are the same if they deliver the same acoustic energy over a given time. The L_{eq} may also be referred to as the average sound level.

L_{max}: The maximum, instantaneous noise level experienced during a given period of time.

L_{90}: The level of noise exceeded 90 percent of the time is sometimes conservatively considered as the background ambient noise level for the purposes of assessing conformity with noise ordinance standards with respect to noise from stationary equipment or entertainment venues.

L_{dn}: Also termed the day-night average noise level (DNL), the L_{dn} is the average A-weighted noise level during a 24-hour day, obtained after an addition of 10 dB to measured noise levels between the hours of 10 PM to 7 AM to account for greater nighttime noise sensitivity.

CNEL: CNEL, or Community Noise Equivalent Level, is the average A-weighted noise level during a 24-hour day that is obtained after an addition of 5 dB to measured noise levels between the hours of 7 PM to 10 PM and after an addition of 10 dB to noise levels between the hours of 10 PM to 7 AM to account for greater noise sensitivity in the evening and nighttime, respectively.

Health Effects of Environmental Noise

The World Health Organization (WHO) is perhaps the best source of current knowledge regarding the health effects of noise impacts because European nations have continued to study noise and its health effects, while the United States Environmental Protection Agency (USEPA) all but eliminated its noise investigation and control program in the 1970s.[1] According to WHO, sleep disturbance can occur when continuous indoor noise levels exceed 30 dBA or when intermittent interior noise levels (such as from traffic) reach 45 dBA, particularly if background noise is low. With a bedroom window slightly open (a reduction from outside to inside of 15 dB), the WHO criteria suggest that exterior continuous (ambient) nighttime noise levels should be 45 dBA or below, and short-term

[1] The *San Francisco General Plan* Land Use Compatibility Guidelines for Community Noise, presented below in Figure 4.11-2, were created during the same era.

events should not generate noise in excess of 60 dBA. WHO also notes that maintaining noise levels within the recommended levels during the first part of the night is believed to be effective for the ability of people to initially fall asleep (WHO, 1999).

Other potential health effects of high noise levels identified by WHO include decreased performance for complex cognitive tasks, such as reading, attention span, problem solving, and memorization; physiological effects such as hypertension and heart disease (after many years of constant exposure, often of workers, to high noise levels); and hearing impairment (again, generally after long-term occupational exposure, although shorter-term exposure to very high noise levels, for example, exposure several times a year to concert noise at 100 dBA, can also damage hearing). Finally, noise can cause annoyance and can trigger emotional reactions like anger, depression, and anxiety. WHO reports that, during daytime hours, few people are seriously annoyed by activities with noise levels below 55 dBA or moderately annoyed with noise levels below 50 dBA.

Vehicle traffic and continuous sources of machinery and mechanical noise contribute to ambient noise levels. Short-term noise sources, such as truck backup beepers, the crashing of material being loaded or unloaded, and car doors slamming contribute very little to 24-hour noise levels but are capable of causing sleep disturbance and annoyance. The importance of noise to receptors depends on both time and context. For example, long-term high noise levels from large traffic volumes can make conversation at a normal voice level difficult or impossible, while short-term peak noise levels, if they occur at night, can disturb sleep.

Vibration Descriptors

Vibration is an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. Several different methods are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal. The PPV is most frequently used to describe physical vibration impacts on buildings and structures. Another useful vibration descriptor is known as vibration decibels or VdBs. VdBs are generally used when evaluating human response to vibration, as opposed to damage to structures (for which PPV is the more commonly used descriptor). Vibration decibels are established relative to a reference quantity, typically 1×10^{-6} inches per second and are based on the root mean square velocity amplitude (FTA, 2018).

Typically, groundborne vibration generated by human activities attenuates rapidly with distance from the source of the vibration. Sensitive receptors to vibration include people (especially residents, the elderly, and sick people), structures (especially older masonry structures), and vibration-sensitive equipment.

The background vibration velocity levels in residential areas are typically 50 VdB or lower, and the threshold of perception for humans is approximately 65 VdB. A vibration level of 85 VdB in a residence can result in strong annoyance (FTA, 2018).

Existing Noise and Vibration Environment

Long-term environmental noise in urbanized areas is primarily dependent on vehicle traffic volumes and the mix of vehicle types. The existing ambient noise environment at the Parnassus Heights campus site is dominated by vehicular traffic on adjacent public streets, including Parnassus Avenue, Irving Avenue and Clarendon Avenue, internal private roadways, and parking and loading areas within the campus site. Ambient noise levels on the campus site are also affected by noise generated by stationary equipment noise sources, particularly in the east portion of the campus core where principal campus support functions exist [e.g., Central Utility Plant (CUP)].

Ambient Noise Measurements

Ambient long-term (24-hour) and short-term (15-minute) noise measurement data were collected in 2014 in conjunction with the preparation of the 2014 LRDP Final EIR, and updated in October 2019 to characterize noise conditions on the campus site and its environs. Additionally, long- and short-term noise measurements were collected in 2017 as part of the Mount Sutro Vegetation Management Plan Final EIR. Noise measurement locations are shown in **Figure 4.11-1**, and noise results for the short-term and long-long monitoring locations are summarized in **Table 4.11-2** and **Table 4.11-3**, respectively.

TABLE 4.11-2
SHORT-TERM AMBIENT NOISE LEVELS IN THE NHPH SITE VICINITY

Measurement Location	Time	Noise Levels in dBA	
		Hourly L_{eq}	L_{max}
ST-1 Edgewood Trailhead at terminus of Edgewood Avenue (2017)	11:00 AM	52	64

NOTE: See Figure 4.11-1 for noise measurement locations. L_{eq} represents the constant sound level; L_{max} is the maximum noise level.

SOURCE: Environmental Science Associates, 2019; Illingworth and Rodkin, 2018.

TABLE 4.11-3
LONG-TERM AMBIENT NOISE LEVELS IN THE NHPH SITE VICINITY

Measurement Location	Day-Night Noise level (Ldn)	Noise Levels in dBA	
		Daytime hourly average, L_{eq}	Nighttime hourly average, L_{eq}
LT-1 Campus Site east property line (2014): Along rear of adjacent existing Edgewood Avenue residences, near the proposed New Hospital	64	58	58
LT-1 Campus Site east property line (2017)	60	54	53
LT-2 UC Hall Balcony on Parnassus Avenue (2014)	61	58	53

NOTE: See Figure 4.11-1 for noise measurement locations.

SOURCE: Environmental Science Associates, 2014 and 2019; Illingworth and Rodkin, 2018.

SOURCE: Google Earth, 2019; ESA, 2019

UCSF New Hospital Parnassus Heights EIR

Figure 4.11-1
Noise Monitoring Locations

ESA

Short-term monitoring location ST-1 is located off-site at the Edgewood Trailhead at the terminus of Edgewood Avenue. Long-term monitoring location LT-1 is located at the top of the ridge at the eastern property line of the campus site east of the NHPH site. The noise environment at this location is dominated by noise generated by mechanical equipment at the CUP and delivery trucks at the loading docks behind Long Hospital at the campus site. Noise data indicate that these noise sources are consistent throughout the daytime and nighttime hours. [Noise levels recorded at monitoring location LT-1 in 2017 reflect a reduced noise level (4 to 5 dBA less) from those recorded at the same location in 2014, which reflects improvements made by UCSF to mechanical equipment associated with the CUP. As UCSF replaces exterior mechanical equipment, the design for new equipment incorporates a noise analysis to ensure new equipment conforms to standards at the property line. Long-term monitoring location LT-2 is located at UC Hall. The noise environment at this location is dominated by Parnassus Avenue vehicle traffic, which is relatively high during daytime hours, but is largely reduced after 10:00 PM Noise levels at the LT-1 and LT-2 monitoring locations were at or marginally in excess of 60 dBA, Ldn.

Sources of Vibration

The primary vibration source in the campus site vicinity is SF Muni light rail operations on Irving Street along the northern campus site boundary. The FTA has published generalized ground-surface vibration levels for light-rail passenger trains which are presented in **Table 4.11-4**; the table presents only those vibration levels that correspond to light rail speeds that are representative of those that occur along Irving Street.

TABLE 4.11-4
GENERALIZED VIBRATION LEVELS (IN VdB) FROM LIGHT RAIL ACTIVITY

Train Speed	Distance from Tracks	
	50 Feet	100 Feet
10 Miles per Hour	59 VdB	53 VdB
20 Miles per Hour	65 VdB	59 VdB
30 Miles per Hour	69 VdB	63 VdB

SOURCE: FTA, 2018

Sensitive Receptors

Sensitive receptors for noise are generally considered to include nursing homes, senior citizen centers, hospitals with overnight accommodations, schools, churches, libraries, and residences. Land uses in the campus site vicinity are described in detail in Section 4.10, *Land Use and Planning*.

On the Parnassus Heights campus site, existing sensitive receptors within 1,000 feet of the NHPH site, including proposed New Hospital and related improvements, include UCSF campus housing on Third and Fifth Avenues, and Irving Street. The UCSF Marilyn Reed Lucia Child Development Center at 610 Parnassus Avenue is also located within 1,000 feet of the NHPH site. Moffitt and Long Hospitals are also sensitive receptors that are adjacent to the proposed New Hospital.

Off-campus receptors (residences) are located as close as approximately 180 feet to the east of the NHPH site. There are two public schools operated by the San Francisco Unified School District within one quarter mile of the NHPH site: Independence High School is located at 1350 7th Avenue, approximately one quarter mile to the northwest; and Grattan Elementary School (which also contains Grattan Nursery and School-Age Children's Center) is located at 165 Grattan Avenue, approximately one quarter mile east. The private Haight Ashbury Community Nursery School is located at 1180 Stanyan Street, approximately 1,000 feet to the east.

Vibration sensitive receptors can include not only residences and other places where people would be expected to sleep, such as a hotel, nursing home, or hospital, but also locations where vibration-sensitive equipment may be in use such as microscopes and magnetic resonance imagery (MRI) equipment and recording studios. Vibration-sensitive receptors in the campus site vicinity consist of the noise-sensitive receptors identified above, existing MRI and microscopy uses at Moffitt Hospital and Long Hospital, as well as any research facilities that use vibration-sensitive equipment. Older structures, especially those constructed of masonry, are also sensitive to vibration.

4.11.3 Regulatory Framework

Federal

Federal Aviation Administration

The Federal Aviation Administration (FAA) develops noise exposure maps that use average annual CNEL noise contours around the airport as the primary noise descriptor. The FAA states that all land uses are considered compatible when aircraft noise effects are less than 65 decibels (dB) CNEL. San Francisco International Airport and Oakland International Airport are over 8 and 12 miles from the campus site, respectively. The campus site is outside the 55 dB CNEL noise contour of both airports (ACCDA, 2010; SFO, 2015).

State

State regulations include requirements for the construction of new hotels, motels, apartment houses, and dwellings other than detached single-family dwellings that are intended to limit the extent of noise transmitted into habitable spaces. These requirements are collectively known as the California Noise Insulation Standards and are found in Title 24 of the California Code of Regulations.

The 2016 California Building Code included the most recent update to the sound transmission standards which (CBC, Title 24, Part 2 of the California Code of Regulations) requires that walls and floor/ceiling assemblies separating dwelling units from each other, or from public or service areas, have a Sound Transmission Class (STC) of at least 50, meaning they can reduce noise by a minimum of 50 dB.[2] The CBC (Section 1207.4, Allowable Interior Noise Levels) also specifies a

[2] State Building Code section 1207.2.

maximum interior noise limit of 45 dBA (Ldn or CNEL) in habitable rooms, and requires that common interior walls and floor/ceiling assemblies meet a minimum STC rating of 50 for airborne noise.

UCSF

The UCSF 2014 LRDP identified campus-wide objectives and objectives specific to the Parnassus Heights campus site. The following UCSF 2014 LRDP campus-wide objective relates to noise:

Campus-Wide Objectives[3]

1. Respond to City and Community Context

C. Design new buildings to be sensitive to the surrounding neighborhood and landscape, taking into account use, scale, potential noise generation, and density.

F. Consider neighborhood and city-wide impacts related to UCSF's physical growth.

The UCSF 2014 LRDP also included *Community Planning Principles*, which were produced in collaboration with the UCSF Community Advisory Group:

Community Planning Principles

Environmental Planning and Safety

EP3. Meet or exceed city, state, and federal standards with respect to health and safety, noise and construction-related environmental impacts.

UCSF is not subject to local plans, policies, or ordinances whenever using land under its control in furtherance of its educational mission. However, it is UCSF policy to be consistent with such plans, policies, or ordinances to the extent feasible. The most recent noise levels recorded in the project site perimeter and presented in Table 4.11-3 are within the normally acceptable and conditionally acceptable noise exposure category with respect to the City of San Francisco standard discussed below and presented in Figure 4.11-2.

City of San Francisco

San Francisco General Plan

Land Use Compatibility Guidelines for Community Noise

The Environmental Protection Element of the *San Francisco General Plan* contains Land Use Compatibility Guidelines for Community Noise (CCSF, 1996). These guidelines, which are similar to but differ somewhat from state guidelines promulgated by the Governor's Office of Planning and Research, indicate maximum acceptable exterior noise levels for various newly developed land

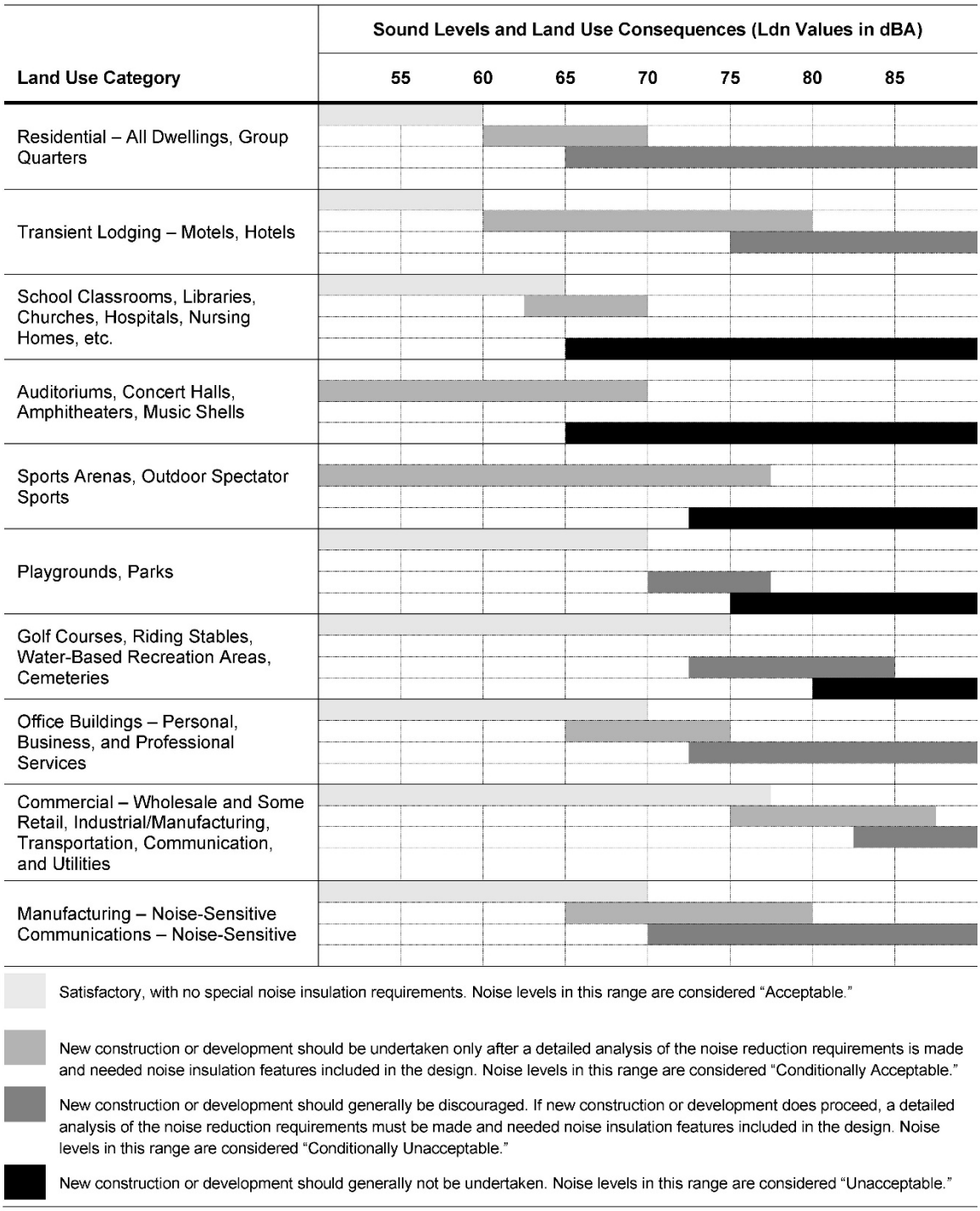
[3] Amendment #7 included a revision to the campus wide objectives that states "In recognition of the substantial space need associated with the NHPH, and the need for proximity to existing hospitals, Objectives 1B and 1C do not apply to the NHPH. However, efforts will be made during the design process to come as close as possible to meeting these objectives, where feasible. Please refer to site-specific objectives for the Parnassus Heights campus site and to the Physical Design Framework for applicable objectives and design guidelines." (Amended by 2014 LRDP Amendment #7).

uses. The City's guidelines, which are presented in **Figure 4.11-2**, list exterior noise levels that might be inappropriate for sensitive land uses and would therefore require additional noise insulation considerations beyond standard practices. Though this figure presents a range of noise levels that are considered compatible or incompatible with various land uses, the maximum "satisfactory" noise level is 60 dBA (Ldn) for residential and hotel uses; 65 dBA (Ldn) for school classrooms, libraries, churches, and hospitals; 70 dBA (Ldn) for playgrounds, parks, office buildings, retail commercial uses, and noise-sensitive manufacturing/communications uses; and 77 dBA (Ldn) for other commercial uses such as wholesale, some retail, industrial/manufacturing, transportation, communications, and utilities. If these uses are proposed to be located in areas with noise levels that exceed these guidelines, a detailed analysis of noise reduction requirements will normally be necessary prior to final review and approval.

Noise-Related Policies

The following policies of the *San Francisco General Plan* Environmental Protection Element relate to noise:

> ***Policy 10.1*:** Promote site planning, building orientation and design and interior layout that will lessen noise intrusion. Because sound levels drop as distance from the source increases, building setbacks can play an important role in reducing noise for the building occupants. Buildings sited with their narrower dimensions facing the noise source and sited to shield or be shielded by other buildings also help reduce noise intrusion. Although walls with no windows or small windows cut down on noise from exterior sources, in most cases it would not be feasible or desirable to eliminate wall openings. However, interior layout can achieve similar results by locating rooms whose use require more quiet, such as bedrooms, away from the street noise.
>
> ***Policy 10.2*:** Promote the incorporation of noise insulation materials in new construction. State-imposed noise insulation standards apply to all new residential structures except detached single-family dwellings. Protection against exterior noise and noise within a building is also important in many nonresidential structures. Builders should be encouraged to take into account prevailing noise levels and to include noise insulation materials as needed to provide adequate insulation.
>
> ***Policy 11.1*:** Discourage new uses in areas in which the noise level exceeds the noise compatibility guidelines for that use. New development should be examined to determine whether background and/or thoroughfare noise level of the site is consistent with the guidelines for the proposed use. If the noise levels for the development site exceed the sound level guidelines established for that use, as shown in the accompanying land use compatibility chart, then either needed noise insulation features should be incorporated in the design or else the construction or development should not be undertaken.
>
> ***Policy 11.3*:** Locate new noise-generating development so that the noise impact is reduced. Developments which will bring appreciable traffic into or through noise-sensitive areas should be discouraged, if there are appropriate alternative locations where the noise impact would be less. For those activities—such as a hospital—that need a quiet environment, yet themselves generate considerable traffic, the proper location presents a dilemma. In those cases, the new development should locate where this traffic will not present a problem and, if necessary, incorporate the proper noise insulation.



SOURCE: San Francisco Planning Department, *San Francisco General Plan*, Environmental Protection Element, adopted on June 27, 1996, http://www.sf-planning.org/ftp/General_Plan/I6_Environmental_Protection.htm#ENV_TRA_11, accessed December, 2019.

Figure 4.11-2
San Francisco Land Use Compatibility Chart for Community Noise

San Francisco Noise Ordinance

In San Francisco, regulation of noise is stipulated in Article 29 of the Police Code (Regulation of Noise), which states that the City's policy is to prohibit unnecessary, excessive, and offensive noises from all sources subject to police power. Sections 2907 and 2908 of Article 29 regulate construction equipment and construction work at night, while Section 2909 provides for limits on stationary-source noise from machinery and equipment. Sections 2907 and 2908 are enforced by the Department of Building Inspection, and Section 2909 is enforced by the Department of Public Health. Summaries of these and other relevant sections are presented below.

Sections Regulating Construction Noise

Sections 2907(a) and (b) of the Police Code state that it shall be unlawful for any person, including the City and County of San Francisco, to operate any powered construction equipment, regardless of age or date of acquisition, if the operation of such equipment emits noise at a level in excess of 80 dBA when measured at a distance of 100 feet from such equipment, or an equivalent sound level at some other convenient distance. Exemptions from this requirement include:

- Impact tools and equipment with intake and exhaust mufflers recommended by the manufacturers and approved by the Director of Public Works as best accomplishing maximum noise attenuation; and
- Pavement breakers and jackhammers equipped with acoustically attenuating shields or shrouds recommended by the manufacturers and approved by the Director of Public Works as best accomplishing maximum noise attenuation.

Section 2908 prohibits any person, between the hours of 8:00 PM of any day and 7:00 AM of the following day, from erecting, constructing, demolishing, excavating for, altering, or repairing any building or structure if the noise level created is in excess of the ambient noise level by 5 dBA at the nearest property line unless a special permit has been applied for and granted by the Director of Public Works.

Sections Regulating Operational Noise

Section 2909 establishes a not-to-exceed noise standard for fixed sources of noise, such as building mechanical equipment and industrial or commercial processing machinery. Unlike the state building code (Title 24) standard, which is applicable to interior living space only, the standards in Section 2909(a), (b), and (c) are applicable outdoors, at the property line of the affected use, and vary based on the residential or commercial nature of the noise generator's use. For example, the noise limits for commercial and industrial properties (Section 2909(b)) provide that no person shall produce or allow to be produced a noise level more than 8 dBA above the local ambient level at the property plane. If the noise generated from commercial and industrial properties is generated from a licensed place of entertainment or other location subject to regulation by the Entertainment Commission, such use shall not produce or allow to be produced a noise level more than 8 dBC[4] above the local ambient level at the property plane in addition to the 8 dBA standard.

[4] C-weighted decibels include low-frequency sounds that are more common to amplified sound/concerts.

For noise generated by residential properties, the noise limits are 5 dBA above the ambient level at any point outside of the property plane of a residential use. The noise limits for public property provide that no person shall produce a noise level more than 10 dBA above the local ambient level at a distance of 25 feet or more on public property.

As is common for noise standards, the permitted noise level for fixed noise sources such as mechanical equipment, the residential interior noise limits identified in Section 2909(d) is lower at night than during the day. For example, maximum noise levels at any sleeping or living room in any dwelling unit located on residential property must not exceed 45 dBA between 10:00 PM and 7:00 AM, and 55 dBA between 7:00 AM and 10:00 PM. None of the noise limits set forth in this section apply to activity for which the City and County of San Francisco has issued a permit that contains noise limit provisions that are different from those set forth in this article. Additionally, the Directors of Public Health, Public Works, or Building Inspection, or the Entertainment Commission, or the Chief of Police may grant variances to noise regulations, over which they have jurisdiction pursuant to Section 2916.

4.11.4 Impacts and Mitigation Measures

Significance Criteria

Would implementation of the NHPH result in:

a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

b) Generation of excessive groundborne vibration or groundborne noise levels?

c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

d) Exceed an LRDP EIR operational standard of significance by contributing to an increase in average daily noise levels (L_{dn}) of 3 dB(A) or more at property lines, if ambient noise levels in areas adjacent to proposed development already exceed local noise levels set forth in local general plans or ordinances for such areas based on their use[5]?

With respect to criterion a) above, this analysis applies the restrictions of the City of San Francisco Police Code Sections 2907 and 2908 and the 90 dBA daytime construction noise criteria of the FTA for residential uses in the assessment of construction-related noise. Additionally, an increase of 10 dBA representing a doubling of perceived loudness is also applied as an impact criterion, although not a regulatory threshold. The restrictions of the City of San Francisco Police Code Sections 2909 are applied as criteria with respect to operational noise from fixed, mechanical sources. With respect to criterion b) above, this analysis applies the thresholds published by

[5] This approach to assessing traffic noise is consistent with transportation-related noise assessment as suggested by the Federal Interagency Commission on Aircraft Noise (FICAN, 1992) and with Caltrans guidance which characterizes a 3 dBA increase as “barely perceptible” increase outside of the laboratory.

Caltrans for vibration impacts that may result in building damage or human annoyance. See Approach to Analysis, below, for additional detail.

Criteria Not Analyzed

As stated in the Initial Study, there would be no impact related to the following topic for the reasons described below:

- ***For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels.*** The proposed NHPH would not include development of land uses near an airport influence area. The FAA states that all land uses are considered compatible when aircraft noise effects are less than 65 decibels (dB) CNEL. As discussed above, San Francisco International Airport and Oakland International Airport are over 8 and 12 miles from the campus site, respectively. The project site is outside the 55 dB CNEL noise contour of both airports (ACCDA, 2010; SFO, 2015). No impact would occur, and this impact is not discussed further in this EIR.

Approach to Analysis

Construction Noise and Vibration Assessment for NHPH

Construction Noise

According to Section 2907 of the City's noise ordinance, it is prohibited to operate any powered construction equipment (non-impact), regardless of age or date of acquisition, if the operation of such equipment emits noise at a level in excess of 80 dBA when measured at a distance of 100 feet from such equipment. Impact equipment such as pile driving and hoe rams are exempt from this requirement. To assess consistency with this Code requirement, published reference noise levels for standard construction equipment are compared to this Code requirement to determine whether construction of the NHPH would generate noise levels in excess of published standards.

All construction activity for the NHPH, including related improvements, would be consistent with the restrictions established by Sections 2907 and 2908 of the San Francisco Police Code. As discussed in the *Regulatory Setting*, UCSF voluntarily strives to meet the City's Police Code, which sets limits on the hours during which construction activities can occur (between the hours of 7:00 AM and 8:00 PM) and requires that construction noise not exceed 80 dB(A) Maximum Noise Level (L_{max}) at a distance of 100 feet, although an exception to the City's Police Code allows the use of impact tools with appropriate controls and approval by the Director of Public Works or the Director of Building Inspection.

Additionally, for assessment of construction noise impacts, the quantitative evaluation of daytime construction noise effects is based on the general assessment methodology and criteria set forth in the Federal Transit Administration (FTA) guidelines for residential land uses which is an hourly 90 dBA L_{eq} (FTA, 2018) during daytime hours.

The FTA methodology for general assessment of construction noise entails a process for calculating the hourly dBA, L_{eq} for each stage of construction considering (1) the reference noise emission level at 50 feet for equipment to be used for each stage of construction, (2) the usage factor for each piece of equipment, and (3) the distance between construction centerline and receptors[6]. This methodology entails determining the resultant noise levels for the two noisiest pieces of equipment expected to be used in each stage of construction.

The FTA does not publish a software noise model; as such, the Federal Highway Administration (FHWA) Roadway Construction Noise Model (RCNM) was used. The RCNM is used as the FHWA's national standard for predicting construction noise. The RCNM analysis includes the calculation of noise levels (L_{max} and L_{eq}) at incremental distances for a variety of construction equipment. The model inputs include acoustical use factors, L_{eq} values at various distances depending on the receptor location analyzed. Construction noise levels were calculated for the construction phases of the NHPH and related improvements.

In addition to the assessment of construction noise relative to Sections 2907 and 2908 of the San Francisco Police Code and the FTA's 90 dBA L_{eq} daytime standard at residential uses, this analysis applies an increase of 10 dBA or more over existing noise levels at sensitive receptor locations to warrant the implementation of construction noise control measures. Such an increase is a perceived doubling of loudness (Caltrans, 2013).

Construction Vibration

The study area for evaluation of vibration impacts from construction encompasses the construction site and the nearest potentially affected sensitive receptors to that site. Vibration levels are predicted at various distances for equipment reasonably expected to be involved with project demolition and construction activities and impacts to receptors assessed based on methodology and criteria established by Caltrans and FTA. Construction vibration impacts are analyzed in terms of the potential of project-related vibrations to result in damage to nearby structures or buildings, based on thresholds put forth by Caltrans (Caltrans, 2020). The Caltrans thresholds for potential architectural damage due to groundborne vibrations is 0.5 in/sec PPV for new residential structures and modern commercial buildings and 0.25 in/sec PPV for historic and older buildings. With respect to human annoyance, Caltrans considers vibrations of 0.04 in/sec PPV to be strongly perceptible and this is the threshold applied for vibration impacts during sensitive nighttime hours when people ae likely to be sleeping. The threshold for vibration-sensitive equipment is 65 VdB, as published by FTA and based on the root mean square velocity amplitude (FTA, 2018).

Operational Noise Assessment for NHPH

Operational Stationary Source Noise

Operational stationary sources include mechanical equipment such as heating, ventilation, and air conditioning (HVAC) equipment and backup generators. Noise levels generated from this equipment were calculated based on representative sound power specifications provided by UCSF

[6] In an urban area such as downtown San Francisco that have acoustically non-absorptive ground conditions, the ground factor for this analysis is taken to be zero.

and diagrams of the locations of HVAC units and generators. The analysis identifies existing code requirements that would serve to limit noise from these sources and UCSF's intent to meet code requirements to the degree feasible. UCSF voluntarily strives to meet the City's Police Code, according to which stationary mechanical equipment noise for commercial and industrial uses is limited to 8 dB(A) in excess of the ambient noise environment. The Code also provides an interior noise limit, stating that noise levels from mechanical sources may not exceed 45 dB(A) between the hours of 10:00 PM and 7:00 AM or 55 dB(A) between the hours of 7:00 AM and 10:00 PM with windows open except where building ventilation is achieved through mechanical systems that allow windows to remain closed.

Operational Traffic Noise

Traffic noise modeling to analyze the effects of the traffic generated by the NHPH was completed using a spreadsheet based on the FHWA Traffic Noise Model. The significance of traffic noise impacts was determined by comparing the increase in noise levels (traffic contribution only) to increments recognized by UCSF to represent a substantial permanent increase in noise levels. An increased noise level of 3 dBA or more where noise levels without the project already exceed those identified as appropriate for a given land use within the San Francisco General Plan, as presented in Figure 4.11-2 is considered to represent a substantial permanent increase with respect to traffic noise.

Impact Analysis

Impact NOI-1: Construction activities under the NHPH would generate a substantial temporary increase in ambient noise levels in the vicinity of the construction project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies. (*Significant and Unavoidable with Mitigation*)

NHPH

Due to the overlapping construction schedules for the proposed New Hospital and related improvements, the construction noise associated with the NHPH project components are considered together.

Construction activities for the NHPH would include site clearing, excavation, and grading activities; new building foundation and vertical construction; adjacent improvements on Parnassus Avenue; installation of utilities; building interior finishing; and exterior hardscaping and landscaping improvements. Equipment involved with excavation, grading and construction at the campus site would include excavators, backhoes, dozers, loaders, cranes, drill rigs, and trucks for delivering materials and for off-hauling demolition debris. No pile driving or blasting activities are proposed during construction of the NHPH. Rather, foundations would be installed using drilled piers; and excavation of soft rock would be conducted using hydraulic heavy excavators.

Table 4.11-5 shows typical noise levels produced by various types of construction equipment that UCSF has identified are likely to be involved with construction of the NHPH that would occur at a reference distance of 50 feet from the source. Noise levels at and near the NHPH construction site would fluctuate depending on the particular type, number and duration of uses of various pieces of

construction equipment at any given time. As shown in Table 4.11-5, the estimated noise levels generated by typical equipment that would be used for NHPH construction would meet the City of San Francisco Police Code Section 2909 standard of 80 dBA at 100 feet, with the exception of concrete saws. Some non-impact pieces of equipment may exceed the noise ordinance standard, such as a concrete saw, however, use of such equipment would be limited in duration and frequency and based on the limited duration of use are not considered to represent a significant noise impact.[7]

TABLE 4.11-5
TYPICAL NOISE LEVELS FROM CONSTRUCTION EQUIPMENT

Construction Equipment	Noise Level (dBA, Lmax at 50 Feet)	Noise Level (dBA, Leq at 100 Feet)	Exceed 80 dBA at 100 feet standard?
Dump truck	77	71	No
Portable air compressor	78	72	No
Concrete mixer (truck)	79	73	No
Crane	81	75	No
Forklift (gradall)	83	77	No
Grader	85	79	No
Scraper	84	78	No
Signal Board	73	67	No
Sweeper	82	76	No
Trencher	80	74	No
Excavator	81	75	No
Dozer	82	76	No
Paver	77	71	No
Generator	81	75	No
Tractor	84	78	No
Backhoe	78	72	No
Auger Drill Rig	84	78	No
Pumps	81	75	No
Concrete Saws	90	84	Yes
Concrete Truck	79	73	No
Welder	74	68	No
Compactor	83	77	No
Off-highway Truck	85	79	No

SOURCE: FHWA, 2006.

In addition to estimating the noise increases from the operation of individual pieces of equipment as reported in the table above, the total increase in noise from the concurrent/overlapping operation of several pieces of equipment was calculated for major construction phases of the proposed project. The FHWA RCNM was used to estimate noise generated by the proposed construction activities. Construction noise levels were calculated for each stage of construction based on the equipment list provided by UCSF. Distances to receptors input into the model

[7] Concrete saws are generally used for relatively detailed demolition work, such as opening up a specific area of roadway or sidewalk. As such, the duration and frequency of their use would not be extensive.

include elevation gains as well as lateral distance, but conservatively the model does not consider any shielding attenuation from intervening topography.

Table 4.11-6 presents the results of the RCNM modelling of NHPH construction stages showing the predicted noise levels at the nearest off-campus sensitive land use. The nearest sensitive receptors to the NHPH are residential dwellings on Edgewood Avenue and Parnassus Avenue adjacent to the east campus site boundary; and on Hillway Avenue, north of Parnassus Avenue - approximately 200 feet from the NHPH worksite. Predicted noise values in Table 4.11-6 represent a worst-case analysis when equipment is in operation at the point of the construction site closest to the nearest receptor, as this would occur only for a short percentage of the overall construction period. As can be seen in Table 4.11-6, noise levels generated during NHPH construction activities at the closest receptor would be below the FTA daytime criteria of 90 dBA Leq for residential uses.

However, as indicated in Table 4.11-6, noise levels from proposed NHPH construction activities at the closest receptors could exceed existing noise levels by as much as 17 dBA, and mitigation measures are therefore warranted.

Construction Staging Areas

As described in Chapter 3, *Project Description*, potential on-site construction materials/ construction worker staging areas would include: 1) the existing parking lot area located south of UC Hall; 2) the Surge parking lot; and/or 3) the top level of the Medical Building 1 parking lot. Additionally, during the period from 2023 to 2029, construction and construction staging would occur along the NHPH site's frontage on the south side of Parnassus Avenue, immediately to the east and west of Medical Center Way.

Staging areas would primarily generate noise at the beginning and end of work shifts, when equipment is activated or shut down for a given workday, and by trucks delivering and removing materials. Operation of trucks, loaders and forklifts may also occur in staging areas. The existing parking lot area located south of UC Hall is located more than 250 feet from the nearest receptors across Parnassus Avenue, and with removal of UC Hall planned under the CPHP, there may be some line-of-sight exposure to loading activities at that staging area until the planned RAB is constructed. In addition, staging on Parnassus Avenue would occur approximately 200 feet from residential uses on Hillway Avenue which could have some line-of-sight exposure to loading activities.

The potential staging at the Surge parking lot would be located as close as 20 feet from the nearest off-site receptors (on Edgewood Avenue) and potential staging at the Medical Building 1 parking lot would be within 100 feet of the nearest off-site receptors (e.g., on Irving Street, Arguello Boulevard, Cole Street and Hillway Avenue). Noise levels at receptors nearest the Surge parking lot staging area would increase by more than 10 dBA over existing ambient noise. Equipment operations and delivery trucks at Medical Building 1 parking lot and the Surge parking lot staging areas and along Medical Center Way would be a new source of noise to the residences in the vicinity of the staging areas, which would be a potentially significant impact.

TABLE 4.11-6
DAYTIME NOISE LEVELS FROM CONSTRUCTION FOR PROPOSED NHPH

Representative Receptor	Existing Daytime Noise Level (dBA, Leq)[a]	Loudest Two Noise Sources	Reference Noise Level (dBA)[a]	Distance to Receptor[b] (feet)	Usage Factor	Adjusted L_{eq} Level (dBA)[c]	Exceed 90 dBA Leq daytime standard?	Increase over Noise Level (dBA)
Site Preparation								
100 block Edgewood Avenue	--	Forklift	83	205	40%	60	No	NA
100 block Edgewood Avenue	--	Crane	81	205	16%	67	No	NA
100 block Edgewood Avenue	54	Combined Total	NA	205	NA	68	No	14
Drainage/Utilities/Subgrade								
100 block Edgewood Avenue	--	Forklift	83	205	40%	67	No	NA
100 block Edgewood Avenue	--	Generator	81	205	50%	66	No	NA
100 block Edgewood Avenue	54	Combined Total	NA	205	NA	70	No	16
Grading/Excavation								
100 block Edgewood Avenue	--	Excavator	83	205	40%	69	No	NA
100 block Edgewood Avenue	--	Grader	81	205	40%	65	No	NA
100 block Edgewood Avenue	54	Combined Total	NA	205	NA	70	No	16
Foundations/Concrete Pour								
100 block Edgewood Avenue	--	Drill Rig	84	205	20%	65	No	NA
100 block Edgewood Avenue	--	Tractor	84	205	40%	68	No	NA
100 block Edgewood Avenue	54	Combined Total	NA	205	NA	70	No	16
Building Construction								
100 block Edgewood Avenue	--	Concrete Saw	90	205	20%	70	No	NA
100 block Edgewood Avenue	--	Drill Rig	84	205	20%	65	No	NA
100 block Edgewood Avenue	54	Combined Total	NA	205	NA	71	No	17
Paving								
100 block Edgewood Avenue	--	Backhoe	78	205	40%	61	No	NA
100 block Edgewood Avenue	--	Scraper	84	205	40%	67	No	NA
100 block Edgewood Avenue	54	Combined Total	NA	205	NA	68	No	14

TABLE 4.11-6 (CONTINUED)
DAYTIME NOISE LEVELS FROM CONSTRUCTION FOR PROPOSED NHPH

Representative Receptor	Existing Daytime Noise Level (dBA, Leq)[a]	Loudest Two Noise Sources	Reference Noise Level (dBA)[a]	Distance to Receptor[b] (feet)	Usage Factor	Adjusted L_{eq} Level (dBA)[c]	Exceed 90 dBA Leq daytime standard?	Increase over Existing Noise Level (dBA)
Diesel Fuel Tank Replacement[d]								
100 block Edgewood Avenue	--	Drill Rig	84	205	20%	61	No	NA
100 block Edgewood Avenue	--	Drill Rig	84	205	20%	61	No	NA
100 block Edgewood Avenue	54	Combined Total	NA	205	NA	64	No	10
Moffitt/Long Renovations/Bridge and Tunnel Connection[e]								
100 block Edgewood Avenue	--	Crane	81	400	16%	55	No	NA
100 block Edgewood Avenue	--	Generator	81	400	50%	60	No	NA
100 block Edgewood Avenue	54	Combined Total	NA	400	NA	61	No	8
Surge Staging Area								
100 block Edgewood Avenue	--	Truck	74	20	40%	78	No	NA
100 block Edgewood Avenue	--	Loader	79	20	40%	83	No	NA
100 block Edgewood Avenue	54	Combined Total	NA	20	NA	84	No	20

NOTES:
a L_{max} at 50-feet
b Distance between approximate location of equipment and property line of receptor. For receptors on Edgewood Drive distance includes lateral separation of 180 feet and elevation gain of 100 feet.
c The L_{eq} level is adjusted for distance and percentage of usage.
d Construction of the diesel tanks will occur in 2024 to 2026 at the same time as hospital construction. Therefore, construction noise from this activity would be subsumed in the noise generated for building construction of the hospital above.
e Moffitt Long Renovations would occur after 2030 and would not be simultaneous with hospital construction.

NHPH Mitigation Measure NOI-1a, which is detailed below, would require shielding of the staging area where adjacent sensitive receptors have direct line-of-sight with loading and delivery activities. Depending on the materials used, such shielding can provide anywhere from 5 to 15 dBA of noise reduction. **NHPH Mitigation Measure NOI-1b** would require construction hours to be limited to those established by Sections 2907 and 2908 of the San Francisco Police Code. **NHPH Mitigation Measure NOI-1c** would require implementation of noise-reducing pile installation techniques during project construction. Implementation of **NHPH Mitigation Measures NOI-1a, NOI-1b** and **NOI-1c** would reduce noise levels associated with construction activities. Furthermore, under **NHPH Mitigation Measure TRANS-5**, a traffic control plan would be implemented to reduce temporary construction related conflicts. The traffic control plan shall specify that truck routes for haul trucks and vendor trucks shall be designated and signed to be circular loops to the degree feasible. This would reduce the need for back-up alarms in proximity to noise-sensitive receptors.

NHPH Mitigation Measure NOI-1a: Construction Noise Control Measures

UCSF contractors shall employ site-specific noise attenuation measures during construction of projects under the NHPH to reduce the generation of construction noise. These measures shall be included in a Noise Control Plan that shall be submitted for review and approval by UCSF to ensure that construction noise is consistent with the standards set forth in the City's Noise Ordinance. Measures specified in the Noise Control Plan and implemented during project construction shall include, at a minimum, the following noise control strategies:

- Equipment and trucks used for construction shall use the best available noise control techniques (e.g., improved mufflers, equipment redesign, use of intake silencers, ducts, engine enclosures, and acoustically attenuating shields or shrouds).
- Impact tools (e.g., jack hammers, pavement breakers, and rock drills) used for construction shall be hydraulically or electrically powered wherever possible to avoid noise associated with compressed air exhaust from pneumatically powered tools. Where use of pneumatic tools is unavoidable, an exhaust muffler on the compressed air exhaust shall be used; this muffler can lower noise levels from the exhaust by up to about 10 dBA. External jackets on the tools themselves shall be used where feasible; this could achieve a reduction of 5 dBA. Quieter procedures, such as use of drills rather than impact tools, shall be used where feasible.
- Stationary noise sources shall be located as far from adjacent receptors as possible, and they shall be muffled and enclosed within temporary sheds, incorporate insulation barriers, or include other measures.
- Shield staging areas where adjacent sensitive receptors have direct line-of-sight with loading and delivery activities. Shielding may consist of plywood fencing with no gaps or acoustical paneling erected in K-rails.

NHPH Mitigation Measure NOI-1b: Construction Hours

Construction hours shall be restricted to the hours listed in the table below. In rare circumstances, work may need to occur outside of these work hour limits. In such cases, UCSF Community and Government Relations will receive advance notice from the project manager, at least one week in advance as feasible, and will engage the community to identify measures to minimize potential impacts. These measures may include, but not be limited to, restricting work to smaller time windows, condensing the overall duration of nighttime work to the degree feasible, and erecting temporary barriers to shield the short-term nighttime activity.

Construction Hours

	"Not Noisy" Work[1]		Noisy Work	
	Regular hours	**Extended hours[2]**	**Regular hours**	**Extended hours[1]**
Monday - Friday	7:00 AM to 5:00 PM	5:00 PM to 8:00 PM	8:00 AM to 5:00 PM	
Saturday		8:00 AM to 5:00 PM		9:00 AM to 4:00 PM
Sunday		8:00 AM to 5:00 PM		

NOTES:
1 "Not Noisy" work = 80 decibels or less at 100 feet; "Noisy" work = more than 80 decibels at 100 feet.
2 Extended hours to be considered by UCSF Community and Government Relations with advance notice from the project manager.

NHPH Mitigation Measure NOI-1c: Pile-Installation Noise-Reducing Techniques

Noise-reducing pile-installation techniques shall be employed during project construction. These techniques shall include:

- Installing cast-in-place concrete piles. Noise from auger drilling is 17 dBA less than an impact pile driver.
- Vibrating piles into place, and installing shrouds around the pile-driving hammer where feasible.
- Implement "quiet" pile-installation technology (such as pre-drilling of piles and the use of more than one pile driver to shorten the total pile installation duration).

Mitigation: Implement NHPH Mitigation Measure TRANS-5: Construction Coordination and Monitoring Measures– Construction Traffic Control Plan.

Significance After Mitigation: NHPH Mitigation Measures NOI-1a, NOI-1b and NOI-1c would reduce, to the extent feasible, the severity of noise generated by demolition and construction activities and reduce the potential annoyance to nearby residents and others who could be disturbed by these activities. Implementation of NHPH Mitigation Measures NOI-1a and -1b is projected to reduce noise levels associated with demolition and construction activities for NHPH construction by 5 to 10 dBA, while NHPH Mitigation Measure NOI-1c would reduce noise levels associated with pile installation activities by 17 dBA. However, because it would still be likely that during peak construction activities, noise levels in excess of 10 dBA over ambient may still occur at some sensitive receptors on or near the project site after mitigation, the NHPH's construction noise impact would be significant and unavoidable with mitigation.

Potential Health Effects of Significant NHPH Construction Noise Impacts

As discussed above, daytime construction noise levels from simultaneous operation of multiple pieces of equipment could result in occasional noise levels of up to 71 dBA, L_{eq} at the nearby receptors over several months of activity. Because construction would be restricted by NHPH Mitigation Measure NOI-1b to only occur during daytime hours, health effects associated with the potential for nighttime awakenings would be avoided.

Short-term noise levels constituting the thresholds of pain and hearing damage are 120 dB and 140 dB, respectively (Kinsler, 1982). Table 4.11-6 shows average daytime construction noise levels at each of the studied receptors; the predicted levels are substantially below the thresholds of pain and hearing damage. The Occupational Safety and Health Administration require hearing conservation plans when noise levels continuously exceed 85 dBA over an 8-hour period; The predicted noise levels at the nearest receptors would not exceed 85 dBA. with the exception of occasional use of concrete saws, operation of individual pieces of construction equipment under the NHPH would be consistent with the City's Noise Ordinance restriction (noise level of 80 dBA Leq or less at a distance of 100 feet), and the resultant predicted noise levels at the nearest receptors would be below this level as well as below the daytime FTA criterion of 90 dBA. Consequently, the significant and unavoidable noise impact is not generated by virtue of noise levels that would be considered harmful but, rather, as a result of the magnitude of the increase over existing ambient noise levels without construction at certain receptor locations. Therefore,

NHPH construction noise would not result in adverse health effects related to pain, the onset of hearing loss or other significant health effects.

Impact NOI-2: Implementation of the NHPH would generate substantial permanent increases in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies. (*Less than Significant with Mitigation*)

New Hospital

Stationary Noise Sources

Operation of the New Hospital would increase ambient noise levels in the immediate campus site vicinity primarily associated with the operation of new building stationary equipment, such as HVAC systems and emergency generators.

HVAC equipment would be mounted on the New Hospital rooftop as well as internally within the building on the 7th floor. Rooftop HVAC equipment would be shielded from nearby receptors with a penthouse screen that would extend 25 feet above the roofline. Rooftop HVAC equipment would be located within enclosures to provide both noise attenuation and weather protection. Similarly, 7th floor HVAC equipment would be enclosed within the building and would be shielded with louvered openings on the building exterior. Operational noise from the proposed HVAC units was conservatively modeled using equipment specifications and plan drawings provided by UCSF and assuming all units as a point source at the eastern building façade (see **Appendix NOI**). Modeled noise from proposed HVAC units (supply and return) are predicted to be 47 dBA at the nearest receptor (residences on Edgewood Avenue), which would be below the existing nighttime hourly noise level at the property line of 53 dBA. Such a noise level would be consistent with the City of San Francisco noise ordinance which requires equipment noise for commercial and industrial uses to be limited to 8 dB(A) in excess of the ambient noise environment. The City's Police Code also provides an interior noise limit, stating that noise levels from mechanical sources may not exceed 45 dB(A) between the hours of 10:00 PM and 7:00 AM or 55 dB(A) between the hours of 7:00 AM and 10:00 PM with windows open. Given that, with standard construction materials, exterior noise will typically attenuate by 15 dBA with the windows open (U.S. EPA, 1974), and consequently, HVAC noise levels from the New Hospital at the interior of the nearest receptors would be 32 dBA, which would also be consistent with the interior noise standard in the City's noise ordinance.

Five cooling tower cells would also be located on the building rooftop which would generate noise from fan motors and air flow. Rooftop cooling equipment would be located within enclosures to provide both noise attenuation and weather protection. Noise from the proposed cooling tower cells was also conservatively modeled using equipment specifications and plan drawings provided by UCSF and assuming all units as a point source at the eastern edge of the cooling towers (see Appendix NOI). Modeled noise levels from the building cooling towers are predicted to be 63 dBA at the nearest receptor (residences on Edgewood Avenue), which would be 10 dBA above the existing nighttime hourly noise level at the property line of 53 dBA. Such a

noise level would exceed the restrictions of the City of San Francisco noise ordinance which limits equipment noise for commercial and industrial uses to 8 dB(A) in excess of the ambient noise environment. When considering incorporation of standard construction materials, cooling tower noise levels from the New Hospital at the interior of the nearest receptors would be 48 dBA, which would also exceed the 45 dBA interior noise standard of the City's noise ordinance. (The noise generated from the cooling towers would predominate over the less than significant noise from HVAC equipment estimated above, and the combination of these sources would not meaningfully contribute to a higher noise level.) Based on the above, cooling tower noise from the New Hospital would result in a potentially significant operational impact. **NHPH Mitigation Measure NOI-2** is identified to reduce this impact to less than significant.

The emergency standby diesel generators for the proposed New Hospital and their exhaust port would be located on the building's southern rooftop, approximately 300 feet from the nearest off-site receptors on Edgewood Avenue. Rooftop generators would be located within enclosures to provide both noise attenuation and weather protection. Regular maintenance operation testing of the emergency standby generators would occur for approximately four daytime hours per month (50 hours annually). Given the limited duration of noise events for testing, it would not substantially increase ambient noise levels. It should also be noted that operation of the proposed generators during a power failure or other emergency would be exempt from the restrictions of the City's noise ordinance.

NHPH Mitigation Measure NOI-2: New Hospital Cooling Tower Noise Control

New Hospital cooling tower equipment shall be designed to meet the City's Police Code requirements of not exceeding 8 dBA over existing ambient noise levels without the equipment operating as well as an interior noise standard at any sleeping or living room in any dwelling unit located on residential property of 45 dBA between 10:00 PM and 7:00 AM, and 50 dBA between 7:00 AM and 10:00 PM.

Specifically, given the existing monitored nighttime noise level at the nearest property line of 53 dBA, cooling towers shall be selected, designed, or enclosed to achieve an exterior performance standard of 61 dBA or less at the nearest property line. Achievement of this exterior standard would be sufficient to also achieve an interior nighttime standard of 45 dBA.

The proposed cooling tower manufacturer offers towers with "ultra quiet" fans capable of a noise level reduction of up to 12 dBA (Marley, 2021). A qualified acoustical consultant shall be retained to assess mechanical noise to determine the necessary methods by which the selected units would need further attenuation measures to achieve the identified performance standard and conform with the City's Police Code.

Traffic Noise Increases on Medical Center Way, including from Trucks

The proposed New Hospital would generate operational truck trips at the campus site, and there would be the potential for residences along Edgewood Avenue to be exposed to increased noise generation from increases in vehicle travel, including trucks accessing the loading docks via Medical Center Way at Parnassus Avenue. The New Hospital is predicted to generate approximately 175 additional delivery trucks per day, as estimated by the transportation consultant.

This would include a range of vehicle sizes, consisting primarily of small and medium two-axle trucks, and more infrequently, larger trucks with three or more axles.

Noise levels from traffic on Medical Center Way were calculated for existing conditions and with the New Hospital. Noise levels were calculated using the DNL calculator developed by the federal Department of Housing and Urban Development. This model takes into account the increases in vehicle trips, including trucks, and effect of the Medical Center Way roadway grade on the noise emissions from heavy trucks. Based on the estimated increase in traffic volumes on Medical Center Way, noise levels would increase from 58 Ldn to 61 Ldn at the nearest residential structures on Edgewood Avenue, approximately 180 feet away from the roadway. These predicted noise levels do not take into account any shielding that would be provided by local topography or on-campus buildings, and are therefore conservative. The existing noise levels at these receptors do not exceed general plan standards. With the NHPH, traffic noise levels along Medical Center Way would increase by 3 dBA, which would be an increase defined by Caltrans to be barely perceptible to the human ear (Caltrans, 2013). The increase would also be less than the 8 dBA over existing ambient noise levels standard established by Section 2909 of the City's Police Code, and consequently, the noise increase from the increase in vehicle travel on Medical Center Way would be less than significant.

Under the CPHP, a service corridor is planned that would extend from Medical Center Way to Koret Way and from there to a proposed extension of Fourth Avenue on the west side of the campus site. The proposed service corridor would facilitate transport of goods and materials by freight vehicles for back-of-house functions. It should be noted that this corridor would provide a one-way circuit through the campus site, and thus would preclude two-way truck traffic, and would also likely minimize the need for trucks to utilize their backup alarms, as trucks would proceed in a single direction. When considering these factors, the service corridor would be expected to further reduce delivery truck noise associated with the New Hospital experienced at nearby receptors on Edgewood Avenue. Please note that when the proposed service corridor project is advanced in terms of design, it would be subject to additional environmental review, as needed.

Ambulance Related Noise

At the Parnassus Heights campus site, emergency vehicles currently access the Moffitt Hospital emergency room via Moffitt Loop on Parnassus Avenue. UCSF data indicates that under existing conditions, there is an average of approximately 2.5 daily ambulance visits at Moffitt Hospital using lights and sirens. Under the NHPH, all emergency room operations would shift from Moffitt Hospital to the New Hospital. The proposed New Hospital ambulance parking bays would be located within the hospital building, and would be accessed via Medical Center Way. With the New Hospital, total annual emergency room visits at the campus site are projected to increase approximately 32 percent over existing conditions. Therefore, the average number of daily ambulance visits to the campus site using lights and sirens would be expected to increase from 2.5 to 3.3 events per day. An increase in ambulance siren activity would be most prevalent on arterials and collector streets leading to the New Hospital, particularly Parnassus Avenue. These average daily ambulance events would occur during daytime and nighttime hours.

Emergency vehicle sirens associated with ambulances are characteristic in the general vicinity of hospitals and can produce short-term noise up to 106 dB (CCSF, 2010). Ambulance sirens operating during the noise-sensitive nighttime hours have the potential to result in sleep disturbance at residences. The Single Event Noise Exposure Level (SENEL) is a metric for evaluating the potential for sleep disturbance from an intermittent noise event because it describes a receiver's total noise exposure from a single impulsive noise event (e.g., a passing vehicle or train, or an aircraft flying overhead), which is a rating of a discrete noise event that compresses the total sound energy of the event into a 1-second time period, measured in decibels.

San Francisco, the Governor's Office of Research and Planning, and most cities and counties have not established noise level standards for the effects of single-event noise. However, following the court decision in *Berkeley Keep Jets Over the Bay Committee v. Board of Port Commissioners of the City of Oakland*, (2001) 91. Cal.App.4th 1344 (Berkeley Jets case) there has been increased attention to the evaluation of SENELs and their effects on sleep. Because the Berkeley case involved aircraft and the hospital center would involve ambulances using sirens, the situations are not the same. Nonetheless, the SENELs from passing ambulances associated with NHPH operations are considered here. The *Berkeley Jets* case drew concerns related to interior SENEL values in excess of 65 dB, as this would result in a chance of sleep disturbance of less than 5 percent[8]. Reference sound level measurements indicate that when an ambulance travels past a receptor with its siren on, it generates an SENEL of 102.8 dB at 25 feet from its travel route (City of Elk Grove, 2020). Assuming the average exterior-to-interior noise level reduction of 25 dB provided by buildings with the windows closed (USEPA, 1978), the maximum SENEL in the interior of rooms located closer than 105 feet from a passing ambulance siren would exceed 65 dBA SENEL. As there are residences within this distance along Parnassus Avenue and many other roadways, the daily ambulance visits with lights and sirens under existing conditions can result in sleep disturbance when they occur during nighttime hours.

As the NHPH would only marginally increase the frequency of emergency vehicle visits and only a fraction of the additional daily visits would occur during the nighttime hours, the operational impact of additional siren noise from ambulance arrivals at the NHPH would be less than significant.

With the exception of siren use, patient drop-off events associated with ambulances are assumed to generate noise levels similar to those that would occur from typical parking lot activities. Like typical parking lot activities, patient drop-off events are expected to generate noise from vehicle arrival, idling, occupants exiting the vehicle, door closures, conversations among passengers, occupants entering the vehicle, startup, and departure of the vehicle, all of which would occur within the enclosed building access.

[8] According to dose-response curves for predicting awakening, 10 percent of the population is estimated to be awakened when the SENEL interior noise level associated with a noise event is 81 dB, an estimated 5 to 10 percent of the population is affected when the SENEL interior noise level is between 65 and 81 dB, and few sleep awakenings (less than 5 percent) are predicted if the interior SENEL is less than 65 dB (FICAN, 1997).

Related Improvements

Renovated Moffitt and Long Hospitals

The renovations to Moffitt and Long Hospitals would be largely internal to the buildings, and there would not be any notable changes in existing stationary or mobile sources of noise associated with operations of these hospitals over existing conditions. Consequently, the operational noise impact of this related improvement would be less than significant.

Mitigation: None required.

Widening of Medical Center Way

Potential changes in traffic on Medical Center Way associated with New Hospital are addressed above, under *Traffic Noise Increases on Medical Center Way, including from Trucks*. The proposed widening of Medical Center Way would not in and of itself generate increases in operational traffic on this roadway. Consequently, the operational noise impact of this related improvement would be less than significant.

Mitigation: None required.

Diesel Fuel Tank Replacement

Under the NHPH, the diesel fuel tanks would be replaced in approximately the same location as the existing tanks, although the maximum capacity of the tanks would increase by 25 percent over existing conditions. The diesel fuel tanks are not a normally used utility at the campus site, as the diesel fuel would only be used during emergency situations, and when emergency generators are regularly tested. There are approximately one per quarter for generator testing and several per week during annual source testing (less than 1 per day), and this frequency is not expected to substantially change under the NHPH. Consequently, noise associated with truck deliveries of diesel fuel to the diesel fuel tank replacement site would not change substantially from existing conditions. There would be no impact.

Mitigation: None required.

Medical Gas Tank Replacement

Under the NHPH, the proposed medical tank replacement site would be located approximately 150 feet east of the existing medical gas storage site, adjacent to and east of Medical Center Way. It is anticipated that bulk oxygen and nitrogen would continue to be delivered to the medical gas tank replacement site in refrigerated trucks, approximately 5,000-gallon capacity. As these truck deliveries are already occurring in the area and would only marginally relocate, the potential for increased operational noise from the replacement of medical gas tanks would be minimal and the impact would be less than significant.

Vegetation and Management and Slope Stabilization Improvements

Once implemented, the vegetation management and slope stabilization improvements would not be a source of operational noise and, consequently, there would be no operational noise impact of this related improvement.

Mitigation: None required.

Parnassus Avenue Pedestrian Bridge and Tunnel

The Parnassus Avenue pedestrian bridge and tunnel, once constructed, would not be a source of operational noise and, consequently, there would be no operational noise impact of this related improvement.

Mitigation: None required.

Impact NOI-3: Construction activities for the NHPH and related improvements could result in generation of excessive groundborne vibration or groundborne noise levels. (*Less than Significant with Mitigation*)

New Hospital

The types of construction-related activities associated with propagation of ground-borne vibration would primarily include the use of vibratory rollers for compacting, and drilling for pile installation. As discussed above, no pile driving or blasting activities are proposed during construction of the New Hospital. Rather, foundations would be installed using drilled piers, and excavation of soft rock would be conducted using hydraulic heavy excavators.

The Caltrans thresholds for potential architectural damage due to groundborne vibrations is 0.5 in/sec PPV for new residential structures and modern commercial buildings and 0.25 in/sec PPV for historic and older buildings. A matrix of vibration from construction activities with distance is presented in **Table 4.11-7.**

As can be seen from Table 4.11-7, use of a vibratory roller as close as 15 feet from a non-historic building would still be below the threshold for structural damage.

TABLE 4.11-7
VIBRATION LEVELS FOR CONSTRUCTION ACTIVITY

Equipment	Estimated PPV (inches per second)				
	At 15 Feet	At 25 Feet (reference)	At 50 Feet	At 100 Feet	At 180 Feet
Jack Hammer	0.06	0.035	0.016	0.008	0.004
Loaded Trucks	0.13	0.076	0.035	0.017	0.009
Caisson Drilling	0.16	0.089	0.041	0.019	0.011
Large Bulldozer	0.16	0.089	0.041	0.019	0.011
Vibratory Roller	0.37	0.20	0.100	0.046	0.025

SOURCE: Federal Transit Administration, *Transit Noise and Vibration Impact Assessment*, 2018 and Caltrans, 2020.

There are no historic structures within 200 feet of the proposed New Hospital construction site, and the nearest off-site structures on Hillway Avenue and Edgewood Avenue are also approximately 180 to 200 feet from the nearest construction area for the New Hospital. At these distances, vibrations from vibratory rollers for compacting and drilling for pile installation would be well below the architectural damage thresholds and the impact would be less than significant.

The potential for human annoyance and sleep disturbance due to vibration are primarily a concern when substantial construction activities are proposed during the nighttime hours, which would not occur with implementation of NHPH Mitigation Measure NOI-1b: Construction Hours, above. Therefore, with mitigation, human annoyance and sleep disturbance impacts from vibration would be less than significant.

UCSF also operates vibration sensitive equipment in some of its existing buildings, such as MRI machines and electron microscopes and such equipment may be located within the adjacent Long and Moffitt Hospitals. Construction activities in close proximity to such equipment could generate vibration levels of 65 VdB or greater that could affect these operations, depending on the degree of vibration isolation designed into their systems. Therefore, there is a potential for a significant impact to vibration-sensitive equipment and the following mitigation measure is identified to reduce such an impact to a less-than-significant level.

NHPH Mitigation Measure NOI-3: Assessment and Relocation/Retrofitting of Vibration-Sensitive Equipment

UCSF shall evaluate the presence of vibration-sensitive equipment within 150 feet of construction and demolition areas. Any sensitive equipment shall be evaluated for the existing extent of vibration isolation and relocated or vibration isolation shall be further embellished, as warranted. Based on available guidance (FTA, 2018), a performance standard of 65 VdB shall be implemented in lieu of any other available equipment-specific criterion.

Significance after Mitigation: Less than Significant. NHPH Mitigation Measure NOI-3 would require identification and assessment of vibration-sensitive equipment so that it can be relocated or further isolated so as to eliminate the potential for significant vibration impacts. Consequently, with mitigation, potential vibration-related impacts from NHPH construction would be less than significant.

Related Improvements

Renovation of Moffitt and Long Hospitals

While the overall construction activities associated with proposed renovation of Moffitt and Long Hospitals would be comparatively less than that for the New Hospital, certain construction activities could nevertheless have the potential to generate vibration effects. Campus site buildings identified as historical resources in the vicinity include the Medical Sciences Building, Health Sciences Instruction and Research (HSIR) East building, and Millberry Union, located west, south and north of Moffitt Hospital, respectively.

The Medical Sciences Building is located immediately west of and adjacent to Moffitt Hospital, HSIR East is located within 100 feet of Long Hospital, and Millberry Union is within 150 feet of

Moffitt Hospital. While demolition and construction activities for Moffitt and Long Hospital renovations would involve jack hammers or other impact equipment, the distance from historic resources would be sufficient to avoid architectural damage impacts.

Vibration-sensitive equipment within Long and Moffitt Hospitals may be impacted by renovation activities. When considering the potential for vibration-generating construction, and the presence of on-campus buildings that may house vibration-sensitive equipment, implementation of **NHPH Mitigation Measure NOI-3** would ensure that the construction-related vibration impacts associated with these renovation activities would be less than significant.

Mitigation: Implement NHPH Mitigation Measure NOI-3.

Widening of Medical Center Way

During the proposed widening of Medical Center Way, a vibratory roller may be used for roadway compaction. However, the nearest structure would be located 180 feet away which would be sufficient to ensure that the potential for vibration levels to result in architectural damage would be low, and the impact would be less than significant.

Mitigation: None required.

Replacement of Diesel Fuel Tanks

During the proposed replacement of diesel fuel tanks, a vibratory roller may be used for compaction. However, the nearest structure would be located 180 feet away which would be sufficient to ensure that the potential for vibration levels to result in architectural damage would be low, and the impact would be less than significant.

Mitigation: None required.

Replacement of Medical Gas Tanks

During the proposed replacement of medical gas tanks, a vibratory roller may be used for compaction. However, the nearest structure would be located 180 feet away which would be sufficient to ensure that the potential for vibration levels to result in architectural damage would be low, and the impact would be less than significant.

Mitigation: None required.

Vegetation Management and Slope Stabilization Improvements

During the proposed slope stabilization improvements, excavation and compaction equipment would be used in locations similar to those for the widening of Medical Center Way, above, and would have similar construction vibration-related impacts. The distance of work from the nearest structure would be sufficient to ensure that the potential for vibration levels to result in architectural damage would be low, and the impact would be less than significant.

Mitigation: None required.

Parnassus Avenue Pedestrian Bridge and Tunnel

During the proposed construction for the Parnassus Avenue pedestrian bridge and tunnel, excavation equipment and forklifts would be used and in locations on either side of Parnassus Avenue. The proposed tunnel under Parnassus Avenue would be constructed by means of either directional boring or open cut excavation. The types of equipment that would be used produce negligible vibration (Reilly, et al., 2020) and the potential for vibration levels to result in architectural damage would be low, and the impact would be less than significant.

Mitigation: None required.

Impact NOI-4: Operation of the NHPH would not exceed an LRDP EIR operational standard of significance by contributing to an increase in average daily noise levels (L_{dn}) of 3 dB(A) or more at property lines, where ambient noise levels already exceed local noise levels set forth in local general plans or ordinances for such areas based on their use. (*Less than Significant*)

NHPH

Operation of the NHPH would be considered to generate a significant impact if it resulted in a permanent increase in ambient noise levels greater than 3 dBA above levels existing without the project for areas already impacted by noise and a 5 dBA increase at receptors where the noise compatibility standard is being met. Increases in traffic noise levels were determined for this analysis using the FHWA Traffic Noise Prediction Model and the turning movements provided in the NHPH traffic study for the Existing, Existing plus NHPH, and Cumulative plus NHPH conditions in 2050. Peak hour intersection turning data[9] from the traffic study were analyzed to evaluate traffic increases and resulting traffic-generated noise increases on roadway segments most affected by NHPH-related traffic. The roadway segments analyzed and the modeled noise levels are presented in **Table 4.11-8**. The table shows existing roadside traffic noise levels, whether those levels already exceed noise compatibility standards and the applicable increase in noise used as the threshold. All roadways are assumed to be flanked by residential receptors which is the use with the most stringent standard for land use noise compatibility.

As shown in Table 4.11-8, the increase in peak hour traffic noise in the vicinity of the Parnassus Heights campus site from the Existing Plus NHPH traffic scenario compared to the Existing traffic scenario would be less than 3 dBA on all roadway segments. This is also true when the Cumulative plus NHPH condition is compared to existing conditions. Overall, traffic noise increases associated with the NHPH along all analyzed roadway segments in the vicinity of the Parnassus Heights campus site would be less than 3 dBA and the impact related to traffic noise would be less than significant.

Mitigation: None required.

[9] Because average daily traffic volumes and nighttime fraction data are not available for all the roadways analyzed, calculation of an Ldn value from available traffic volume data is speculative. This analysis uses peak hour Leq to determine the existing and with project noise levels. Caltrans recognizes that the Ldn is typically approximately equal to the peak hour Leq (Caltrans, 2013).

TABLE 4.11-8
PEAK-HOUR TRAFFIC NOISE LEVELS IN THE VICINITY OF THE PARNASSUS HEIGHTS CAMPUS SITE (dBA)

Roadway Segment[a,b]	(A) Existing	Does Existing Noise Exceed Residential Compatibility Standard?	Applicable Significance Threshold	(B) Existing Plus NHPH	(B-A) Difference between Existing Plus NHPH and Existing[c]	(D) Cumulative Plus NHPH (2050)	(D-A) Difference between Cumulative Plus NHPH and Existing
Kirkham Street between 5th Avenue and 7th Avenue	58.8	No	>5 dBA increase in an area >60 dBA Ldn	59.4	0.6	61.5	2.7
5th Avenue between Kirkham and Judah Streets	58.1	No	>5 dBA increase in an area <60 dBA Ldn	58.3	0.2	59.3	1.2
7th Avenue between Kirkham and Judah Streets	63.5	Yes	>3 dBA increase in an area <60 dBA Ldn	63.9	0.4	65.1	1.6
Judah Avenue between 5th Avenue and 7th Avenue	63.3	Yes	>3 dBA increase in an area >60 dBA Ldn	64.0	0.7	65.5	2.2
Parnassus Avenue between 3rd Avenue and 5th Avenue	64.6	Yes	>3 dBA increase in an area >60 dBA Ldn	65.2	0.6	66.6	2.0
Parnassus Avenue between 3rd Avenue and Hillway Avenue	64.4	Yes	>3 dBA increase in an area >60 dBA Ldn	65.2	0.8	66.8	2.4
Parnassus Avenue between Hillway Avenue and Stanyan Street	63.1	Yes	>3 dBA increase in an area >60 dBA Ldn	63.6	0.5	65.2	2.1
Stanyan Street between Parnassus Avenue and Frederick Street	63.5	Yes	>3 dBA increase in an area >60 dBA Ldn	63.9	0.4	65.0	1.5
Carl Street between Arguello Boulevard and Stanyan Street	60.1	Yes	>3 dBA increase in an area >60 dBA Ldn	60.3	0.2	61.7	1.6
Irving Street between Arguello Boulevard and 4th Avenue	60.9	Yes	>3 dBA increase in an area >60 dBA Ldn	61.2	0.3	63.3	2.4
Lincoln Way between Arguello Boulevard and 4th Avenue	73.3	Yes	>3 dBA increase in an area >60 dBA Ldn	73.4	0.1	73.9	0.6

NOTES:

[a] Road center to receptor distance is 15 meters (approximately 50 feet) for all roadway segments. Noise levels were determined using algorithms of the FHWA Traffic Noise Prediction Model.

[b] The analysis considered the vehicle mix based on – cars 95 percent, medium trucks three percent, and heavy trucks two percent on Parnassus Avenue, Irving Avenue, and Lincoln Way based on observed city and para-transit bus activity. Traffic speeds for all vehicle classes were set at 25 mph for all vehicle classes, except for Lincoln Way and Clarendon Avenue which are 35 mph.

SOURCE: ESA, 2021.

Cumulative Impacts

Impact C-NOI-1: Implementation of the NHPH, combined with cumulative construction noise in the project area, would generate a substantial temporary increase in ambient noise levels from construction activity in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies. (*Significant and Unavoidable with Mitigation*)

The geographic scope of analysis for cumulative construction noise and vibration impacts encompasses sensitive receptors within approximately 600 feet of the NHPH construction site.[10] Beyond 600 feet, the contributions of noise from other projects would be greatly attenuated through both distance and intervening structures and their contribution would be expected to be minimal. Section 4.0, *Introduction to Environmental Analysis*, presents the list of reasonably foreseeable future projects in the vicinity that could contribute to cumulative construction noise impacts.

There is one reasonably foreseeable off-site cumulative construction project in the campus site vicinity: the seismic retrofit of 350 Parnassus Avenue which could occur in 2022, prior to construction of the NHPH. Additionally, cumulative construction noise would be associated with the planned CPHP Initial Phase projects and other projects within the campus site that were previously approved under the 2014 LRDP. The demolition of the LPPI building, located on the site of the New Hospital, would occur in 2022, prior to NHPH construction work. The only notable contemporaneous cumulative construction project within the geographic scope of cumulative construction noise impacts would be the planned Irving Street Arrival which could undergo construction work beginning in 2022 through the end of 2023. As such there is the potential for one year overlapping construction with this cumulative project.

Receptors potentially affected by both concurrent construction activities for the NHPH and the Irving Street Arrival would be the existing residences on Irving Street between Arguello Boulevard and 2nd Avenue, as well as patients of Long and Moffitt Hospitals. Residences on Edgewood Avenue, while closer to the NHPH site, would be more than 600 feet away from the work for the planned Irving Street Arrival. Irving Street receptors would be 450 feet away and shielded from construction activities of the New Hospital by the intervening Medical Building 1, an 8-story structure, which would provide sufficient attenuation to reduce the cumulative contribution of the New Hospital construction noise to a less than significant level. However, Moffitt Hospital is adjacent to the proposed New Hospital and approximately 160 feet from the planned Irving Street Arrival where noise levels of 76 dBA would be expected at a distance of 100 feet from construction of the New Hospital alone. Construction noise associated with the NHPH in 2022 would be approximately 16 dBA over the existing noise levels at the nearest sensitive receptor which would be a significant construction noise impact. The addition of construction noise from the Irving Street Arrival would likely result in times when construction

[10] This screening threshold distance was developed based on stationary source noise attenuation equations (Caltrans, 2013a) and the combined noise level generated by typical construction phases for a given project (assuming multiple pieces of equipment) at a distance of 50 feet. Using the attenuation equations, the maximum noise level of 89 A-weighted decibels (dBA) for both excavation and finishing would diminish to below 70 dBA (speech interference) at 600 feet.

A receptor experiencing noise levels of 89 dBA from two adjacent construction sites would experience a cumulative noise level of 91 dBA (the acoustical sum of 89 dBA plus 89 dBA), which would still be below 70 dBA at 600 feet which, hence, is used as the geographic scope for approaching a significant cumulative impact.

noise would exceed 10 dBA over existing ambient levels even after implementation of identified mitigation measures identified for that project. Therefore, implementation of **NHPH Mitigation Measures NOI-1a** and **1b** would be required to reduce noise levels associated with construction activities. Implementation of **NHPH Mitigation Measure TRANS-5** would further serve to reduce cumulative construction traffic noise.

> **Mitigation:** Implement NHPH Mitigation Measures NOI-1a, NOI-1b, and NHPH Mitigation Measure TRANS-5: Construction Coordination and Monitoring Measures.
>
> **Significance after Mitigation:** Significant and Unavoidable with Mitigation. NHPH mitigation measures would reduce the severity of noise generated by construction activities and reduce the potential annoyance to nearby sensitive receptors to the extent feasible. Implementation of NHPH Mitigation Measures NOI-1a and 1b would reduce noise levels associated with demolition and construction activities by 5 to 10 dBA. However, because it would still be likely that during peak demolition activities, noise levels in excess of 10 dBA over ambient noise levels may still occur at some off-site sensitive receptors after mitigation, the cumulative construction noise impact would be significant and unavoidable with mitigation.

Impact C-NOI-2: Implementation of the NHPH, combined with cumulative development in the project area, would generate substantial permanent increases in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies. (*Less than Significant with Mitigation*)

There are no reasonably foreseeable off-site cumulative projects within the geographic scope of the NHPH that would generate substantial operational noise and, consequently, cumulative operational noise would be limited to other UCSF projects within the campus site that are planned under the CPHP or were previously approved under the 2014 LRDP. However, operation of these on-campus cumulative projects would similarly be subject to design controls and regulatory requirements to limit noise from stationary sources, as needed. Consequently, cumulative stationary source operational impacts of the NHPH would be less than significant with implementation of **NHPH Mitigation Measure NOI-2**.

> **Mitigation:** Implement NHPH Mitigation Measure NOI-2.
>
> **Significance after Mitigation:** Less than Significant.

Impact C-NOI-3: Implementation of the NHPH, combined with cumulative construction in the project area, would result in generation of excessive groundborne vibration or groundborne noise levels. (*Less than Significant with Mitigation*)

Potential cumulative construction vibration impacts would be limited to other UCSF construction projects that are planned under the CPHP or previously approved under the 2014 LRDP that are located in the immediate NHPH site vicinity. Architectural damage impacts to adjacent buildings

are not a concern in the cumulative scenario because the NHPH is sufficiently distant from these cumulative projects so as to not cumulatively combine to result in architectural damage impacts. Furthermore, none of the cumulative projects would be conducted during nighttime hours and would, therefore, not result in human annoyance or sleep disturbance impacts from vibration.

Consequently, cumulative vibration impacts of the NHPH would be similar to those analyzed above in Impact NOI-3, and would be less than significant with implementation of **NHPH Mitigation Measure NOI-3**.

Mitigation: Implement NHPH Mitigation Measure NOI-3.

Significance after Mitigation: Less than Significant.

Impact C-NOI-4: Implementation of the NHPH combined with cumulative development in the project area could exceed an LRDP EIR operational standard of significance by contributing to an increase in average daily noise levels (L_{dn}) of 3 dB(A)[11] or more at property lines, if ambient noise levels in areas adjacent to proposed development already exceed local noise levels set forth in local general plans or ordinances for such areas based on their use. (*Less than Significant*)

As shown in Table 4.11-8 above, the increase in peak hour traffic noise in the vicinity of the Parnassus Heights campus site from the Existing Plus Cumulative traffic scenario compared to the Existing traffic scenario would be less than 3 dBA on all roadway segments. Overall, traffic noise increases associated with the NHPH and cumulative development along all analyzed roadway segments in the vicinity of the Parnassus Heights campus site would be less than 3 dBA and the cumulative impact related to traffic noise would be less than significant.

Mitigation: None required.

4.11.5 References

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[11] Caltrans acknowledges that the Ldn is approximately equal to the peak hour Leq (Caltrans, 2009)

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4.12 Population and Housing

This section assesses the potential for construction and operation of the New Hospital at Parnassus Heights (NHPH) to result in significant impacts on population and housing. The section includes a description of the existing environmental setting as it relates to population and housing, and also provides a regulatory framework that discusses applicable state and local regulations. The section presents the significance criteria used to evaluate impacts on population and housing, and the results of the impact assessment, including any significant impacts and associated mitigation measures.

For purposes of providing distinction between the various components of this project, references made in this EIR to "New Hospital" relate only to the New Hospital portion of the overall project, whereas references made to "NHPH" relate to the overall project, including the New Hospital and its related improvements.

4.12.1 Environmental Setting

The City and County of San Francisco is the primary study area that would be affected directly by NHPH-related population and housing effects as well as by employment effects that could in turn result in demand for additional housing. However, effects may extend beyond San Francisco to neighboring counties in the Bay Area. The 2019 UCSF Transportation Commute Survey indicated that approximately 53 percent of UCSF students and employees commute from places within San Francisco, and therefore likely reside in San Francisco. Besides San Francisco, employee commuters largely travel from four other counties to UCSF campus sites: Alameda, Contra Costa, Marin, and San Mateo. Therefore, the study area for population and housing impacts includes San Francisco and the four surrounding counties. Population, housing and employment information on San Francisco and the four counties is presented below. As described in Section 4.0.4, the baseline condition for this EIR would be the same as that used in the CPHP Final EIR, which was January 2020. This baseline is also appropriate in consideration of the uncertainties that have resulted from the COVID-19 pandemic on background conditions. The population and housing data projections from January 2020 and the year 2019 therefore represent a conservative baseline.

Study Area Population

In 2020, there were about 889,783 people living in San Francisco, an increase of approximately 9.5 percent, or about approximately 84,548 residents, since 2010. In addition, there were approximately 373,363 households in San Francisco in 2020, an increase of approximately 8.3 percent, or about 28,472 households, since 2010. This rate of population and household growth is slightly higher than the rate of population and household growth in the five-county study area over the same period of time. In 2020, the population in the five-county study area was approximately 4.73 million, an increase of approximately 9.2 percent, or about 398,808 residents, since 2010. In 2020 there were approximately 1.75 million households in the five-county study area, an increase of approximately 5.9 percent, or about 98,173 households, since 2010. However, the average household size in San Francisco in 2020 was slightly lower than the five-county study area with the average household size in San Francisco at 2.31 persons per household and the average household size in the five-county study area at 2.65 persons per household (DOF, 2021).

Study Area Housing

In 2020, there were approximately 404,164 housing units in San Francisco, an increase of approximately 7.4 percent, or 28,002 units, since 2010 (DOF, 2021). During the period from 2014 to 2018, San Francisco had an estimated homeowner vacancy rate of 0.8 percent and rental vacancy rate of 2.9 percent (U.S. Census, 2019). In comparison, the five-county study area contained approximately 1.83 million housing units in 2020, an increase of approximately 5 percent, or 87,664 units, since 2010. The average vacancy rate across the study area in January 2020 was noticeably higher at 6.1 percent (DOF, 2021).

Study Area Employment

In 2019, approximately 762,900 people worked in San Francisco, an increase of 29 percent, or about 219,400 jobs, since 2010 (EDD, 2021a).[1] This estimate measures workers by place of work and includes full-time and part-time wage and salary employment; it does not include self-employed people, unpaid family workers, or private household employees (EDD, 2021b). In comparison the rate of job growth in the five-county study area was lower. In 2018, approximately 2.1 million people were employed in the study area, an increase of 15 percent, or about 307,700 jobs, since 2010.

Regional Projections

The Association of Bay Area Governments (ABAG) is the regional planning agency for the nine Bay Area counties and provides projections of future Bay Area population, housing, and employment. **Table 4.12-1** shows ABAG's current forecasts for San Francisco and the four other study area counties that a majority of UCSF employees live in; this forecast was adopted in 2018 for *Plan Bay Area 2040* (MTC and ABAG, 2018). The forecasts show that of the five counties, San Francisco will have the highest growth in population, households and jobs over the 2010–2040 planning period. The City's population is expected to increase by approximately 225,030 new residents between 2010 and 2030, which would represent a 28 percent increase over the City's 2010 population levels. Over the same 20-year period, the five-county region's population is expected to increase by 22 percent, or by nearly 940,000 million new residents. Household growth is expected to be slightly below population growth, with the number of households in San Francisco increasing by 27 percent between 2010 and 2030 and households in the five-county region increasing by 20 percent.

The rate of future job growth in San Francisco is expected to be higher than the rate of population growth. Between 2010 and 2030, San Francisco is expected to add about 263,400 new jobs, which would represent a 46 percent increase over its 2010 employment levels. Over the same 20-year period, the five-county region's employment is expected to increase by 31 percent, or by about 647,900 new jobs.

[1] These estimates of employment by place of work count part-time and full-time jobs equally. People who hold more than one job may be counted more than once.

TABLE 4.12-1
PLAN BAY AREA FORECAST OF POPULATION, HOUSEHOLDS, AND EMPLOYMENT FOR SAN FRANCISCO AND THE FIVE COUNTY STUDY AREA (2010-2030)

Factor	2010	2030	2010 to 2030	
			Increase	Percent
Population				
San Francisco	809,145	1,034,175	225,030	28%
Alameda	1,515,230	1,868,635	353,405	23%
Contra Costa	1,051,830	1,257,790	205,960	20%
Marin	252,920	274,530	21,610	9%
San Mateo	721,195	853,260	132,065	18%
Five-County Region	4,350,320	5,288,390	938,070	22%
Households				
San Francisco	345,810	437,505	91,695	27%
Alameda	545,140	668,285	123,145	23%
Contra Costa	375,365	440,765	65,400	17%
Marin	103,210	111,065	7,855	8%
San Mateo	257,835	302,520	44,685	17%
Five-County Region	1,627,360	1,960,140	332,780	20%
Employment				
San Francisco	576,850	840,270	263,420	46%
Alameda	705,865	901,380	195,515	28%
Contra Costa	360,080	458,230	98,150	27%
Marin	121,730	133,425	11,695	10%
San Mateo	343,380	423,160	79,780	23%
Five-County Region	2,108,565	2,756,465	647,900	31%

NOTE: Numbers may not sum due to rounding

SOURCE: MTC and ABAG, *Plan Bay Area: Projections 2040*, November 2018.

4.12.2 Regulatory Framework

This section discusses University plans and policies, State laws, and regional plans and policies pertaining to population, housing and employment. There are no federal laws and regulations related to population, housing or employment that are relevant to the proposed NHPH. One State law, SB 375, related to housing is relevant and is summarized below, along with University plans and policies that relate to population and housing. *Plan Bay Area 2040* which was prepared in response to SB 375 is also summarized below, as well as the Bay Area's Regional Housing Needs Allocation.

University of California

UCSF 2014 LRDP

The UCSF 2014 LRDP, as amended in 2021 (2014 LRDP), identified campus-wide objectives and objectives specific to the Parnassus Heights campus site. The following 2014 LRDP campus-wide and Parnassus Heights campus site objectives relate to population and housing:

Campus-Wide Objectives

2. Accommodate UCSF's Growth Through 2035

A. Meet physical needs for growth in research, clinical, and instructional programs at appropriate locations.

C. Provide additional amenities such as retail, permanent child care facilities, recreation and fitness facilities, improved outdoor areas, and other support services to the extent feasible, to enhance the quality of campus life and the public realm.

Campus Site-Specific Objectives

1. Parnassus Heights

D. Provide additional campus housing and improve campus life amenities including outdoor space.

E. Conform to the space limits and population estimates established in the Regents' Resolution Regarding the Parnassus Heights Campus Site, as amended.

The UCSF LRDP also included *Community Planning Principles*, which were produced in collaboration with the UCSF Community Advisory Group:

Community Planning Principles

Housing

H2. Ensure that UCSF development will seek to avoid adversely affecting the availability and affordability of housing. Address the need for student and junior faculty housing by making additions to the existing housing stock, while respecting existing neighborhood character.

H3. Avoid displacement of existing residential units or individuals who could be displaced by converting housing to other uses. Continue the UCSF practice of not acquiring existing residential property for nonresidential use.

State

Senate Bill 375

Senate Bill 375 was enacted to encourage regions like the Bay Area to develop solutions to the challenge of growing congestion, which has disproportionately affected lower-income residents and burdened them with hours-long commutes on crowded roads, buses or trains. This bill requires regions to prepare a Sustainable Communities Strategy (or Alternative Planning Strategy) to reduce greenhouse gas emissions by linking growth to transit, resulting in a different distribution of jobs and housing growth than under pre-strategy projections.

Regional

Plan Bay Area 2040

Plan Bay Area 2040 was developed to comply with Senate Bill 375. This plan serves as the Bay Area's Sustainable Communities Strategy and was prepared by ABAG and the Metropolitan Transportation Commission (MTC). The *Final Plan Bay Area 2040* was published in July 2017 (MTC and ABAG, 2017), and amended as recently as May 2020. *Plan Bay Area 2040* provides an update to the region's long-range transportation plan and sustainable communities strategy; it projects household and employment growth in the Bay Area through 2040, provides a roadmap for accommodating expected growth, and connects it all to a transportation investment strategy that strives to move the Bay Area toward key regional goals for the environment, economy, and social equity. *Plan Bay Area 2040* was advisory; adherence by each jurisdiction is not compulsory.

ABAG and MTC recently completed *Plan Bay Area 2050*. *Plan Bay Area 2050* is 30-year plan that includes outlines 35 integrated strategies for growth and investment, focusing on the economy, environment, housing, and transportation. *Plan Bay Area 2050* includes infrastructure investments to, among other issues, improve the transportation system and address sea level rise; and includes public policies to achieve future growth pattern for housing and jobs. The *Final Plan Bay Area 2050* was adopted in October 2021 (MTC and ABAG, 2021a). Similar to *Plan Bay Area 2040, Plan Bay Area 2050* is advisory.

Regional Housing Needs Planning for the San Francisco Bay Area: 2014-2022

The Regional Housing Needs Allocation (RHNA) is the state-mandated process under the State Housing Law to identify the total number of housing units (by affordability level) that each jurisdiction must accommodate. As part of this process, the California Department of Housing and Community Development (HCD) identifies the total housing need for the San Francisco Bay Area for an eight-year period (in the current cycle, from 2015 to 2023). ABAG must then develop a methodology to distribute this need to local governments in a manner that is consistent with the development pattern included in the Sustainable Communities Strategy (SCS).[2] Once a local government has received its final allocation, it must revise its general plan housing element to accommodate its portion of the region's housing need.

The housing allocation is expressed not only as an overall housing production target to alleviate tight housing market conditions and reduce long-distance commuting, but also, as separate targets for production of housing affordable to various household income categories. Based on this two-fold expression, San Francisco's share of the regional housing need for 2015 through 2023 is approximately 28,900 new units, with approximately 57 percent of the target to provide affordable housing to households making what is considered *above moderate*, or more than 120 percent of the area median income or less (CCSF, 2015).[3] This represents a little over 15 percent of the regional total from 2015 to 2023 and amounts to a total citywide housing

[2] The SCS is a newly required element of the Regional Transportation Plan (RTP), integrating land use and transportation strategies to achieve California Air Resources Board (CARB) emissions reduction targets.

[3] Income levels are broken into four categories: very low income is 50 percent or less of area median income, low income is 51 to 80 percent of area median income, moderate income is 81 to 120 percent of area median income, and above moderate is more than 120 percent of area median income.

production goal of affordable and market rate units of about 3,600 units per year. San Francisco's share of the RHNA is incorporated into the City's 2014 Housing Element of its General Plan (adopted in April 2015). As required by State law, the City's Housing Element discusses the City's fair share allocation of regional housing needs by income as projected by ABAG. Cities in the four study area counties have also prepared updated General Plan Housing Elements in response to the latest RHNA for the Bay Area.

In May 2021, ABAG approved its Final Regional Housing Needs Allocation Methodology and Draft Allocations for 2023 to 2031 (ABAG, 2021). San Francisco's share of the regional housing need for 2023 to 2031 is approximately 82,069 new units. The Final Allocations are anticipated to be considered for adoption by ABAG in December 2021. In addition, the City and County of San Francisco is currently preparing its Housing Element 2022 Update for the next eight years (2022 to 2030), and anticipates adoption of this update by early 2023.

4.12.3 Impacts and Mitigation Measures

Significance Criteria

Would implementation of the NHPH:

a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

c) Exceed the LRDP EIR standard of significance by creating a demand for housing outside the market area where the facilities or site are located?

Criteria a) and c) are addressed in Impact POP-1 below as they address overlapping issues.

Criterion Not Analyzed

As stated in the Initial Study, there would no impact related to the following topic for the reasons described below:

- ***Displacement of people or housing.*** The proposed New Hospital and related improvements would not displace any residents or housing units since no housing units currently exist on the project site. Therefore, the proposed NHPH would have no impact related to displacement of housing units or people and would not necessitate the construction of replacement housing. This topic will not be evaluated further in this section.

Approach to Analysis

The analysis estimates the increase in campus population and related housing needs that would result from implementation of the NHPH. For the analysis of operational impacts, direct population growth refers to the people who would be employed in the proposed hospital that would be developed on the project site. Indirect or secondary growth refers to the population

associated with development that could occur as infrastructure is expanded to previously unserved or underserved areas. This type of indirect growth is not applicable to the proposed project, as it would be located in a built-up urban environment that is already largely served by existing infrastructure

To evaluate the relative magnitude of the increases in population and housing needs resulting from the NHPH, the analysis compares these estimates with ABAG's growth estimates developed for both the City and the entire five-county study area. Projections for 2030 are used to represent future planned conditions. "Substantial unplanned population growth" resulting from implementation of the NHPH is defined as an increase in population or employment that is inconsistent with growth anticipated in adopted planning documents.

Impact Analysis

Impact POP-1: Implementation of the NHPH would induce population growth in the San Francisco Bay area, but not to an extent to which it would create demand for housing outside the market area. (*Less than Significant*)

New Hospital and Renovation of Moffitt and Long Hospitals

The proposed New Hospital and renovation of Moffitt and Long Hospitals under the NHPH are considered together in this discussion due their proposed related and interdependent operational activities.

As discussed in Chapter 3, Project Description, the New Hospital would provide a variety of services, including acute and intensive care, diagnostic and treatment services, clinical support, and logistical support services. In addition, interior renovations would be implemented at Moffitt and Long Hospitals to facilitate the inpatient clinical and support program needs for the increased patient capacity at the Parnassus Heights campus site. Under the NHPH, the proposed New Hospital would provide 336 inpatient beds, Long Hospital would provide 297 inpatient beds, and Moffitt Hospital would provide 49 inpatient beds, for a total inpatient bed count of up to 682 beds (an increase of 207 beds over existing conditions) that would be online by December 2030. Accordingly, the proposed New Hospital and renovation of Moffitt and Long Hospitals would result in population growth on the Parnassus Heights campus site through increased employment, patients, and visitors associated with operation of these hospitals. These NHPH components would accommodate an increase in the campus site's average daily (daytime) population over existing (2020) conditions by approximately 2,275 persons in the year 2030 (see **Table 4.12-2**).

Because patients and visitors, and the vendor-related population associated with these hospitals, would use the campus site for short periods and/or would already be living in the area, they are not considered in the population increase that would result from NHPH implementation. As shown in Table 4.12-2, the proposed NHPH and renovated Moffitt and Long Hospitals would result in a net increase in faculty and staff population at the campus site of 1,449 persons in 2030.

TABLE 4.12-2
PROJECTED NHPH AVERAGE DAILY POPULATION (DAYTIME)

	Projected NHPH Population at 2030
Faculty and Staff	1,449
Inpatients	207
Visitors	518
Vendors/Other	101
Total	**2,275**

SOURCE: UCSF, 2021

As indicated in the Environmental Setting, according to the Plan Bay Area 2040, approximately 576,850 people worked in San Francisco in 2010. Between 2010 and 2030, San Francisco is expected to add about 263,420 new jobs, which would represent a 46 percent increase over its 2010 employment levels, or an annual job growth rate of about 2.2 percent (about 13,171 jobs per year). Some of the employment growth at the Parnassus Heights campus site was included in the 2014 LRDP and is potentially accounted for in the employment projections for San Francisco included in the Plan Bay Area 2040. However, if conservatively it is assumed that all new jobs at the New Hospital and renovated Moffitt and Long Hospitals under the NHPH are not included in the projections and would be incremental, the addition of about 1,449 jobs by 2030 that would be maintained through 2050 would not substantially increase the employment levels in San Francisco above those projected by ABAG. The employment growth from the New Hospital and renovated Moffitt and Long Hospitals would not add significantly to the amount of employment forecast for San Francisco during this period.

Conservatively assuming that all new employees at the New Hospital and renovated Moffitt and Long Hospitals would be new to San Francisco and the five-county study area, the increase in employment would result in an increase in the residential population of San Francisco and other communities in the four study area counties. Assuming that the new employees would make the same residential location decisions as current UCSF employees, based on results of the 2019 UCSF Transportation Commute Survey, approximately 53 percent of new employees would live in San Francisco. There would also be additional population living in those UCSF employee households. Assuming only one UCSF employee per household and based on 2.31 persons per household for San Francisco, the total population in San Francisco associated with UCSF growth from the New Hospital and renovated Moffitt and Long Hospitals would be approximately 1,774[4] by 2030. Between 2010 and 2030, San Francisco is expected to add about 225,030 new residents, which would represent a 28 percent increase over its 2010 population levels. The share of the City's 2030 population growth associated with the population growth from the New Hospital and renovated Moffitt and Long Hospitals by 2030 would be approximately 0.8 percent.

Alternatively, if conservatively it is assumed that all new employees would live in San Francisco, the total population in the City associated with UCSF growth from the New Hospital and renovated

[4] 53% of 1,449 faculty and staff population x 2.31 persons per household = 1,774 new residents.

Moffitt and Long Hospitals would be approximately 3,347 by 2030. Under this scenario, the share of the City's 2030 population growth associated with the population growth from the New Hospital and renovated Moffitt and Long Hospitals by 2030 would be approximately 1.5 percent.

The market area for housing for UCSF employees is the five-county study area discussed in the *Environmental Setting* (i.e., San Francisco, Alameda, Contra Costa, Marin, and San Mateo Counties). Generally, the housing demand associated with employment growth from the New Hospital and renovated Moffitt and Long Hospitals would be satisfied by the housing that could be added in San Francisco and in other parts of the region. Between 2010 and 2030, San Francisco is expected to add about 91,695 new households, which would represent a 27 percent increase over its 2010 household levels. Assuming the current pattern of residential location preferences, the housing demand in San Francisco associated with UCSF employment growth from the New Hospital and renovated Moffitt and Long Hospitals by 2030 would represent approximately 0.8 percent of the projected household growth — a share that would not be anticipated to trigger shifts of demand to other parts of the study area or beyond the regional housing market area. Further, again conservatively assuming that all new employees would live in San Francisco, housing demand in the City associated with UCSF employment growth under the NHPH by 2030 would represent approximately 1.6 percent of the projected household growth.

UCSF currently has 222 housing units on the Parnassus Heights campus site. By the time the New Hospital and renovation of Moffitt and Long Hospitals are completed, approximately 364 housing units would be available on the campus site (i.e., within the expanded Aldea Housing complex, and existing housing on Third and Fifth Avenues and Irving Street). The residential units planned on the Parnassus Heights campus site will provide more on-campus housing to employees near their workplaces, including those that work in these hospitals, thereby reducing demand for off-campus housing in San Francisco and the Bay Area. In addition, as part of a Memorandum of Understanding (MOU) between UCSF and the City of San Francisco (January 22, 2021) regarding the CPHP, UCSF committed to providing additional housing beyond that called for in the CPHP. Specifically, UCSF agreed to deliver "a total of 1,263 net new units in San Francisco by 2050 (inclusive of the 762 units in the CPHP), half delivered by 2030, with the remaining half divided equally by 2040 and 2050. This would double UCSF's current housing portfolio citywide." As further stated in the MOU, "UCSF can opt to satisfy up to 200 of its affordable housing obligation through payment of in-lieu fee, provision of land to the City, and other measures."

Implementation of the proposed New Hospital and renovated Moffitt and Long Hospitals would induce population growth in the Bay Area, but the population growth would not be substantial in comparison to the growth that is projected and planned for San Francisco and the four study area counties in *Plan Bay Area 2040* and the local General Plans for the study area communities.

Over the last several years, the supply of housing has not met the demand for housing in the study area counties. As described above, San Francisco's share of the regional housing need for 2015 through 2023 is approximately 28,900 new units, and 82,069 new units for 2023 to 2031. San Francisco has constructed approximately 24,400 units, or approximately 84 percent of the production target for the 2015 through 2022 planning period (San Francisco Planning Department,

2021). However, the City has an approximately 6,855-unit deficit for the production of very low income, low income, and moderate income housing. The housing demand associated with the employment growth under the NHPH would be expected to be satisfied in part by the approximately 600 new units that are expected to be delivered by UCSF by 2030 in accordance with the MOU. The proposed New Hospital and renovated Moffitt and Long Hospitals' impact related to population and housing would be less than significant.

Mitigation: None required.

Related Improvements

The NHPH would also include the following related improvements: widening of Medical Center Way; diesel fuel tanks and medical gas tanks replacement projects; vegetation management and slope stabilization improvements; and construction of the Parnassus Avenue pedestrian bridge and tunnel. No additional employees would be required for the operation of these related improvements. Accordingly, these related improvements would have no impact related to population and housing.

Mitigation: None required.

Cumulative Impacts

Impact C-POP-1: The NHPH, in combination with past, present, and reasonably foreseeable future projects, would not result in a cumulatively considerable contribution to significant cumulative population and housing impacts. (*Less than Significant*)

Development of the cumulative projects and the associated residential and employee populations could result in substantial unplanned population growth in San Francisco and the Bay Area, thus resulting in a potentially significant cumulative impact with respect to population and housing.

The proposed NHPH would result in a net increase of 1,449 new employees at the campus site by 2030 that would be maintained through CPHP buildout in 2050. The proposed NHPH, in combination with cumulative development under the CPHP would result in a student, faculty, and staff population increase of approximately 5,180 by 2050 at the campus site. Using the same ABAG growth projections discussed in Impact POP-1 above, this combined CPHP growth would similarly not substantially increase the employment levels in San Francisco above those projected by ABAG.

Over the last several years, the supply of housing has not met the demand for housing in the study area counties. As described above, San Francisco's share of the regional housing need for 2015 through 2023 is approximately 28,900 new units, and 82,069 new units for 2023 to 2031. The housing demand associated with employment growth under the CPHP, including the NHPH, would be satisfied by the housing that is expected to be added in San Francisco and in other parts of the region. In addition, some of the additional population associated with the proposed NHPH and cumulative projects would be expected to be housed in the approximately 1,263 net new units

provided by UCSF in San Francisco by 2050, thereby reducing demand for off-campus housing in San Francisco and the Bay Area. As such, this growth would not be anticipated to trigger shifts in demand for housing in the study area or beyond the regional housing market area. Although implementation of the proposed NHPH and cumulative projects would induce population growth in the Bay Area, the contribution made by the proposed NHPH would not be cumulatively considerable and the impact would be less than significant.

Mitigation: None required.

4.12.4 References

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4.13 Transportation

This section describes and evaluates the potential for the construction and operation of the New Hospital at Parnassus Heights (NHPH), including related improvements, to result in significant transportation impacts. The section presents the regional and local transportation setting, provides the transportation regulatory framework, identifies criteria used to determine impact significance, and provides an analysis of the potential transportation impacts associated with the implementation of the NHPH as well as identifies feasible mitigation measures that could mitigate any potentially significant impacts.

For purposes of providing distinction between the various components of this project, references made in this EIR to "New Hospital" relate only to the New Hospital portion of the overall project, whereas references made to "NHPH" relate to the overall project, including the New Hospital and its related improvements.

4.13.1 Environmental Setting

This section describes the existing transportation and circulation setting: the existing regional roadway network, regional transit service, the local roadway network, local transit service, the UCSF shuttle system, existing UCSF transportation demand management programs, pedestrian conditions, bicycle conditions, loading conditions, emergency vehicle access, vehicle miles traveled, and parking conditions. The existing transportation and circulation settings reflects conditions as of January 2020, to reflect a pre-COVID-19 baseline. **Figure 4.13-1** shows the study area, campus site, and NHPH project site.

Regional Setting

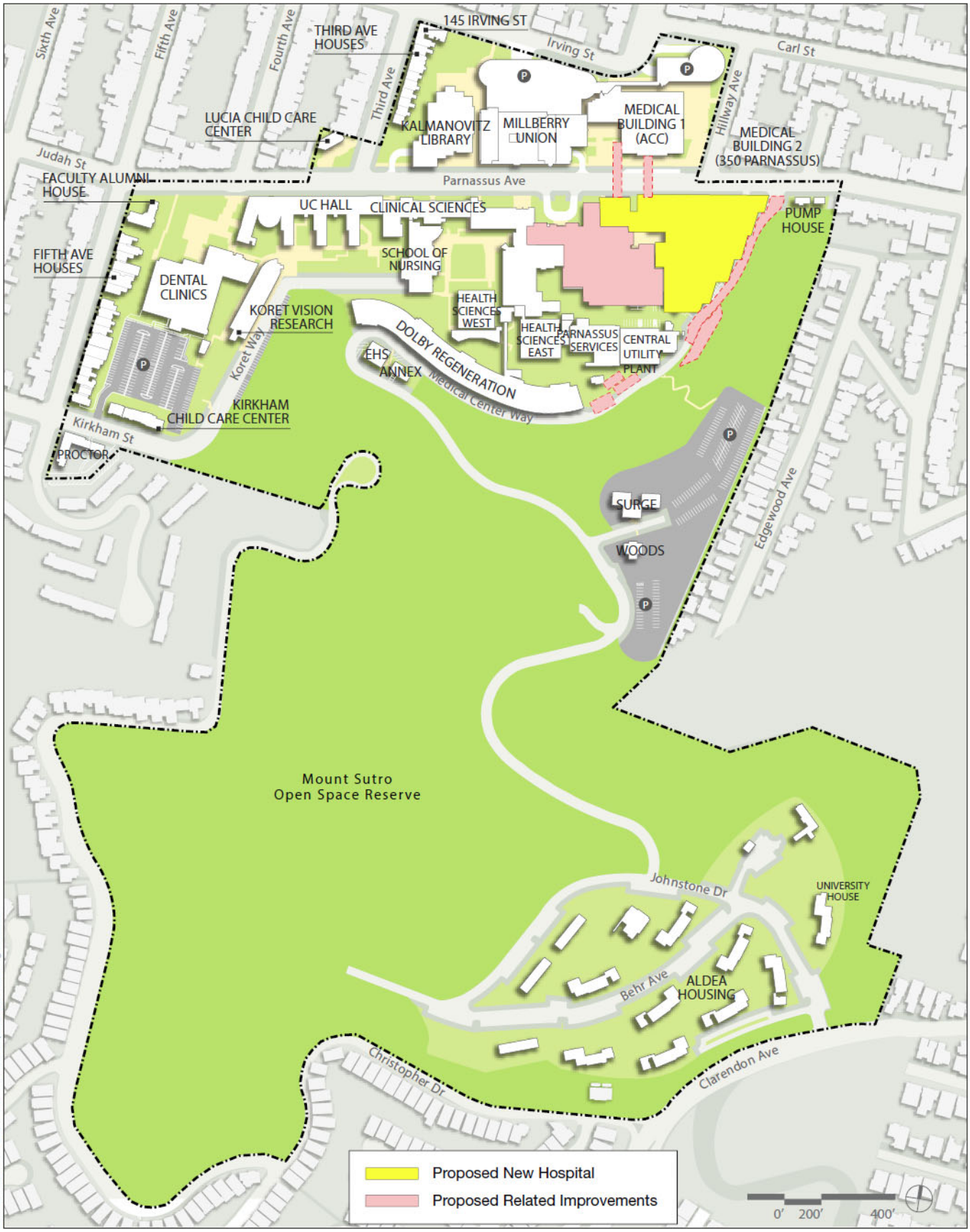
Regional Roadway Network

Regional roadway access to the NHPH project site is provided by several major regional freeways and roadways, as discussed below.

Interstate 80 (I-80) is located approximately 3 miles east of the project site. I-80 connects San Francisco to the East Bay and other points to the east of the City via the San Francisco-Oakland Bay Bridge.

U.S. Highway 101 (U.S. 101) is located approximately 2 miles east of the project site. U.S. 101 connects San Francisco with the Peninsula and the South Bay to the south, and with the North Bay to the north via the Golden Gate Bridge. U.S. 101 connects to I-80 in the South of Market (SoMa) neighborhood of San Francisco. Within the northern part of San Francisco, U.S. 101 operates on surface streets (i.e., Van Ness Avenue and Lombard Street).

State Highway 1 (19th Avenue) is located approximately 1 mile west of the project site. 19th Avenue connects San Francisco to the North Bay via the Golden Gate Bridge and to the South Bay via a connection to Interstate 280 (I-280) south of the project site. Within the study area, 19th Avenue has six lanes, with left turns prohibited at most intersections.



SOURCE: Fehr & Peers, 2021

UCSF New Hospital Parnassus Heights EIR

Figure 4.13-1
Parnassus Heights Campus Site and NHPH Site

Interstate 280 (I-280) is located approximately 2 miles east of the project site. I-280 connects San Francisco to the South Bay with connections to 19th Avenue, the Mission Bay district and SoMa. I-280 connects to U.S. 101 south of Mission Bay.

Regional Transit Service

Golden Gate Transit. The Golden Gate Bridge, Highway, and Transportation District operates Golden Gate Transit (GGT), which provides bus and ferry service between the North Bay (Marin and Sonoma Counties) and San Francisco. GGT operates 22 commuter bus routes, nine basic bus routes, and 16 ferry feeder bus routes in San Francisco. Bus routes operate at headways of 15 to 90 minutes depending on time and day of week and bus type. GGT also operates ferry service between the North Bay and San Francisco, connecting Larkspur and Sausalito with the Ferry Building during the morning and evening commute periods. GGT riders need to transfer to San Francisco Municipal Railway (Muni) to access the project site.

Alameda-Contra Costa County Transit District (AC Transit). AC Transit operates bus service in western Alameda and Contra Costa Counties, as well as routes to the City of San Francisco and San Mateo County. AC Transit operates 33 "Transbay" bus routes between the East Bay and the Salesforce Transit Center, located on Beale Street between Mission Street and Howard Street. The Salesforce Transit Center is accessible from the project site via Muni. The majority of Transbay service is provided only during commute periods in the peak direction of travel, with headways of 15 to 20 minutes. The peak direction of service is into San Francisco during the AM peak period and out of San Francisco during the PM peak period. All-day service is provided on a few lines, with headways of approximately 30 minutes. AC Transit riders need to transfer to Muni to access the project site.

San Mateo County Transit District (SamTrans). SamTrans operates bus and rail service in San Mateo County. A few SamTrans routes also serve the Salesforce Transit Center in downtown San Francisco, including Routes 292, 397, and 398. Route 292 makes San Francisco stops along Potrero Avenue and Mission Street throughout the day. AM peak hour headways are between 10 and 15 minutes, and PM peak hour headways are 20 minutes. Routes 397 and 398 run along Mission Street in San Francisco but stop only at the Salesforce Transit Center. Route 397 is a late-night service route with headways of one hour. Route 398 operates during peak periods with one-hour headways. SamTrans riders need to transfer to Muni or UCSF shuttle to access the project site.

Bay Area Rapid Transit (BART). BART provides regional commuter rail service between San Francisco and the East Bay (Pittsburg/Bay Point, Richmond, Dublin/Pleasanton and Fremont), as well as between San Francisco and San Mateo County (SFO Airport and Millbrae). Weekday hours of operation are currently between 5:00 AM and midnight. During the weekday PM peak period, headways are 5 to 15 minutes along each line. Within San Francisco, BART operates underground along Market Street to Civic Center Station where it turns south through the Mission District towards Daly City. The closest BART station to the project site is the Civic Center BART station, which is accessible from the project site via Muni.

Caltrain. Caltrain provides passenger rail service on the Peninsula between San Francisco and Downtown San Jose with several stops in San Mateo County and Santa Clara County. Limited

service is available south of San Jose. Caltrain service headways during the AM and PM peak periods are 10 to 60 minutes, depending on the type of train. The peak direction of service is southbound during the AM peak period and northbound during the PM peak period. Caltrain service terminates at the San Francisco Station at Fourth and King Streets (Fourth/King station). The Fourth/King station is served by local, limited, and express "Baby Bullet" trains that are accessible from the project site via Muni.

Caltrain is in the process of implementing a Modernization Program that will electrify the railway. The electrification project is scheduled to be complete by 2024[1] and will upgrade rail performance, improve operational efficiency, and result in higher capacity. For example, whereas today Caltrain operates 10 trains per hour during peak periods, electrification will support an increase to 12 trains per hour. Additionally, Caltrain is anticipating a "blended system," with California High Speed Rail trains running alongside Caltrain on the same tracks by 2040. Electrification of Caltrain (and the associated improved travel times and frequencies), as well as the introduction of High Speed Rail, may improve UCSF's regional transit access.

Local Setting

Local Roadway Network

With Golden Gate Park to the north and Mount Sutro to the south, the roadways used to access the project site are primarily via east-west corridors – Parnassus Avenue, Judah Street, Irving Street-Carl Street, Lincoln Way, and Kirkham Street. Primary north-south routes to the project site include Stanyan Street, Arguello Boulevard, Seventh Avenue, and Second Avenue through Fifth Avenue. The primary vehicular entrances to parking facilities for the project site are located at the intersections of Second Avenue/Irving Street, Arguello Boulevard/Carl Street-Irving Street, and Parnassus Avenue between Hillway Avenue and Third Avenue. Local access to the project site is provided by an urban street grid network. Key local roadways in the vicinity of the project site are discussed below.

The local road network serving the project site consists primarily of two-lane roadways with on-street parking provided on both sides of the streets in most areas, as follows:

- **Kirkham Street** runs between the project site to La Playa Street in the west. East of Fifth Avenue, Kirkham Street becomes Koret Way (a campus street) and provides access to the School of Dentistry and School of Nursing buildings. West of Sixth Avenue, Kirkham Street has Class II bicycle lanes in both directions.
- **Carl Street/Irving Street** extends from Clayton Street to 48th Avenue. The City classifies this roadway as a Primary Transit Street (transit-oriented) east of Ninth Avenue. In the vicinity of the project site, the N – Judah light rail line operates along the roadway between Cole Street and Ninth Avenue. The street provides exclusive turn pockets for vehicles to enter the UCSF parking garage at the Second Avenue/Irving Street intersection.
- **Hugo Street** runs between Arguello Boulevard and Seventh Avenue. Between Seventh Avenue and Third Avenue, Hugo Street is designated as a Class III bicycle route.

[1] https://www.caltrain.com/about/MediaRelations/news/Caltrain_Electrification_Delayed_to_2024.html

- **Willard Street** runs from Fredrick Street to Woodland Avenue.
- **Medical Center Way**, a campus street, runs from Parnassus Avenue to Johnstone Drive through the Mount Sutro Open Space Reserve.
- **Hillway Avenue** runs between Parnassus Avenue and Carl Street.
- **Arguello Boulevard** runs from Kezar Drive to Carl Street.
- **Second Avenue** runs from Lincoln Way to Irving Street, with the southern end of the street providing direct access to a large UCSF public parking garage with a long-term bicycle parking facility.
- **Third Avenue** runs between Lincoln Way and Parnassus Avenue. Between Hugo Street and Lincoln Way, Third Avenue is a designated Class III bicycle route. All northbound traffic on Third Avenue must turn right at Lincoln Way.
- **Fourth Avenue** runs between Lincoln Way and Parnassus Avenue. All northbound traffic on Fourth Avenue must turn right at Lincoln Way.
- **Fifth Avenue** runs between Lincoln Way and its terminus south of Kirkham Street. Fifth Avenue provides full access (i.e., northbound traffic can turn left and right) at Lincoln Way.
- **Sixth Avenue** runs between Lincoln Way and its terminus south of Kirkham Street. Sixth Avenue is designated as a bicycle route between Hugo Street and Kirkham Street and has a southbound Class II bicycle lane and a northbound Class III bicycle route (with shared-lane markings [“sharrows”]).
- **Eighth Avenue** runs between Lincoln Way and its southern terminus at Pacheco Street. The 66 Quintara bus line operates along Eighth Avenue between Judah Street and Lawton Street in the northbound direction only.

The roadway exceptions to the two-lane cross section are as follows:

- **Parnassus Avenue/Judah Street** is a two- to three-lane roadway that extends from Clayton Street to 48th Avenue. The City classifies this roadway as a Secondary Transit Street east of Ninth Avenue (in the vicinity of the project site) and a Primary Transit Street (Transit-Oriented) west of Ninth Avenue. The 6 Parnassus and 43 Masonic bus lines operate on this street. A two-way left-turn lane extends from Stanyan Street to the Moffitt-Long Hospital. Access to the Millberry Union Garage is across from the Moffitt/Long Hospital Drop-off/Pick-up area; two signalized crosswalks facilitate heavy pedestrian volumes across the street in the same location. Parnassus Avenue/Judah Street is also designated as a Class III bicycle route east of Sixth Avenue. Class III bicycle routes employ “sharrows.”
- **Lincoln Way/Frederick Street** is a two- to four-lane Secondary Transit Street that forms the southern boundary of Golden Gate Park. At Third Avenue, Lincoln Way merges with Kezar Drive and is a main thoroughfare between the Sunset District and downtown. The 7 Haight-Noriega bus line uses the entirety of Lincoln Way and Frederick Street to travel to Stanyan Street, while the 7X Noriega Express uses Lincoln Way to merge onto Kezar Drive in order to get to the Fell-Oak Street one-way couplet.
- **Kezar Drive** is a two- to four-lane east-west Major Arterial Street north of Parnassus Avenue that provides the major connection from the project site to the Fell-Oak Street one-way couplet. Kezar Drive has a Class I bicycle path facility. The 7X Noriega Express uses Kezar Drive to travel from Lincoln Way to Oak Street.

- **Stanyan Street** is a Secondary Transit Street from Geary Boulevard to Belgrave Avenue. It forms the eastern boundary of Golden Gate Park (excluding the Panhandle section of the park). In the vicinity of the project site (north of Frederick Street), it is a four-lane roadway; south of Fredrick Street, it is a two-lane street. The 7 Haight-Noriega bus line operates along Stanyan Street north of Frederick Street.
- **Seventh Avenue** is a Secondary Transit Street, which provides access to Golden Gate Park and becomes Laguna Honda Boulevard to the south of the Parnassus Heights campus. It has one northbound and two southbound lanes in the vicinity of the project site. Seventh Avenue is designated as a Class III bicycle facility between Lincoln Way and Judah Street and as a Class II bicycle lane south of Judah Street. The 36 Teresita, 43 Masonic, and 44 O'Shaughnessy bus lines operate on Seventh Avenue south of Lawton Street.
- **Ninth Avenue** is a Secondary Transit Street, which provides access to Golden Gate Park and the Sunset District. It has one northbound and two southbound lanes in the vicinity of the project site. The N-Judah light rail line operates on Ninth Avenue between Irving and Judah Streets. The 43 Masonic and 66 Quintara bus lines operate along Ninth Avenue between Judah Street and Lawton Street, while the 44-O'Shaughnessy line runs between Golden Gate Park and Lawton Street.

Parnassus Avenue Traffic Volumes

UCSF committed to monitoring the number and classification (vehicle type, e.g., private passenger vehicle, taxi, parcel/mail delivery, etc.) of vehicles at key gateways of the Parnassus Heights campus site every two years as part of the Measurement and Accountability section (4.6) of the 2014 Long Range Development Plan (LRDP), as amended. Specifically, monitoring takes the form of collecting two days of vehicle turning movement and classification observations at three "gateway" intersections (Fifth Avenue and Kirkham Street, Fifth Avenue and Parnassus Avenue, and Medical Center Way and Parnassus Avenue), first in 2013 and subsequently every two years beginning in 2016. These traffic volumes also account for through traffic (i.e., vehicles that are passing through the campus site on Parnassus Avenue without stopping at the campus). These gateway intersection counts show that total vehicle volumes increased by approximately four percent between 2013 and 2018, and seven percent between 2016 and 2018. The large majority of vehicles observed at the gateways are private passenger vehicles. Non-passenger vehicles are mainly UCSF shuttles and Muni buses at the Parnassus Avenue intersections.

Local Transit Service

The project site is well-served by public transit; both local and regional. Local service is provided by the Muni bus and light rail lines, which provide transit service to the project site and throughout San Francisco and can be used to access regional transit operators. As described previously under Regional Transit Service, service to and from the East Bay is provided by BART, AC Transit and ferries; service to and from the North Bay is provided by GGT buses and ferries; service to and from the Peninsula and South Bay is provided by SamTrans, BART, and Caltrain. As described below under UCSF Shuttle System, UCSF supplements Muni transit service with its own shuttle system that provides direct connections to UCSF-operated or affiliated facilities throughout San Francisco. In many cases, these shuttles provide a direct transit alternative between two UCSF campuses that would otherwise require a transfer between two or more Muni routes. Based on the 2018 UCSF Employee Commute Survey, approximately 32 percent of employees travel to or from the Parnassus Heights campus using public transit, while another 10 percent rely on UCSF shuttles.

Muni routes in the study area and their characteristics as of January 2020, which reflect a pre-COVID-19 baseline, are summarized in **Table 4.13-1** and presented in **Figure 4.13-2**. This transportation analysis uses a 0.25-mile radius as the walking distance for transit access.

TABLE 4.13-1
LOCAL MUNI OPERATIONS

Route	AM Peak Weekday Headways (7:00-9:00 AM)[1]	PM Peak Weekday Headways (4:00-6:00 PM)[1]	Hours of Operation	Neighborhoods Served by Route	Nearest Stop Location	Distance to Project Site (feet)
6 – Haight/ Parnassus	10	11	6:20 AM – 12:20 AM	Financial District, Golden Gate Heights	Several stops on Parnassus between Hillway Avenue and Fifth Avenue	0
43 – Masonic[2]	9	11	5:15 AM – 12:30 AM	Marina District, The Excelsior	Several stops on Parnassus between Hillway Avenue and Fifth Avenue	0
7 – Haight/ Noriega	10	11	6:15 AM – 12:10 AM	Financial District, Haight-Ashbury, Sunset District	Frederick Street and Arguello Boulevard	1,000
N – Judah	7	9	5:00 AM – 1:00 AM	Financial District, Sunset District	Irving Street and Second Avenue	500

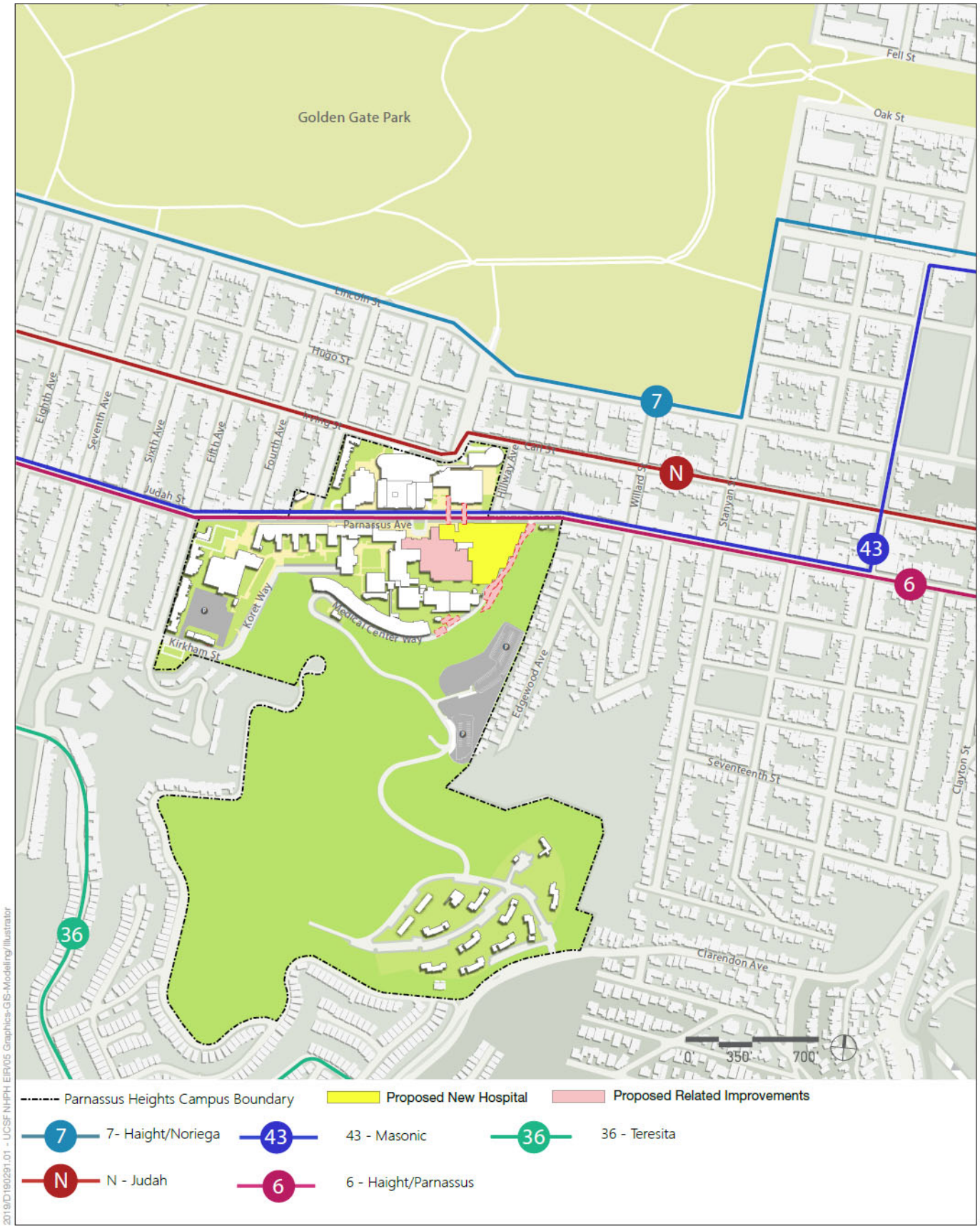
NOTES:
1 Headway in minutes.
2 For this route, there is a slight discrepancy between the peak hour frequencies for the existing schedules posted on the SFMTA website and the service changes approved as a part of Muni Forward.

SOURCE: SFMTA, July 2019; prepared by Fehr & Peers, 2020.

At time of writing, Muni was gradually increasing the reduced transit service it had operated under the COVID-19 Core Service Plan in response to the COVID-19 pandemic in San Francisco, including resuming light rail service for the full N Judah route in May 2021.[2] As part of its August 2021 service updates, the San Francisco Municipal Transportation Agency (SFMTA) reinstated the 66 Quintara route and extended it through the Parnassus Heights campus site along Parnassus Avenue to a new terminus at Haight Street. With these updates, all transit routes presented in Table 4.13-1 are in operation, with the exception of the 6 Haight-Parnassus, which remains suspended.

The timing and degree to which transit service is fully reinstated in San Francisco is uncertain at present. SFMTA generally evaluates key factors such as annual ridership, vehicle availability, and resource availability – and relies on regularly-collected passenger data – to inform their transit service planning decisions; this approach allows SFMTA the flexibility and responsiveness to provide the most efficient transit service possible. In September 2021, SFMTA launched the 2022 Muni Service Network Planning effort, including three potential alternatives: a return to the pre-COVID Muni network, a modified "frequent" network, and a hybrid of the two. Under the

2 San Francisco Municipal Transportation Agency (SFMTA), COVID-19 Muni Core Service Plan, https://www.sfmta.com/travel-updates/covid-19-muni-core-service-plan



2019/D190291.01 - UCSF NHPH EIR/05 Graphics-GIS-Modeling/Illustrator

SOURCE: Fehr & Peers, 2021

UCSF New Hospital Parnassus Heights EIR

Figure 4.13-2
Transit Network in NHPH Site Vicinity

frequent alternative, the 6 Haight-Parnassus would not return to service and the 66 Quintara would continue its current routing via Parnassus Avenue to a terminus at Haight Street. Under the hybrid alternative, the 6 Haight-Parnassus would return to service, but with modified route via Stanyan Street instead of Cole Valley; the 66 Quintara would return to its prior terminus west of the Parnassus Heights campus at 9th & Judah.

In terms of longer-term planned transit improvements, SFMTA's "Muni Forward" program aims to improve reliability, reduce travel times, provide more frequent service, and update Muni bus routes and rail lines to better match current travel patterns. Informed by the Transit Effectiveness Project, Muni Forward proposals include new routes and route realignments, more service on busy routes, and elimination or consolidation of certain routes or route segments with low ridership. There were several Muni Forward service changes to routes in the project site area that, as of January 2020, had been implemented or approved by the SFMTA Board of Directors.[3]

- **6 – Haight/Parnassus:** AM and PM peak frequencies planned to be reduced from 10 minutes to 12 minutes.[4] These changes have not yet been implemented and are therefore not reflected in **Table 4.13-1**.
- **7 – Haight/Noriega (f/k/a 71 Haight/Noriega):** The 71 Haight/Noriega route was renamed 7 Haight/Noriega line. Additionally, AM and PM peak frequencies planned to be increased from 10 minutes to 7.5 minutes, and midday frequencies planned to be increased from 12 minutes to 8 minutes.[5] The peak frequency changes had not yet been implemented by January 2020 and are therefore not reflected in **Table 4.13-1**.
- **43 – Masonic:** AM peak frequency was increased from 10 minutes to eight minutes, and PM peak frequency was increased from 12 minutes to 10 minutes.[5] These changes had been partially implemented (frequencies have increased to nine and 11 minutes, respectively) by January 2020 and are therefore not fully reflected in **Table 4.13-1**.
- **N – Judah:** An increase in frequencies during the AM peak from 7 minutes to 5.5 minutes and during the PM peak from 8 minutes to 6 minutes has been approved. However, these changes have not yet been implemented and are therefore not reflected in **Table 4.13-1**.[6]

UCSF Shuttle System

The core element of UCSF's Transportation Demand Management (TDM) plan is the shuttle service that UCSF operates throughout San Francisco. The shuttle system fleet (currently 63 shuttles) provides service between transit facilities, remote parking lots, the various UCSF campus sites, and UCSF-affiliated hospitals / medical centers within the City. The primary shuttle routes serve the Parnassus Heights, Mission Bay, Mission Center, Zuckerberg San Francisco General Hospital, Mount Zion, and Laurel Heights campus sites. As of 2019, UCSF shuttles transport 2.5 million passengers per year. Service includes 11 fixed-route lines and three

3 San Francisco Municipal Transportation Agency (SFMTA), Muni Forward, 2019, https://www.sfmta.com/projects/muni-forward, accessed August 2019.

4 San Francisco Municipal Transportation Agency (SFMTA), 7 Haight Noriega Rapid Project, 2019, https://www.sfmta.com/projects/7-haight-noriega-rapid-project, accessed August 2019.

5 San Francisco Municipal Transportation Agency (SFMTA), Muni Forward, 2019, https://www.sfmta.com/projects/muni-forward, accessed August 2019.

6 San Francisco Municipal Transportation Agency (SFMTA), N Judah Rapid Project, 2019, https://www.sfmta.com/projects/n-judah-rapid-project, accessed August 2019.

on--demand services (one daytime, and two evening services). Fixed-route shuttle headways are generally between 15 and 25 minutes, and most routes operate between 6:00 AM and 9:00 PM, Monday through Friday.

As a result of the COVID-19 pandemic, UCSF reduced fixed-route service to eight core routes, seven of which serve the Parnassus Heights campus (Blue, Bronze, Gold, Grey, Lime, Orange, and VA Shuttle). At time of writing, some of these routes have returned to previous service levels. The remaining routes are still suspended until further notice.

The two on-demand evening services operated both weekday and weekend nights. Riders can request on-demand service within a pre-defined border around the Parnassus Heights campus site by calling UCSF Transportation Department dispatch or via the online portal. All shuttle buses are equipped with bike racks, and many are equipped with Wi-Fi. The service is free for UCSF faculty, staff, students, patients, and visitors to UCSF facilities. At the time of writing, all on-demand service was suspended as a result of the COVID-19 pandemic.

Shuttles to and from the Parnassus Heights campus site (Blue, Bronze, Gold, Grey, Lime, Orange, and VA Shuttle) stop at shuttle zones along the north side of Parnassus Avenue, between Third Avenue and the Library, and on the south side of Parnassus Avenue, just west of UC Hall, outside the Dental Clinics plaza at Fourth Avenue, and also east of the Langley Porter Psychiatric Institute (LPPI). The stop east of LPPI is the closest existing shuttle stop to the NHPH project site. These stops are designated by UCSF Transportation Services and reviewed/approved by SFMTA. Existing shuttle routes and stops in the vicinity of Parnassus Heights campus site are shown on **Figure 4.13-3**.

As part of the Parnassus Avenue Streetscape Plan, UCSF plans to consolidate shuttle stop locations at the center of the campus site to one westbound and one eastbound stop in front of Millberry Union and the Clinical Sciences Building (CSB) on Parnassus Avenue. The shift to the eastbound stop from east of LPPI to in front of CSB is expected to occur by the end of 2021.

UCSF Transportation Services regularly monitors the capacity utilization of its routes via a combination of boarding audits, driver and rider feedback, program analysis from external consultants, stop audits, and consultation with UCSF Campus Planning to understand the impacts of potential growth or new service areas. UCSF's shuttle system is a key strategy in providing efficient inter-campus travel. As part of this service, UCSF has made and will continue to make periodic minor operational changes to improve operations, expand service to accommodate new facilities or to respond to specific community concerns.

The seated per-vehicle capacity of the shuttle buses (Blue, Bronze, Gold, Grey, Lime, Orange, and VA Shuttle) varies from 22 to 30 persons or up to 40 persons on the new electric buses. **Figure 4.13-4** shows the average daily boardings for the UCSF shuttle system by route for December 2019, and presents all UCSF shuttle routes, including those that serve other campus sites and the eastbound and westbound on-demand shuttles.[7] The Grey, Blue, and Gold lines, which represent some of the highest ridership routes, serve the Parnassus Heights campus site.

[7] The Pink shuttle, which served the Kezar parking area, was discontinued in March 2020 when UCSF ceased offering permits for the Kezar parking area. However, it is still included in the December 2019 data.

2019/D190291.01 - UCSF NHPH EIR/05 Graphics-GIS-Modeling/Illustrator

SOURCE: Fehr & Peers, 2021

UCSF New Hospital Parnassus Heights EIR

Figure 4.13-3
UCSF Parnassus Heights Campus Shuttle Routes and Stops

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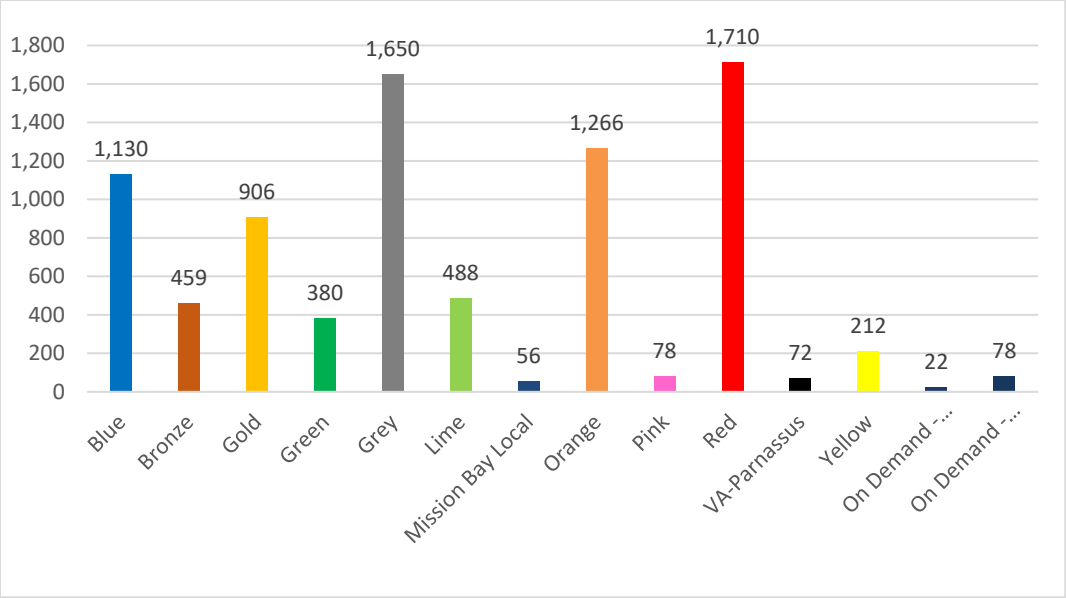


SOURCE: UCSF, December 2019 UCSF New Hospital Parnassus Heights

Figure 4.13-4
UCSF Shuttle Average Daily Boardings
(December 2019)

UCSF Transportation Demand Management Plan (TDM)

There are many factors that determine how people travel to/from work, including home location, work shifts, access to transit, travel incentives and disincentives (e.g., how convenient or costly it is to park), or other obligations before or after work (e.g., childcare drop-off or pick-up). A TDM program is a set of policies and programs that include incentives, information, and education to encourage employees to commute to work by modes other than driving alone. The UCSF TDM program includes strategies that emphasize alternative commuting options, such as public transit, UCSF's shuttle service, biking, walking, and carpooling/vanpooling. The key elements of the UCSF TDM program, generally as of January 2020, are summarized in **Table 4.13-2**.

In particular, UCSF's priced permit parking, carpool/vanpool, and telecommuting programs and policies are effective TDM strategies that help reduce the number of drive-alone trips to/from the UCSF campus sites. Employee parking permits are limited by the fixed supply of permits available and by permit eligibility requirements, which encourage employees who are unable to obtain or unwilling to pay for a permit to commute by carpool, public transit, UCSF shuttle, biking, or walking. The vanpool program encourages employees to share higher occupancy vehicles (seating up to 12 passengers) for their commute trips; vanpools are organized on a UCSF-run website, and volunteer drivers participate in the program for free, while other participants pay a monthly fee. UCSF's telecommuting policies also allow certain employees to work remotely for one or more days per week, which reduces travel demand to/from the campus sites, including the Parnassus Heights campus site.

TABLE 4.13-2
EXISTING UCSF TDM PROGRAM ELEMENTS

TDM Strategy	Description
Annual Transportation Survey	Annual employee and student survey to learn more about travel to/from, and within UCSF campus sites.
Online Commute Planning Tool	MyCommute is an online commute planning tool that helps find transit options that are custom tailored, including carpool, vanpool, public transit, biking, and walking.
Bicycle Parking	Short-term bicycle racks are provided on the campus site, with capacity generally exceeding demand. Long-term bicycle parking is provided in the Millberry Union garage.
Showers and Lockers	Showers and lockers are provided at various campus sites, which can be used by bicyclists. The Bike To Work Shower Program, in partnership with the Fitness & Recreation Centers at UCSF, provides access to the locker room and showers for a small fee.
Bicycle Permits	Free bicycle permits are provided, allowing free access to enclosed bicycle parking facilities; bike fix-it stations available at the Parnassus campus site; discounted SF Bike Coalition membership.
Carshare	Zipcars are available at the campus site for rental as an alternative to owning or driving a personal car to campus.
Shuttle	UCSF shuttle system serving all main campus sites.
Priced Permit Parking	UCSF offers market-rate parking to patients/visitors, employees, and students. The price of hourly parking is $5 with a daily maximum of $35; some discounts are available for certain employees, students, and patients/visitors w ADA placards. Monthly general parking permits are about $300; discounted permits are available based on time or location restrictions to parking. Employee parking permits are limited by the fixed supply of permits available and by permit eligibility requirements.
Limited Parking Supply	The campus parking supply is limited, and prioritized for patients and visitors, by limiting employee campus parking eligibility.
Priced Visitor Parking	UCSF offers short-term visitor parking. Both hourly and daily rates are available.
EV & Green Vehicles	Electric Vehicle Charging Stations and priority parking spaces are available for Green Vehicles.
Pre-Tax Commuter Benefits Program	The Pre-Tax commuter benefits program allows employees to reduce their public transit and vanpool costs by about one-third. The program works by allowing participants to deduct up to $270 per month (as of 2020) from their paycheck without paying payroll taxes on this income.
Carpool Parking	Preferential parking for UCSF employees with a valid carpool permit.
Pass Sales	Fare cards and monthly passes for select public transit agencies are available for purchase and reloading on campus at Transportation Offices.
Emergency Ride Home	Employees who need an emergency ride home can be reimbursed up to $50 for a transit, taxi, TNC or rental car trip.
Late Night Ride Home for Students with Lyft	Students can ride Lyft from campus to home, a transit hub, or other UCSF campus after hours and UCSF will cover the first $10 of the ride.
Telecommuting Policy	Telecommuting policies have typically been determined by job position/requirements and individual departments, for employees whose job duties are conducive to remote work.
Vanpool Program	The vanpool program requires a minimum of eight participants per vanpool. The driver participates for free and the riders pay about $250 per month per person, Currently, there are over 20 vanpools that travel throughout the Bay Area, and as far as Sacramento.

SOURCE: UCSF Staff, 2020; UCSF Campus Life Services webpage, 2020

Pedestrian Circulation

Walking to and from the project site is a common travel mode option for many UCSF employees and students. Based on the 2018 UCSF Employee Commute Survey, approximately 16 percent of employees commute to the Parnassus Heights campus site by walking.

Pedestrian facilities include sidewalks, crosswalks, curb ramps, and pedestrian signals. Near the project site, sidewalks exist on both sides of the streets. Adjacent to the project site, on the south side of Parnassus Avenue, sidewalks are generally 8 feet to 12 feet wide, while on the north side of the street they are generally 12 feet to 15 feet wide. Adjacent to the project site at Parnassus Avenue and Hillway Avenue, an unsignalized intersection, there are high visibility continental crosswalks on the western and northern legs of the intersection; there is no marked crosswalk on the eastern leg of the intersection. There is also a standard crosswalk across Medical Center Way at Parnassus Avenue. West of the project site, there are two high-visibility continental crosswalks across Parnassus Avenue adjacent to the Moffitt/Long Hospital Drop-off/Pick-up area; these crossings are signalized with countdown timers and accommodate the large numbers of pedestrians crossing from one side of Parnassus Avenue to the other. East of the project site, the next crossing of Parnassus Avenue is roughly 500 feet past Medical Center Way at Willard Street, an unsignalized intersection with high visibility continental crosswalks on all four legs of the intersection. All of these intersections on Parnassus Avenue adjacent to the project site provide Americans with Disabilities Act (ADA) compliant curb ramps, which are bidirectional, high contrast in color, and include truncated domes.

The results of pedestrian counts conducted near the project site on a weekday in June 2019 between 12:00 PM and 2:00 PM are presented in **Table 4.13-3**. Counts were conducted at three crosswalks on Parnassus Avenue between Hillway Avenue and the Millberry Union Plaza. Pedestrian volumes were highest at the two signalized pedestrian crosswalks on Parnassus Avenue between Millberry Union Plaza and the Moffitt/Long Hospital Drop-off/Pick-up area, where approximately 1,500 pedestrians were observed at each crosswalk during the two-hour observation period. The number of people walking is substantially less at the Parnassus Avenue / Hillway Avenue intersection, where approximately 400 pedestrians were observed.

TABLE 4.13-3
PEDESTRIAN COUNTS – PARNASSUS HEIGHTS

	Midday Counts	Daily Counts	
Crosswalk Location	**2019**[1]	**2013**[2]	**2007**[2]
Parnassus Avenue (in front of Millberry Union)	1,600	9,450	9,500
Parnassus Avenue (east of Moffitt Circle)	1,500	9,000	8,800
Parnassus Avenue / Hillway Avenue	400	2,750	3,000

NOTES:
[1] Conducted between 12:00 PM and 2:00 PM.
[2] Conducted between 7:00 AM and 7:00 PM.

SOURCE: Fehr & Peers, 2020.

Pedestrian counts were previously conducted at similar locations in 2013 and 2007 over a 12-hour period (7:00 AM and 7:00 PM). Although these historical counts cannot be compared directly to the recent counts, they reflect a similar pattern, with most pedestrian activity occurring at the signalized pedestrian crossings on Parnassus Avenue.

As another point of comparison, during the same 12-hour time period in which the two Parnassus Avenue signalized crosswalks accommodated approximately 18,500 crossings in 2013 and 2007, the Parnassus Avenue roadway carries about 8,500 vehicles. Thus, on average, there are over two times more pedestrians crossing Parnassus Avenue than vehicles traveling along it.

Field observations near the project site indicate that the locations of the two signalized crosswalks across Parnassus Avenue in the Parnassus campus core area are not aligned with many pedestrians' desired travel paths. A number of pedestrians exiting the UCSF Medical Center walk around Moffitt Circle and walk directly across Parnassus Avenue into the entrance to the Millberry Union building and garage, rather than walk east or west to one of the two signalized crosswalks. The Parnassus Avenue Streetscape Plan[8] would address this issue by widening the two signalized crosswalks.

In terms of pedestrian safety, there have been five pedestrian-involved collisions within the area immediately adjacent to the project site over the 10-year period between 2009 and 2018 for which collision data is publicly available.[9] All of these collisions occurred on Parnassus Avenue between Millberry Union and Hillway Avenue. However, this roadway segment is not part of the citywide High-Injury Network, which identifies corridors where high numbers of people have been killed or severely injured in traffic collisions and where investments in bicycle and pedestrian infrastructure could have the largest impact on reducing fatalities and severe injuries as part of the City's Vision Zero goal. The locations closest to the project site that are a part of the High-Injury Network are Seventh Avenue between Kirkham and Noriega Streets, Lincoln Way between Arguello Avenue and 22nd Avenue, and the Stanyan Street / Fell Street / Oak Street intersection.

Bicycle Circulation

Bicycle facilities in San Francisco consist of bicycle paths, separated bikeways, bicycle lanes, and bicycle routes. Bicycle Paths (Class I) provide a completely separated right-of-way for the exclusive shared use of cyclists and pedestrians. These facilities are off-street and minimize cross-flow traffic, but they can be adjacent to an existing roadway. Bicycle Lanes (Class II) provide a striped, marked, and signed bicycle lane buffered from vehicle traffic; these facilities are located on roadways and require a minimum of four to five feet of space for exclusive bicycle traffic. Bicycle Routes (Class III) provide a shared travel lane marked and signed for shared use with motor vehicle traffic. These facilities may or may not be marked with "sharrows" to emphasize that the roadway space is shared. Separated Bikeways (Class IV), also referred to as

8 Note: The Parnassus Avenue Streetscape Plan was initially proposed and analyzed as part of the 2014 LRDP Final EIR. It was also analyzed as part of the CPHP Final EIR, with slight modifications to conform to new development proposals that front Parnassus Avenue. Those modifications would be specified as adjacent new buildings, such as the NHPH, are designed.

9 Data accessed via Transportation Injury Mapping System (TIMS), *Safe Transportation Research and Education Center, University of California, Berkeley.* 2020

cycle tracks or protected bikeways, are set aside for the exclusive use of bicycles and physically separated from vehicle traffic. Separated Bikeways were adopted by Caltrans in 2015. Types of separation may include, but are not limited to, grade separation, flexible posts, physical barriers, or on-street parking.

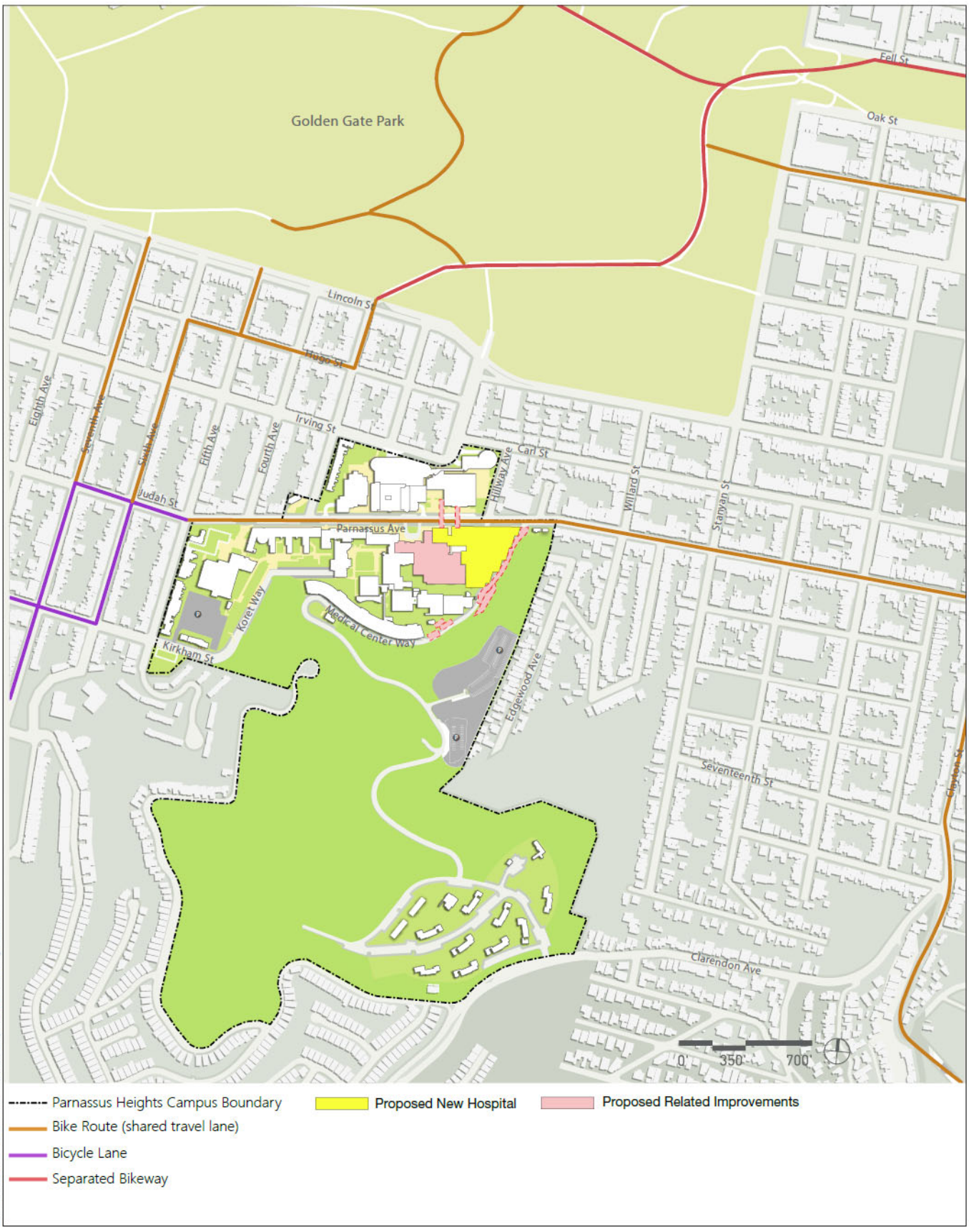
Bicycle facilities located within or near the project site are presented in **Figure 4.13-5**. The project site is within the Inner Sunset neighborhood, which has a mix of hilly and flat terrain. Hillway, Third, and Fourth Avenues connect Irving Street to Parnassus Avenue near the project site, but they feature steep grades that are difficult for people to bicycle uphill without electrical assistance. Sixth Avenue and Seventh Avenue provide flatter north/south connections west of the site, and also include Class II and Class III bicycle facilities, respectively.

Although traffic volumes on Parnassus Avenue are lower than other two-lane corridors in San Francisco, such as Polk Street, high pedestrian volumes, double-parking, and loading activity can make bicycling on Parnassus Avenue more challenging. While there is less pedestrian and loading activity on Irving Street, cyclists share the road with Muni light rail vehicles, and may risk catching their bicycle wheels in the light rail tracks that run through the center of the street.

Despite these challenges, bicycling is a viable and common travel mode at the Parnassus Heights campus site. UCSF has identified bicycling as an effective tool in reducing congestion and pollution, promoting good health, and creating a livable environment. Based on the 2018 UCSF Employee Commute Survey, approximately 6 percent of employees travel to and from the campus site by bicycle.

Bicycle counts were collected along Parnassus Avenue and Irving Street, between 4:00 PM and 6:00 PM on a typical weekday in May 2019, as part of the previously described gateways counts. In the eastbound direction, Irving Street/Carl Street carried approximately twice as many bicycles as Parnassus Avenue, where in the westbound direction, bicycle volumes on the two streets were similar. Higher volumes along Irving Street/Carl Street may be due to the fact that the street is relatively flat compared to Parnassus Avenue, and/or influenced by the location of the UCSF bicycle cage on the ground level of the Millberry Union Garage, which is accessible from Irving Street/Second Avenue. In terms of change over time, in 2013, bicycle counts along Parnassus Avenue had increased four-fold when compared to 2007, paralleling the uptick in bicycle use throughout the city that has been reported by the SFMTA and observed on key corridors, such as Market Street.

UCSF provides free, secured bicycle parking inside a bicycle cage in the Millberry Union garage. There are bike racks at seven additional locations throughout the Parnassus Heights campus site. While there are no on-street bicycle racks on the south side of Parnassus Avenue adjacent to the project site, there are bicycle racks on the north side of Parnassus Avenue in front of Medical Building 2 as well as on the west side of the Medical Building 1. Most bicyclists are encouraged (by signs) to park in the designated bicycle parking areas at campus buildings. During site visits conducted in 2019, the designated bicycle parking areas at the Parnassus Heights campus site were generally well utilized, and some bikes were observed parked at parking meters and sign poles, indicating a high demand for bicycle parking facilities.



SOURCE: Fehr & Peers, 2021

UCSF New Hospital Parnassus Heights EIR

Figure 4.13-5
Bicycle Network in NHPH Site Vicinity

ESA

Loading Conditions

Loading conditions at the project site reflect both service vehicle and passenger loading activity. Adjacent to the project site, the Central Receiving Area and Long Hospital loading docks, which are accessible from Medical Center Way, accommodate off-street commercial loading. The Long Hospital dock has four truck loading bays and two smaller van parking spaces to facilitate off-street service vehicle loading activities. Compared to other designated off-street service vehicle loading facilities on the Parnassus Heights campus site, the Central Receiving Area and Long Hospital are typically the busiest locations throughout the day.

Passenger loading adjacent to the project site generally takes place in the Moffitt Loop, located on Parnassus Avenue in front of Moffitt Hospital, or in passenger loading zones, UCSF shuttle stops, and Muni bus stops located along Parnassus Avenue. There are approximately 13 designated passenger loading spaces provided along Parnassus Avenue and approximately six spaces provided at Moffitt Loop, for a total of 19 spaces. Moffitt Loop consists of two lanes: a curb lane that provides short term parking spaces (15 minutes or less) at the curb and a travel lane in which passenger loading generally occurs; parked vehicles were generally observed at 75 - 100 percent of the curb spaces. Based on observations at Moffitt Loop during a typical afternoon in 2019, passenger loading generally occurs within one to two minutes, with some vehicles waiting for up to 15 minutes for a passenger to arrive to be picked up. Based on the 2018 UCSF Employee Commute Survey, approximately 2 percent of employees/staff are dropped off at work and 4 percent travel to and from the campus site by taxi or a transportation network company vehicle (TNC; e.g., Uber or Lyft, or other company providing a similar service).

On-street commercial loading is also provided along Parnassus Avenue. One standard commercial loading space is provided adjacent to the project site on the south side of Parnassus Avenue, just west of Medical Center Way. Two more spaces are provided east of Medical Center Way. Three six-wheel commercial loading zones are provided on the north side of Parnassus Avenue, across from the project site and adjacent to Medical Building 2.

The loading area located on Parnassus Avenue in front of the Medical Building 1 across from the project site serves passenger vehicles, service vehicles, emergency vehicles, and is the location for valet service. This area is also a popular location for private vehicle and TNC pick-up and drop-off activities. Drivers picking up or dropping passengers idle at or adjacent to the designated passenger loading area (with white curb space) in front of Medical Building 1. While vehicles dropping off passengers typically occupy the curb for 30 seconds or less, those making pick-ups can take up to several minutes due to either waiting for passengers or extra time needed to communicate with passengers. This area, in particular, can become congested throughout the day, sometimes leading to vehicles blocking a lane of traffic as passenger and service loading occurs.

Emergency Vehicle Access

Emergency transport vehicles in the area typically use major streets, including Parnassus Avenue/ Judah Avenue, Stanyan Street, Lincoln Way, and Seventh Avenue, heading to and from an emergency and/or emergency facility. Arterial roadways allow the emergency vehicles to travel at higher speeds and permit other traffic to maneuver out of the path of the emergency vehicle, as

required by the California Vehicle Code. The San Francisco Fire Department stations closest to the project site are: Station 12, located on Stanyan Street at Grattan Street (approximately 0.3 miles to the east); Station 20, located on Olympia Way at Clarendon Avenue (approximately 0.8 miles to the south); and Station 22, located on Irving Street at 16th Avenue (approximately 0.9 miles to the west).

The UCPD serves the project site, and has a substation located on the Parnassus Heights campus near the project site. The San Francisco Police Department stations closest to the project site are Park Station, located on Kezar Drive in Golden Gate Park (approximately 0.5 miles to the northeast) and Richmond Station on Sixth Avenue at Geary Boulevard (approximately 1.2 miles to the north).

Vehicle Miles Traveled

Vehicle miles traveled (VMT) per person (or per capita) is a measurement of the amount and distance that a resident, employee, or visitor drives, accounting for the number of passengers within a vehicle. In general, higher VMT areas are associated with more air pollution, including greenhouse gas emissions, and energy usage than lower VMT areas. Many interdependent factors affect the amount and distance a person might drive. In particular, the type of built environment affects how many places a person can access within a given distance, time, and cost, using different ways of travels (e.g., private vehicle, public transit, bicycling, walking, etc.). Typically, low-density development located at great distances from other land uses and in areas with few options for ways of travel provides less access than a location with high density, mix of land uses, and numerous ways of travel. Therefore, low-density development in a suburban location typically generates more VMT per capita compared to a similarly sized development located in urban areas.

Given these factors that affect travel behavior, on average, persons living or working in San Francisco have a lower level of VMT per person than persons living or working elsewhere in the nine-county San Francisco Bay Area region. In addition, persons living or working in some areas of San Francisco have a lower level of VMT per person than persons living or working elsewhere in San Francisco. The City estimates different levels of VMT per capita geographically by transportation analysis zones (TAZs).[10]

To evaluate the transportation impacts of new development proposed in San Francisco, the San Francisco Planning Department has adopted a VMT analysis methodology, which is described in the current version of the *Transportation Impact Analysis Guidelines for Environmental Review* (*SF Guidelines*) published in February 2019 and updated in October 2019. The SF Guidelines use the San Francisco County Transportation Authority's (Transportation Authority) San Francisco Chained Activity Modeling Process (SF-CHAMP) travel demand forecasting model to estimate VMT by private automobiles and taxis in different TAZs. The Transportation Authority's calibration of travel behavior in the model is based on observed behavior from the California

[10] Planners use these zones as part of transportation planning models for transportation analyses and other planning purposes. The zones vary in size from single city blocks in the downtown core, multiple blocks in outer neighborhoods, to even larger zones in historically industrial areas such as the Hunters Point Shipyard area.

Household Travel Survey, 2010–2012; census data regarding automobile ownership rates and county-to-county worker flows; and observed vehicle counts and transit boardings. The model uses a synthetic population, which is a set of individual actors that represents the Bay Area's actual population and makes simulated travel decisions for a complete day.

The model estimates daily VMT for residential, office, and retail land use types. For residential and office uses, the Transportation Authority uses tour-based analysis. A tour-based analysis examines the entire chain of trips over the course of a day, not just single trips to and from a site. For the evaluation of retail VMT, the Transportation Authority uses a trip-based analysis. A trip-based analysis counts VMT from individual trips to and from a site (as opposed to the entire chain of trips, which represents a tour). A trip-based approach, as opposed to a tour-based approach, is necessary for retail sites because a tour is likely to consist of several retail trips stopping in multiple locations. Summarizing tour VMT to each location would over-estimate the retail VMT due to longer travel distances.[11,12,13]

Because the Parnassus Heights campus site encompasses multiple TAZs, the per capita values presented in the *SF Guidelines* could not be used directly. Instead, the existing total daily VMT for the residential and office uses of each TAZ were obtained from the SF-CHAMP model, aggregated for the five TAZs within the campus site, and then divided by the applicable geographic household population or office jobs to calculate the average daily VMT per capita.

Table 4.13-4 presents the existing VMT per capita for office land uses (hereinafter VMT per employee) at the campus site. As shown in the table, the Parnassus Heights area (which comprises the campus site and surrounding area) has a relatively low average VMT per employee, compared to the regional average. This is a function of the campus site's mix of uses and different populations as well as its central location and accessibility to transit. The land uses at the campus site include medical work, medical visits, residential, and retail. As discussed later in this section, medical work has been treated as office land use for VMT screening and analysis purposes. The SFCTA model does not report VMT per capita for medical visits; VMT per capita for medical visits is higher than for medical employment, as given the reputation and specialized care offered by UCSF, the campus site draws from beyond the immediate region – 67 percent of medical visits to UCSF begin or end in the San Francisco Bay Area region with the remainder coming from outside the Bay Area, compared to 96 percent of medical work trips which begin or end in the Bay Area. Given that the NHPH does not include changes to the residential or retail uses at the campus site, the potential changes in residential or retail VMT were not evaluated in this impact analysis for the NHPH.

11 To state another way, a tour-based assessment of VMT at a retail site considers VMT for all trips in the tour for any tour with a stop at the retail site. If a single tour stops at two retail locations, for example, a coffee shop on the way to work and a restaurant on the way back home, then both retail locations would be allotted the total tour VMT. A trip-based approach allows an apportionment of all retail-related VMT to retail sites without double counting.

12 Retail travel is not explicitly captured in SF-CHAMP; rather, there is a generic "other" purpose that includes retail shopping and all other non-work, non-school tours. The retail efficiency metric captures all of the "other" travel generated by Bay Area households. The denominator of employment represents the size, or attraction, of the zone for this type of "other" travel.

13 San Francisco Planning Department, Executive Summary: Resolution Modifying Transportation Impact Analysis, Appendix F, Attachment A, March 3, 2016.

TABLE 4.13-4
EXISTING AVERAGE DAILY VMT PER EMPLOYEE

Area	Average Daily VMT per Employee
Bay Area Regional Average	19.1
UCSF Parnassus Heights Area[1]	8.9

NOTES:
[1] TAZs 226, 227, 545, 546, and 547; includes adjacent residential, retail, medical and other office uses unrelated to UCSF.

SOURCE: Adavant Consulting, 2020.

Parking Conditions

Although parking is not considered in determining if a project has the potential to result in significant environmental impacts, this section presents information regarding the existing parking supply in relation to the parking demand, both on- and off-street facilities, for context and for informational purposes.

On-Street Parking

On-street parking is provided on most streets near the project site, primarily with parallel parking on both sides of the street. Due to the steep topography of the area, parking spaces perpendicular to the direction of travel are provided on some streets, on one side of the street only. Most parking spaces on Parnassus Avenue adjacent to the site are metered and have a two-hour limit. Spaces on adjacent residential streets are generally subject to Residential Parking Permit (Zone "J") restrictions (two-hour parking, except for residents, Mondays through Friday from 8:00 AM to 5:00 or 6:00 PM). On-street metered motorcycle parking is also provided on Parnassus Avenue adjacent to the site.

Along the project site's frontage on Parnassus Avenue, between Medical Center Way and the entrance to the Emergency Department parking area, there are currently two designated accessible parking spaces, one standard metered parking space, one metered commercial loading space, and five metered motorcycle parking spaces. Additionally, there is a passenger loading zone which is restricted to UCSF shuttle usage from 6 AM to 11 PM, Monday through Friday, and a Muni bus stop used by the 6 Haight-Parnassus and 43 Masonic routes.

Parking occupancies in the vicinity of the project site, as shown in **Table 4.13-5**, are about 90 percent on average over the course of the day. The parking demand in this area is primarily associated with residential uses and the campus site during the mid-morning (10:00 AM – 12 Noon) and midday (12 Noon – 2:00 PM) periods, and the residential and nearby neighborhood commercial uses during the evening period.

These parking occupancies do not consider residents who park in their own driveways, which is typical in this area given the high parking demand, vehicles idling or parked in loading zones, or vehicles parked in designated motorcycle parking spots.

Based on travel behavior surveys conducted at the Parnassus Heights campus site in recent years, it is estimated that approximately 1,000 on-street parking spaces are utilized by UCSF employees, patients and/or visitors during the peak parking hour on an average weekday.

TABLE 4.13-5
ON-STREET PARKING OCCUPANCY – PARNASSUS HEIGHTS AREA

Corridor	Time	Percent Occupancy
Parnassus Avenue – Fifth Avenue to Stanyan Street	10:00 AM	88%
	12:00 PM	87%
	6:00 PM	82%
Fourth Avenue – Lincoln Way to Parnassus Avenue	10:00 AM	103%
	12:00 PM	100%
	6:00 PM	101%
Irving Street – Sixth Avenue to Arguello Boulevard	10:00 AM	85%
	12:00 PM	83%
	6:00 PM	79%
Arguello Boulevard – Frederick Street to Hugo Street	10:00 AM	96%
	12:00 PM	100%
	6:00 PM	92%
Frederick Street – Arguello Boulevard to Stanyan Street	10:00 AM	94%
	12:00 PM	91%
	6:00 PM	92%
Total	**-**	**91%**

SOURCE: Fehr & Peers, 2019.

Off-Street Parking

There are several UCSF-managed off-street parking facilities on or near the project site that provide approximately 2,300 public and permit-only parking spaces. The two structured parking garages at the Parnassus Heights campus site are the Millberry Union / Kalmanovitz Library garage and the Medical Building 1 garage.

The Millberry Union / Kalmanovitz Library garage is located between Parnassus Avenue and Irving Street and has approximately 870 parking spaces, which are available to the general public. In addition, staff, faculty, and students may purchase monthly "N" parking permits to park in this garage on weekdays from 2:00 PM to 8:00 AM and anytime on the weekend, and monthly "L" parking permits to park in this garage on weekdays from 4:45 PM to 8:00 AM and anytime on the weekend. As shown in **Table 4.13-6**, existing parking occupancy peaks at approximately 90 percent at 11:00 AM, and remains at approximately 90 percent until after 3:00 PM.

The Medical Building 1 garage is located adjacent to the Millberry Union garage, at the Irving Street / Arguello Boulevard intersection, and provides approximately 670 marked parking spaces and approximately 100 vehicles parked outside of marked spaces via attendant parking services during peak parking hours. Permit parking is available for faculty, staff with patient care responsibilities, and senior management. As shown in Table 4.13-6, the garage is almost or fully occupied from 9:00 AM until 3:00 PM, after which parking occupancy declines.

TABLE 4.13-6
OFF-STREET PARKING GARAGE OCCUPANCY

Time	Percent Occupancy	
	Medical Building 1 Garage	Millberry Union / Kalmanovitz Library Garage
7:00 AM	78%	50%
9:00 AM	100%	62%
11:00 AM	98%	92%
1:00 PM	99%	89%
3:00 PM	95%	87%
5:00 PM	61%	59%

SOURCE: Fehr & Peers, 2019.

The LPPI building has a small surface lot on the site of the proposed hospital, near Medical Center Way, which provides 11 permitted parking spaces, two designated accessible spaces, five motorcycle spaces, and one loading space. Parking on this lot is available by permit.

Other off-street parking facilities on the Parnassus Heights campus site in the vicinity of the project site include the following:

- Proctor surface lot is located south of Kirkham Street near the intersection of Fifth Avenue and provides 17 spaces available by permit.
- The Westside surface lot is located behind the Dental Clinics Building at Fourth Avenue and Kirkham Street, on the western edge of the campus site, and provides 151 parking spaces.
- Beckman surface lot is located on Koret Way across from the Beckman Vision Center and provides 64 parking spaces.
- The Environmental Health and Safety Building has a 12-space surface parking lot, off Medical Center Way. Parking on this lot is available by permit.
- The Surge and Woods lots form a 157-space surface parking lot located off Medical Center Way above the campus site. Parking permits for this location are issued for staff.
- The Emergency Room parking area is accessed off Parnassus Avenue at the southeast end of the campus site and provides 16 parking spaces reserved for ambulances, emergency patients, and for radiation and chemotherapy patients.

4.13.2 Regulatory Framework

UCSF is situated on land that is owned or controlled by the Regents of the University of California. As such, UCSF is exempted by the State constitution from compliance with local land use regulations, including general plans and zoning, whenever using property under its control in furtherance of its educational mission. However, UCSF consults and coordinates on a regular basis with the City (e.g., the Planning Department, SFMTA, San Francisco Public Works (SFPW), and Office of Community Investment and Infrastructure) when planning new development within the

City, especially if improvements are being proposed within City rights-of-way adjacent to campus sites. Transportation improvements or modifications to city roadways required to accommodate the transportation needs associated with the NHPH would be the responsibility of the City and would need to be approved by the applicable City agencies. University of California, UCSF, and City plans and policies that are relevant to the NHPH are described below.

University of California

The University of California Sustainable Practices Policy

The University of California (UC) Sustainable Practices Policy lays out sustainability goals and strategies for all UC campuses and medical centers and covers climate and energy, transportation, water, green building, waste, food, and operations. UC has a goal to reach operational carbon neutrality by 2025. As a part of that goal, UC recognizes that single-occupant vehicle (SOV) commuting is a primary contributor to commute GHG emissions and localized transportation impacts, and has set the following goals related to transportation:

- By 2025, each location shall strive to reduce its percentage of employees and students commuting by SOV by 10 percent relative to its 2015 SOV commute rates.
- By 2050, each location shall strive to have no more 40 percent of its employees and no more than 30 percent of all employees and students commuting to the location by SOV.
- By 2025, each location shall strive to have at least 4.5 percent of commuter vehicles be zero-emission vehicles (ZEV).
- By 2050, each location shall strive to have at least 30 percent of commuter vehicles be ZEV.
- Each location (campus) will develop a business-case analysis for any proposed parking structures serving University affiliates or visitors to campus to document how a capital investment in parking aligns with each campus' Climate Action Plans and/or sustainable transportation policies.

UCSF

UCSF Long Range Development Plan

Each campus within the University of California system is required periodically to prepare a Long Range Development Plan (LRDP), which sets forth concepts, principles, and plans intended to guide future physical growth of the campus. Currently, development at all UCSF campus sites is guided by the *2014 UCSF Long Range Development Plan* (2014 LRDP), which includes specific policies related to future program development and space needs at each UCSF campus site, including the Parnassus Heights campus site.

The 2014 LRDP identified campus-wide objectives and objectives specific to the Parnassus Heights campus site. The following 2014 LRDP objectives relate to transportation goals:

LRDP Objectives

1. Respond to the City and Community Context

D. Incorporate pedestrian-friendly urban design principles to relate campus buildings to surrounding streetscape and neighborhoods.

4. Promote Environmental Sustainability

C. Reduce the number of UCSF remote locations by consolidation of owned and leased sites, thereby reducing travel between sites.

D. Enhance the Transportation Demand Management program by developing adequate facilities and transportation demand reduction policies, to emphasize transportation alternatives that will lessen auto traffic in and around campus sites and to meet changing needs consistent with the City's Transit First policy.

E. Continue to prioritize scarce parking for use by patients and essential healthcare providers.

The 2014 LRDP also included *Community Planning Principles*, which were produced in collaboration with the UCSF Community Advisory Group:

Community Planning Principles

Transportation

T1. Coordinate with relevant agencies to minimize congestion and provide viable transportation alternatives to single-occupancy vehicles.

T2. Coordinate UCSF planning and development efforts with San Francisco Municipal Transportation Agency operations within and around campus sites.

T3. Remain committed to San Francisco's Transit First policy and appropriate transportation demand management strategies.

T4. Recognizing UCSF's position as the second largest employer in San Francisco, take a leadership position to advance San Francisco's Transit First policy and to advocate for sustainable transportation solutions including increase in public transit ridership, use of alternative fuel vehicles, traffic calming measures, transportation demand management, demand pricing, off-peak delivery of goods and services, smart phone technologies, and other innovative strategies.

T5. Take into account transportation impacts at both the neighborhood and citywide levels in planning for UCSF's facilities.

T6. Avoid building parking in excess of anticipated need.

Comprehensive Parnassus Heights Plan

As described in Chapter 3, *Project Description*, in 2018, UCSF undertook a planning process to re-envision and revitalize the Parnassus Heights campus site. This planning process resulted in the development of the Comprehensive Parnassus Heights Plan (CPHP), which was aimed at updating the projected space needs for critical programs, improving the functional and aesthetic design of the campus environment, and planning for needed on-campus housing. In January 2021,

the Regents of the University of California approved Amendment #7 to the 2014 LRDP, incorporating the CPHP planning concepts and proposals in the 2014 LRDP.

The CPHP included an "Initial Phase" to be completed by approximately year 2030 that included the development of a New Hospital, the subject of this EIR. Other Initial Phase projects include Irving Street Arrival improvements, a Research and Academic Building, and initial Aldea Housing densification, as well as other improvements, all of which were analyzed at a project level in the CPHP Final Environmental Impact Report. Beyond the Initial Phase, a "Future Phase" encompassed the remaining development described in the CPHP, envisioned for completion by the horizon year of 2050.

Key transportation related improvements or elements associated with CPHP include:

- Improving the pedestrian connection between Irving Street & Parnassus Avenue
- Consolidating freight deliveries to new service corridor off of Medical Center Way
- Extending Fourth Avenue between Parnassus Avenue and Koret Way
- Adding new off-street passenger loading areas (e.g., New Hospital loading loop)
- Relocating access to ambulance bays from Parnassus Avenue to Medical Center Way
- Improving Parnassus Avenue streetscape

City of San Francisco

Transit First Policy

The City's Transit First policy is a set of principles that emphasize the City's commitment to give pedestrian, bicyclist, and public transit use of public rights-of-way priority over the private automobile.

Better Streets Plan

The Better Streets Plan is a unified set of standards, guidelines, and implementation strategies to govern how San Francisco designs, builds, and maintains its pedestrian environment, which it defines as the areas of the street where people walk, sit, shop, play, or interact. The Better Streets Plan focuses on creating a positive pedestrian environment through measures such as careful streetscape design and traffic calming measures to increase pedestrian safety. Generally speaking, the guidelines are for design of sidewalks and crosswalks; however, in some cases, the Better Streets Plan includes guidelines for certain areas of the roadway, particularly at intersections.

San Francisco Bicycle Strategy

The San Francisco Bicycle Strategy describes a City program to provide the safe and attractive environment needed to promote bicycling as a transportation mode. The Bicycle Strategy identifies the citywide bicycle route network and establishes the level of treatment (i.e., Class I, Class II or Class III facility) for each route.

4.13.3 Impacts and Mitigation Measures

This section provides the impact analysis related to transportation for the proposed project. It describes the methods used to determine the impacts of the proposed project and lists the thresholds used to conclude whether an impact would be significant. Measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts accompany the discussion of each identified significant impact, as needed.

Significance Criteria

Would implementation of the NHPH:

a) Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?

b) Would the project conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b)?[14]

c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

d) Result in inadequate emergency access?

e) Would project construction activities adversely affect travel conditions along sidewalks and roadways serving the project site?

Approach to Analysis

Consistent with the CEQA Guidelines and the *SF Guidelines*, the transportation impact analysis in this EIR analyzes the change to VMT per employee that would result from the implementation of the NHPH at the Parnassus Heights campus site. Changes to traffic operations in the study area (i.e., the level of service of project area intersections) and transit operations (e.g., project generated transit ridership and effect on capacity utilization, potential delay to transit vehicles) are outside the scope of the CEQA analysis and are not discussed below. A high-level analysis of potential changes to traffic and transit operations has, however, been completed and is presented in **Appendix TRANS** for informational purposes only. This appendix is provided for decision-makers' consideration, independent of the environmental review process.

As discussed in the Vehicle Miles Traveled section above (within the *Local Setting* section), VMT is a measurement of the amount and distance that a resident, employee, or visitor drives, accounting for the number of passengers within a vehicle. To estimate VMT, travel demand was first estimated based on the population associated with the NHPH.

At a high level, travel demand is determined through the use of a four-step process: trip generation, mode split, trip distribution, and trip assignment, which are described in more detail in the "Travel

[14] CEQA Guidelines Section 15064.3, subdivision (b) refers to the discontinuation of vehicle level of service (LOS) as an impact metric for transportation analysis and instead recommends the use of vehicle miles traveled (VMT); this section gives lead agencies discretion to choose the most appropriate methodology to evaluate the impact due to a project's VMT.

Demand Estimates" section. The travel demand estimates for the NHPH were primarily informed by the results of travel behavior surveys conducted at the Parnassus Heights campus site in recent years, but with two adjustments to reflect how people are reasonably expected to travel in the future with the implementation of the NHPH, as well as the CPHP, at a larger scale: (1) current travel behavior trends such as more people traveling to and from the site using TNCs such as Uber and Lyft, and (2) the expected amount of parking available to UCSF faculty, staff, patients, and visitors under the CPHP, which would be more constrained than existing conditions and would result in a shift away from driving alone and parking on the campus site. The overall Parnassus Heights campus site off-street parking supply is expected to decrease by approximately 400 spaces with full implementation of the CPHP through 2050, from approximately 2,300 spaces to approximately 1,900 spaces.[15,16] It is anticipated that the campus site's off-street parking supply would decrease by approximately 100 spaces by the time the NHPH is complete (approximately 2030) – from approximately 2,300 spaces today to approximately 2,200 spaces.

Analysis Scenarios

The analysis examines four scenarios: 'Existing', 'Existing Plus NHPH', '2030 Baseline Plus NHPH', and '2050 Cumulative.' Each scenario is described below.

- **Existing** – This scenario represents conditions at the campus site prior to the beginning of the COVID-19 pandemic in March 2020.Itis based on pre-COVID population numbers and travel behavior.
- **Existing Plus NHPH** – This scenario represents increased travel demand associated with the NHPH, layered on top of existing conditions. It is an informational scenario that does not consider other CPHP Initial Phase projects anticipated to be in place when the NHPH is complete. This analysis uses projected future NHPH population and travel behavior to calculate NHPH travel demand and associated changes in VMT.
- **2030 Baseline Plus NHPH** – This scenario represents the full buildout of the NHPH and the CPHP Initial Phase projects, comprising the Irving Street Arrival, Research and Academic Building (RAB), and other Initial Phase Improvements (e.g., Initial Phase Utility Improvements, the Parnassus Avenue Streetscape Plan, Renovation of Existing Buildings, and Neighborhood Investments) that are anticipated to be in place by 2030. This scenario considers the campus population and travel behavior associated with the NHPH, CPHP Initial Phase and background growth associated with planned campus changes by 2030.
- **2050 Cumulative** – The Cumulative scenario represents the full buildout and implementation of the CPHP, including the NHPH, in combination with past, present, and reasonably foreseeable future projects in the vicinity of the campus site. For the travel demand and VMT analyses, this scenario uses the projected future campus population under the CPHP buildout and future mode of travel assumptions.

15 These estimates include garage and surface lots at the campus site, including the Kezar lot, and exclude parking associated with the Aldea Housing complex.

16 The CPHP Final EIR from which the travel demand approach of the NHPH EIR is taken included a 400-parking space reduction, from 2,300 to 1,900 spaces total. This reduction included 100 spaces that will be used for an Integrated Center for Design Construction (ICDC). We have since learned that the spaces removed to create the ICDC would be eventually returned to parking spaces and therefore the overall reduction would be 300 spaces (from 2,300 to 2,000 spaces). However, for the purposes of this analysis and consistency with the CPHP Final EIR we have retained the more conservative 400 parking space reduction.

Travel Demand Estimates

Trip Generation

UCSF provided population estimates for faculty and staff, patients and visitors, and residents for the NHPH in June 2021. Trip generation rates for the populations were based on historical UCSF travel surveys and largely consistent with the Transportation Impact Study prepared in support of the 2014 LRDP. These trip generation inputs were used in combination with the population estimates by category to estimate daily and PM peak hour person trips by population category for the analysis scenarios described above for comparison purposes.

Daily and peak hour person trip estimates by population group for the NHPH alone are presented in **Table 4.13-7**. Aggregated daily and peak hour person trip estimates for both faculty/staff/students and patients/visitors population groups are presented by analysis scenario in **Table 4.13-8**. Both tables exclude trips associated with residential uses as the NHPH does not influence residential populations. While the focus of this study is on the NHPH, travel demand estimates and mode split associated with the full buildout and implementation of the CPHP are presented in the 2050 Cumulative scenario for comparison, for informational purposes only.

TABLE 4.13-7
NHPH ONLY[1] DAILY AND PEAK HOUR PERSON TRIPS

Population Group	Population	External Daily Person Trips	External PM Peak Person Trips
Faculty/Staff/Students	1,400	2,600	500
Patients/Visitors	800	1,700	100
Total	**2,300**	**4,300**	**600**

NOTES:
1 The population and trip estimates reflect only the projects addressed in the NHPH EIR and not other concurrent projects
2 Numbers may not add exactly due to rounding

SOURCE: Fehr & Peers, 2021.

TABLE 4.13-8
DAILY AND PEAK HOUR CAMPUS PERSON TRIPS WITH NHPH[1]

Scenario	External Daily Person Trips[2]	External PM Peak Person Trips
Existing (Pre-COVID)	32,800	4,500
NHPH Only	4,300	600
Existing Plus NHPH	37,000	5,100
2030 Baseline Plus NHPH	43,600	5,900
2050 Cumulative	47,500	6,400

NOTES:
1 Excludes person trips associated with residential uses on the UCSF Parnassus Campus, as the NHPH does not influence residential populations.
2 Numbers may not add up exactly due to rounding.

SOURCE: Fehr & Peers, 2021.

The NHPH is estimated to generate a total of approximately 4,300 daily external person trips. By approximately 2030, the Parnassus Heights campus site is estimated to generate a total of approximately 43,600 external daily person trips (excluding residential uses), considering the NHPH project and baseline 2030 growth associated with the implementation of CPHP Initial Phase projects. This represents an increase of approximately 33 percent compared to existing conditions. For comparison, the Parnassus Heights campus site is estimated to generate a total of approximately 47,500 external daily person trips (excluding residential uses) with full implementation of the CPHP (including the NHPH) by approximately year 2050. This represents an increase of approximately 45 percent compared to existing conditions. These trip estimates exclude internal trips that are expected to occur within the campus site (e.g., a nurse at the hospital traveling to the Millberry Union to eat lunch and returning back to the hospital afterwards).

Mode Choice

Mode choice is the designation of person trips to the various means that people use to travel, such as automobile, transit, walking, bicycling, taxi, or other modes of transportation. The determination of the mode of transportation used in trips to and from the campus site depends on many characteristics of the trip such as who is making the trip (e.g., faculty, staff, patient, visitor, vendor), the type of trip (work, medical appointment, other visit), and trip origin or destination. Existing mode choice data was derived from the 2018 Employee Commute Survey and the 2017-18 Patient/Visitor Survey and is displayed in **Table 4.13-9**.

TABLE 4.13-9
EXISTING (PRE-COVID) MODE SPLIT (2018)

Population Group	Drive Alone	Drop-Off	Taxi/ Uber/ Lyft	Car-pool[1]	Van-pool	Public Transit	UCSF Shuttle	Bicycle	Motor-cycle/ Scooter	Walk/ Run	Tele-com-mute	Other
Faculty/ Staff/ Students	21%	2%	4%	3%	1%	31%	10%	6%	1%	18%	2%	0%
Patient/ Visitor	23%	7%	7%	37%[1]	1%	16%	3%	1%	0%	4%	0%	0%

NOTES:
[1] Surveyed patients and visitors who "traveled in a car with others" on their trip to/from the campus site are categorized under "carpool." The larger proportion of carpooling activity among patients and visitors reflects the proportion of patients (both inpatients and outpatients) who travel to/from the campus site with a companion.

SOURCE: Fehr & Peers, 2021.

To forecast anticipated travel behavior associated with the NHPH, which is anticipated to be completed by approximately 2030, a methodology was developed to adjust the existing mode split to account for:

- The continuation of observed historical travel behavior trends, such as a decrease in faculty/staff drive alone trips, an increase in faculty/staff transit use and an increase in TNC and drop-off trips associated with both faculty/staff and patients/visitors
- The anticipated amount of parking provided in 2030 according to the CPHP for faculty/staff and patients/visitors population groups, which would essentially "cap" the number of drive alone and carpool trips to/from the campus site across both the faculty/staff and patient/visitor populations

- The anticipated population on the campus site by approximately 2030, considering the implementation of the NHPH, other CPHP Initial Phase projects, and other background growth planned by 2030

To estimate how travel patterns might change in the future (by approximately 2030), pre-COVID trends in travel behavior at UCSF were first examined. In recent years, UCSF has continued implementing an extensive TDM program, prices for off-street parking have increased, and some minor transit improvements have been implemented on nearby routes. Based on regularly conducted surveys of UCSF faculty and staff travel behavior, the share of faculty and staff driving alone to campus decreased from 32 to 23 percent between 2013 and 2018. During the same period, the share of faculty and staff traveling by public transit or UCSF shuttle increased from 37 to 42 percent and the percentage of faculty and staff traveling by taxi/TNC or drop-off increased from 4 to 6 percent. The COVID-19 pandemic has resulted in less total travel to the campus; while the majority of clinical[17] staff have continued to work in-person, the majority of administrative staff continue to work from home. Whether and when staff who have shifted to remote work during the pandemic will return to the workplace at full or reduced capacity will be determined by job position/requirements and individual departments.

Over the past 30 years, UCSF patients and visitors have been surveyed on their travel behavior twice – in 1990 and 2018. During that time period, the share of patients and visitors driving alone to the campus site decreased from 39 to 22 percent and the share traveling by public transit or UCSF shuttle decreased from 33 percent to 20 percent. During the same period, the share traveling by taxi, TNC, drop-off or carpool increased from 22 percent to 51 percent. The COVID-19 pandemic has increased the use of telemedicine as an alternative to in-person outpatient treatment. The extent to which the shift in in-person to virtual visitation will be sustained, continue to change, or revert back to pre-pandemic percentages in the future is unclear.

Even if these travel behavior trends continue into the future – and fewer faculty and staff drive alone and more travel by public transit and/or taxi/TNC – the amount of parking available at UCSF – both by approximately 2030 when the NHPH is anticipated to be complete and under the 2050 Cumulative scenario – would not be sufficient to accommodate the number of people who would desire to drive alone or carpool to the NHPH or other parts of the campus site.

By 2030, the amount of off-street parking available is expected to decrease by approximately 100 parking stalls from approximately 2,300 stalls today to approximately 2,200 stalls in off-street garages and lots. Under the 2050 Cumulative scenario, the amount of off-street parking available is expected to decrease by approximately 400 parking stalls from approximately 2,300 to approximately 1,900 parking stalls in off-street garages and surface lots.[18]

[17] 'Clinical staff' includes physicians, fellows, residents, nurses, nurse practitioners, postdocs and students. This group makes up approximately half of the UCSF Parnassus Heights campus site daily staff population.

[18] These estimates include garage and surface lots at the campus site, including the Kezar lot, and exclude parking associated with the Aldea Housing complex. Total parking supply would decrease even with the addition of a new structured parking garage proposed as part of the West Side Housing under 2050 Cumulative conditions. A new structured parking garage with approximately 190 parking spaces would replace the Westside surface lot behind the Dental Clinics building (with 151 existing parking spaces).

As the total campus population increases in a more parking-constrained environment over time, people will likely change the way they travel to and from the campus site. With respect to patients, some health insurance companies and hospitals are currently partnering with TNCs, like Uber and Lyft, to provide patients with free travel to and from medical appointments,[19] and in the future, TNCs could have larger roles in medical travel. One reason taxi/TNC services are attractive is that they do not require a parking space; people can travel to/from the campus site by vehicle without needing to park the vehicle. It is expected that those desiring to travel to the campus site by vehicle in the future are less likely to drive and park, and more likely travel by taxi/TNC due to the door-to-door convenience and removal of looking for and paying for parking in at a parking constrained destination. Specifically, the number of people who would otherwise desire to drive alone or carpool to/from campus site, but would not under the Baseline 2030 Plus NHPH scenario due to the limit on parking supply, was estimated by comparing anticipated parking supply by 2030 to estimated parking demand based on the continuation of observed historical travel behavior trends. This proportion of people would be reasonably expected to shift their travel behavior and would be more likely to travel by taxi/TNC or drop-off in the future, which reflects a desire to travel by automobile – but one that is not limited by parking availability. For the 2050 Cumulative scenario, a similar approach was taken considering the anticipated parking supply and demand by 2050.

This approach, which contemplates a larger shift to taxi/TNC and drop-off trips, is conservative with respect to estimating the number of vehicle trips associated with the NHPH only scenario, and 2050 Cumulative scenario. Each taxi/TNC or drop-off trip generates two vehicle trips for every person trip: one when the driver arrives to the campus site to pick-up/drop-off a passenger(s) and one when they depart the campus site. The future estimated mode split – for 2030 Baseline Plus NHPH and 2050 Cumulative scenarios – that reflects this analysis approach is displayed in **Table 4.13-10** and **Table 4.13-11**, respectively. As compared to the existing mode split, the share of faculty/staff driving alone or carpooling to the NHPH and campus site would decrease over time, while the share of faculty/staff using taxi/TNC, drop-off, and public transit would increase. For patients/visitors, travel by drive alone, carpool, and public transit is expected to decrease, and travel by taxi/TNC and drop-off is expected to increase.

Since parking is provided at the campus site level, travel behavior for the NHPH considers both the campus-wide parking supply and faculty/staff/student and patient/visitor populations anticipated by approximately 2030. Travel behavior was first assessed at the campus site level using the 2030 Baseline Plus NHPH scenario and mode choice for the NHPH project was calibrated based on the 2030 Baseline Plus NHPH scenario and then applied to the NHPH only scenario. The travel demand estimates for the NHPH Only scenario (using calibrated 2030 Baseline Plus NHPH mode split) was added to existing (pre-COVID) travel for the Existing Plus NHPH scenario.

[19] For additional information, see *Uber Health's website* https://www.uberhealth.com/; Recent news coverage of TNC-healthcare partnerships include Sutter Health's partnership with Lyft (https://www.forbes.com/sites/brucejapsen/2020/01/13/lyft-hails-major-hospital-partner-in-sutter-health/) and Medicare Advantage's partnership with Lyft (https://healthpayerintelligence.com/news/lyft-expands-work-with-bcbs-humana-medicare-advantage-plans).

TABLE 4.13-10
2030 BASELINE PLUS NHPH[1] MODE SPLIT

Population Group	Drive Alone	Drop-Off	Taxi/ Uber/ Lyft	Car-pool	Van-pool	Public Transit	UCSF Shuttle	Bicycle	Motor-cycle/ Scooter	Walk/ Run	Tele-com-mute	Other
Faculty/ Staff/ Students	17%	4%	7%	2%	1%	33%	11%	6%	1%	17%	2%	0%
Patient/ Visitor	16%	14%	14%	29%	1%	16%	3%	1%	0%	5%	0%	0%

NOTES:
[1] These mode split estimates reflect full buildout of the NHPH in 2030, when the NHPH and CPHP Initial Phase projects have been fully implemented.

SOURCE: Fehr & Peers, 2021.

TABLE 4.13-11
2050 CUMULATIVE[1] MODE SPLIT

Population Group	Drive Alone	Drop-Off	Taxi/ Uber/ Lyft	Car-pool	Van-pool	Public Transit	UCSF Shuttle	Bicycle	Motor-cycle/ Scooter	Walk/ Run	Tele-com-mute	Other
Faculty/ Staff/ Students	13%	5%	8%	2%	1%	33%	12%	6%	1%	16%	2%	0%
Patient/ Visitor	12%	20%	20%	23%	1%	15%	2%	1%	0%	5%	0%	0%

NOTES:
[1] These mode split estimates reflect full buildout of the 2050 Cumulative scenario, when the NHPH and CPHP have been fully implemented.

SOURCE: Fehr & Peers, 2021.

These estimated future mode splits were used to calculate the daily and peak hour number of vehicle trips, which are presented in **Table 4.13-12**. The daily vehicle trip estimate is an input to the VMT analysis. The PM peak vehicle trip estimate is presented for informational purposes. The Parnassus Heights campus site is estimated to generate a total of approximately 22,400 daily and 2,600 PM peak hour external vehicle trips (excluding residential uses) under 2030 Baseline Plus NHPH scenario, which represents an increase of approximately 51 percent in daily trips and 44 percent in peak hour trips compared to existing conditions. For comparison, under 2050 Cumulative scenario, the campus site is estimated to generate a total of approximately 27,000 daily and 3,000 PM peak hour external vehicle trips (excluding residential uses) by year 2050, an increase of approximately 82 percent in daily trips and 67 percent in peak hour trips, respectively, compared to existing conditions.

Over the last two years, travel behavior has changed at a global level as a result of the COVID-19 pandemic. In San Francisco, travel patterns (both amount and mode of trips) changed significantly under the “shelter-in-place” orders first issued on March 17, 2020. For example, telework and telemedicine services increased, and transit use decreased during this time.

TABLE 4.13-12
DAILY AND PEAK HOUR CAMPUS VEHICLE TRIPS WITH NHPH[1]

Scenario	External Daily Vehicle Trips	External PM Peak Vehicle Trips
Existing	14,800	1,800
NHPH Only	2,500	300
Existing Plus NHPH	17,300	2,100
2030 Baseline Plus NHPH	22,400	2,600
2050 Cumulative	27,000	3,000

NOTES:
[1] Excludes vehicle trips associated with residential uses on the UCSF Parnassus Campus, as the NHPH does not influence residential populations.

SOURCE: Fehr & Peers, 2021.

Muni has been operating reduced transit service in San Francisco under a COVID-19 Core Service Plan since April 8, 2020.[20] While transit service has gradually been reinstated, including resumption of light rail service for the full N Judah route in May 2021, the timing and degree to which transit service will fully recover in San Francisco remains uncertain. SFMTA generally evaluates key factors such as annual ridership, vehicle availability, and resource availability – and relies on regularly-collected passenger data – to inform their transit service planning decisions; this approach allows SFMTA the flexibility and responsiveness to provide the most efficient transit service possible. Financial constraints may also impact Muni's ability to restore transit service.

At the time of publication, the medium- or long-term effects of the COVID-19 pandemic on travel behavior are uncertain and it would be speculative to estimate any of these possible changes, which may include various effects such as increased telework and telemedicine services or less transit ridership. To the degree that telework/telemedicine increases over the long-term, as compared to a pre-COVID-19 (January 2020) baseline, this could result in less VMT than projected as part of this study. Should transit ridership decrease over the long-term, as compared to a pre-COVID-19 (January 2020) baseline, with more people choosing to drive or be driven, this could result in additional VMT than projected as part of this study.

Trip Distribution

For each population group, project-generated vehicle trip origins and destinations were analyzed as coming to or from the four super districts in San Francisco, (i.e., northeast, northwest, southeast, and southwest quadrants of the City), different regions in the Bay Area (East Bay, North Bay, Peninsula, South Bay), or outside the Bay Area. Trip distributions were based on information collected by UCSF in the 2018 Employee Commute Survey and 2017-18 Patient/Visitor Survey. As previously presented in **Table 4.13-13**, the campus site (excluding residential uses) would generate 17,300 daily vehicle trips under the Existing Plus NHPH scenario, 22,400 daily vehicle trips under the 2030 Baseline Plus NHPH scenario, and 27,000 daily vehicle trips under the 2050 Cumulative scenario across all nonresidential population groups. These trips were then distributed regionally by

[20] San Francisco Municipal Transportation Agency (SFMTA), COVID-19 Muni Core Service Plan, https://www.sfmta.com/travel-updates/covid-19-muni-core-service-plan

population type (faculty/staff/students or patient/visitor), with the resulting estimated trip distribution percentages shown in **Table 4.13-14**. The results of the vehicle trip distribution analysis were used to determine average VMT by population.

TABLE 4.13-13
DAILY AND PEAK HOUR CAMPUS VEHICLE TRIPS WITH NHPH[1]

Scenario	External Daily Vehicle Trips	External PM Peak Vehicle Trips
Existing (Pre-COVID)	14,800	1,800
NHPH Only	2,500	300
Existing Plus NHPH	17,300	2,100
2030 Baseline Plus NHPH	22,400	2,600
2050 Cumulative	27,000	3,000

NOTES:
[1] Excludes vehicle trips associated with residential uses on the UCSF Parnassus Campus, as the NHPH does not influence residential populations.

SOURCE: Fehr & Peers, 2021.

TABLE 4.13-14
PROJECT TRIP DISTRIBUTION BY POPULATION GROUP

	SD 1	SD 2	SD 3	SD 4	East Bay	North Bay	Peninsula	South Bay	Outside Bay Area
Faculty/Staff/Students	3%	12%	15%	17%	15%	10%	24%	3%	1%
Patient/Visitor	4%	5%	11%	7%	18%	11%	11%	6%	27%

SOURCE: Fehr & Peers, 2021.

Parking and Loading Estimates

Although parking and loading demand are not CEQA significance topics, parking and loading demand estimates are presented, as they relate to the overall travel demand analysis. Parking demand was an important consideration in the travel demand process, as described above. Passenger loading demand is an output of the travel demand process and is related to parking demand. Parking demand reflects the space needed on the campus site to accommodate people who travel to/from the campus site by drive alone or carpool, whereas passenger loading demand reflects the space needed for those who travel by taxi/TNC or drop-off.

Parking Demand

Parking demand estimates were calculated based on population type, expected mode of travel to and from the Parnassus Heights campus site, and average vehicle occupancy. Parking associated with residential uses on the campus were excluded since the project does not influence residential populations. The number of daily parked vehicles reflects vehicle trips associated with drive alone and carpool trips, and excludes vanpool vehicle trips, which are parked in a separate, dedicated parking lot. The expected daily parking demand and peak hour parking demand for a typical weekday are summarized in **Table 4.13-15** by analysis scenario. Peak parking hour is

distinct from the PM peak hour and reflects the time of day with the greatest parking demand. For the off-street parking garages, the peak parking hour occurs at approximately 11:00 AM, as presented in Table 4.13-5.

TABLE 4.13-15
DAILY AND PEAK PARKING DEMAND[1]

Scenario	Daily Parking Demand	Peak Parking Hour Demand
Existing (Pre-COVID)	5,900	3,100
NHPH Only	500	150
Existing Plus NHPH	6,400	3,250
2030 Baseline Plus NHPH	5,900	3,200
2050 Cumulative	5,100	2,900

NOTES:
[1] Excludes parking demand associated with residential uses on the UCSF Parnassus Campus, as the NHPH does not influence residential populations.

SOURCE: Fehr & Peers, 2021.

Under the Existing Plus NHPH scenario, parking demand is anticipated to increase by 11-12 percent as compared to existing conditions. In comparison, the 2030 Baseline Plus NHPH scenario considers the anticipated growth and parking demand associated with the CPHP Initial Phase projects by 2030 as well as a slightly reduction in campus-wide parking supply (by approximately 100 parking stalls by 2030). Due to the combined effect of an increase in campus population and a decrease in campus parking supply – which would essentially "cap" the number of drive alone and carpool trips to/from campus that require a parking stall – parking demand is expected to be similar to existing conditions under the 2030 Baseline Plus NHPH scenario. For comparison purposes, under the 2050 Cumulative scenario, the daily and peak hour parking demand is expected to decrease by approximately 12 percent and 11 percent, respectively. This decrease reflects the expected decrease in off-street parking supply (by approximately 400 parking stalls), which would "cap" the number of parking trips associated with the 2050 Cumulative scenario.

The on-street parking supply in the vicinity of the campus site is expected to remain constant between existing conditions and implementation of the NHPH – as well as under the 2050 Cumulative scenario – at approximately 1,000 parking spaces. Since existing on-street parking occupancies are about 90 percent on average over the course of the day, it is not expected that there would be additional on-street parking supply to meet additional parking demand related to UCSF populations. Therefore, the total peak hour parking demand under the 2030 Baseline Plus NHPH scenario is expected to be approximately equal to the total parking supply of 3,200 spaces, which includes both off-street and on-street parking facilities – and excludes residential uses. Peak parking hour demand is anticipated to decrease under the 2050 Cumulative scenario, to match the anticipated parking supply decrease associated with that scenario.

Loading Demand

Passenger loading demand was calculated based on the expected number of people traveling to the Parnassus Heights campus site by taxi/TNC or drop-off during the PM peak hour. As described above, more people are expected to travel to/from the campus site by taxi/TNC or drop-off as a result of the limited campus parking supply. The estimated daily and PM peak hour passenger loading demand and peak minute passenger loading demand range is summarized in **Table 4.13-16** by analysis scenario, for comparison purposes. The NHPH project alone is anticipated to result in an increase of about 25-27 percent in daily and peak hour passenger loading demand compared to existing conditions. Compared to existing conditions, the daily and PM peak hour loading demand are expected to increase by approximately 135-150 percent, under the Baseline 2030 Plus NHPH scenario and by 230-265 percent under the 2050 Cumulative scenario.

TABLE 4.13-16
DAILY AND PEAK HOUR LOADING DEMAND[1]

Scenario	Daily Loading Demand	Peak Loading Hour Demand
Existing (Pre-COVID)	3,000	360
NHPH Only	800	90
Existing Plus NHPH	3,800	450
2030 Baseline Plus NHPH	7,500	850
2050 Cumulative	11,000	1,180

NOTES:
[1] Excludes loading demand associated with residential uses on the UCSF Parnassus Campus, as the NHPH does not influence residential populations.

SOURCE: Fehr & Peers, 2021.

In order to compare the anticipated passenger loading demand associated with the NHPH, against the NHPH's proposed passenger loading facilities, daily and peak hour loading demand under the 2030 Baseline Plus NHPH scenario is presented by population group in **Table 4.13-17**. This scenario represents the total number of inpatients anticipated when the New Hospital opens (in approximately 2030), along with the renovated Moffitt and Long Hospitals – as well as other populations associated with other buildings on the campus site. It is anticipated that the NHPH passenger loading facilities would be used primarily by inpatients and inpatient visitors. To the degree faculty/staff/students are dropped off or picked up, their passenger loading activities are anticipated to be brief (i.e., less than 60 seconds based on TNC loading behavior studies conducted in San Francisco) and along Parnassus Avenue in on-street passenger loading areas across the Parnassus Heights campus site. Outpatient passenger loading is anticipated to continue to occur primarily at the existing Moffitt Loop in front of Medical Building 1, where valet service currently operates. A new waste loading dock for the NHPH would be located on the east side of the New Hospital and accessed directly from Medical Center Way. Loading demand associated with vendors and services would take place either "back of house" or in designated commercial loading spaces along Parnassus Avenue.

TABLE 4.13-17
2030 BASELINE PLUS NHPH PASSENGER LOADING DEMAND BY POPULATION[1]

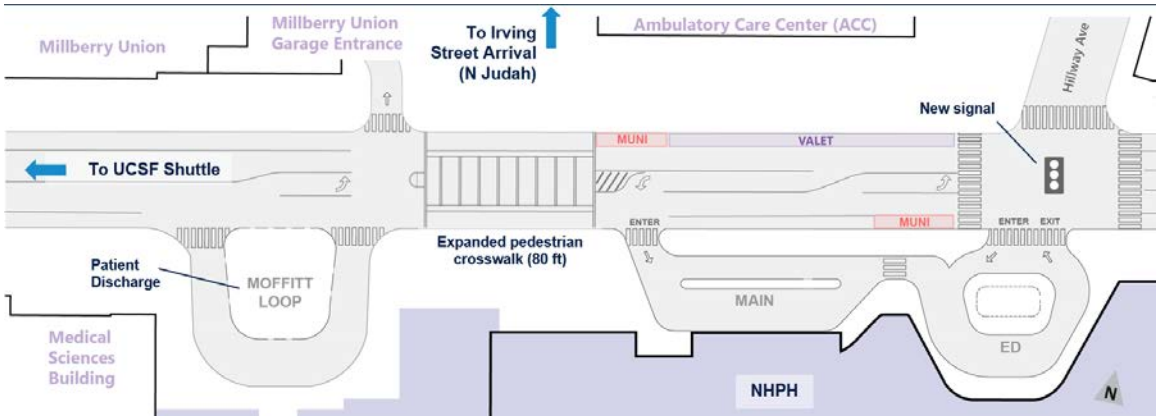
Scenario	Daily Loading Demand	Peak Loading Hour Demand
Faculty/Staff/Students	3,000	530
Inpatients and Inpatient Visitors	1,650	120
Outpatients and Companions	2,630	180
Vendors and Services	270	20
Total	**7,540**	**850**

NOTES:
[1] Excludes loading demand associated with residential uses on the UCSF Parnassus Heights campus site, as the NHPH does not influence residential populations.

SOURCE: Fehr & Peers, 2021.

Loading Supply

The NHPH proposes the provision of two new passenger loading areas accessible off Parnassus Avenue: one specifically for the Emergency Department ("ED Loop") and one for non-emergency services ("Main Loop"). These two new passenger loading loops would have separate entrances but a combined exit at Hillway Avenue as described in *Chapter* 3, *Project Description* (*"Option 1: Without valet area")* and in **Figure 4.13-6** below.



SOURCE: Fehr & Peers, July 2021

UCSF New Hospital Parnassus Heights

Figure 4.13-6
Vehicular Circulation Option 1: Without Valet Area

The ED Loop will serve up to four vehicles simultaneously, and the Main Loop would serve up to eight vehicles simultaneously. The new loops are intended to serve inpatients and inpatient visitors associated with the NHPH and, as well as Moffitt and Long Hospitals, and would augment the existing Moffitt Loop, which can serve up to eight vehicles simultaneously and would continue to be used for hospital discharges.

To estimate peak hour loading demand for each loop, observed behavior at the existing Moffitt Loop and Emergency Department parking area were scaled up based on the following factors:

- Increase in hospital beds with the NHPH
- Population growth associated with the NHPH (and CPHP)
- A shift to taxi/TNC and drop-off trips (as explained in the previous Mode Choice section)

Since the current ED parking area sees little loading activity as compared to the Moffitt Loop, the percentage of loading events using the proposed Main Loop and ED Loop is estimated from the split in overall arrivals to the Emergency Department and non-emergency services, as provided by UCSF. The Main Loop is anticipated to serve as the drop-off location for people arriving at the hospital, while the existing Moffitt Loop would serve as the recommended pick-up location for patient discharge. A range of projected loading events by area was estimated – with peak hour demand for the Main Loop estimated at 40 vehicles per hour at the low end and 80 vehicles per hour at the high end, 25 to 30 vehicles per hour estimated for the ED Loop, and 25 to 45 vehicles per hour estimated for the Moffitt Loop.

The ability of the proposed passenger loading loops to meet the projected passenger loading demand was assessed through a probabilistic mathematical model in which many simulations of peak hour demand for the Main, ED, and Moffitt loops can be run. In each simulation, the model randomly assigns each anticipated loading event with a specific arrival time during the peak hour and a dwell time in proportion to an anticipated distribution of dwell times. Anticipated dwell time distributions are presented in **Table 4.13-18**, based on observed data at the existing Moffitt Loop and ED parking area and refined to anticipate future operations with input from UCSF facilities staff.

TABLE 4.13-18
PROJECTED DWELL TIME DISTRIBUTION FOR PASSENGER LOADING LOOPS

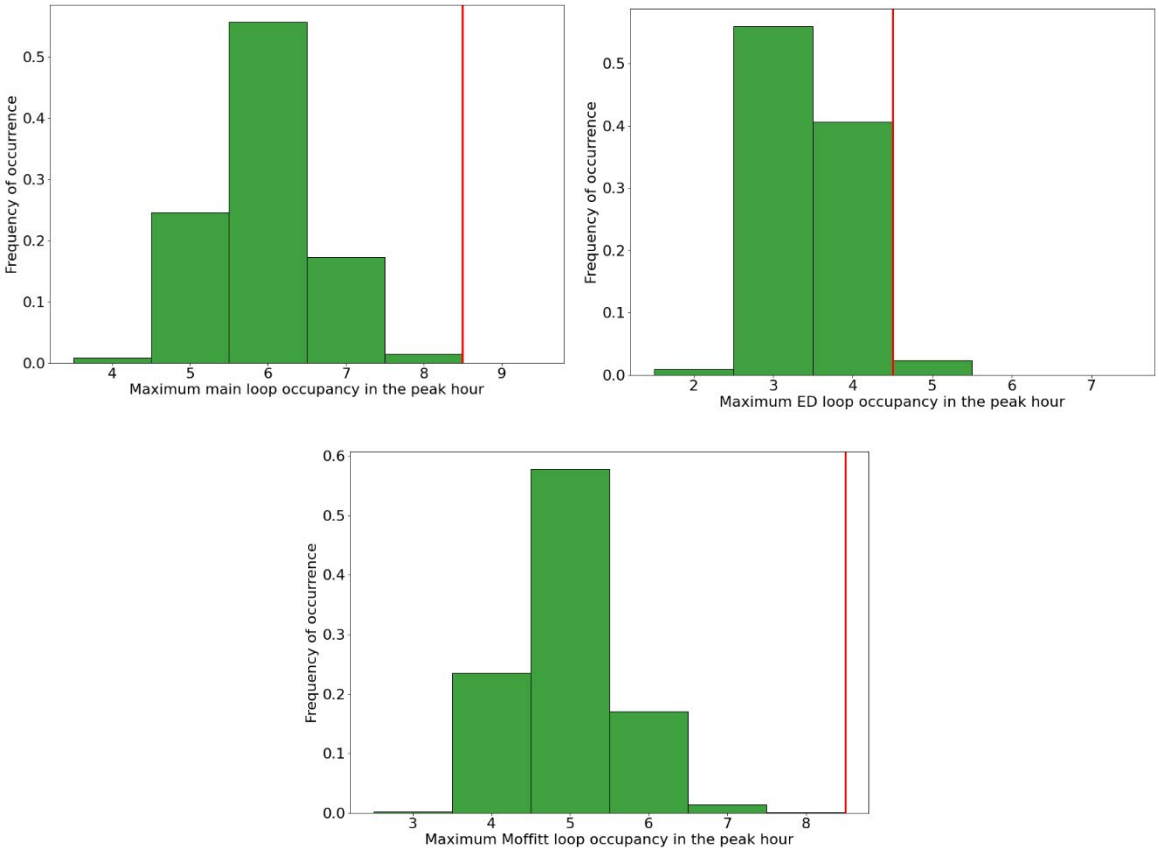
	Percent of Loading Events at Each Facility[1]		
Length of Dwell	**Main Loop**	**ED Loop**	**Moffitt Loop**
< 2 minutes	60%	30%	40%
2-5 minutes	20%	40%	20%
5-10 minutes	20%	30%	40%

NOTES:
[1] All distributions based on observations made at the existing Moffitt Loop and ED parking area, adjusted for the anticipated usage of each future passenger loading facility.

SOURCE: Fehr & Peers, 2021.

The mathematical model determines the number of vehicles present in each loop during each minute of the peak hour. The peak minute loading demand for each loop in each simulated peak hour is determined by calculating the 85th percentile of the demand over the course of the hour, in order to remove outliers. By running 10,000 simulations with randomly assigned arrival times and dwell times, the model determines the distribution of potential values of peak minute loading

demand.[21] The results, shown in **Figure 4.13-7**, indicate that, across all simulated peak hours, the most common peak minute occupancy of the Main Loop is 6 vehicles, the ED Loop is 3 vehicles, and the Moffitt Loop is also 3 vehicles. The red lines in the figures indicate the capacity of each loop. In fewer than 0.1 percent of simulations does the Main Loop exceed capacity in the peak minute and in fewer than 3 percent of simulations does the ED Loop exceed capacity in the peak minute based on the model parameters described above. The Moffitt Loop never exceeds capacity based on the model parameters described above.



SOURCE: Fehr & Peers, July 2021

UCSF New Hospital Parnassus Heights

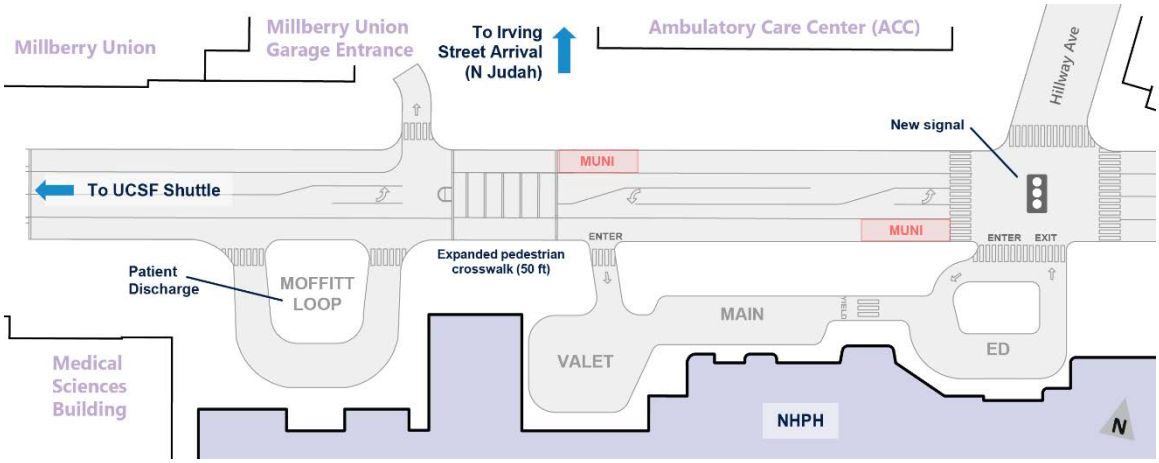
Figure 4.13-7
Vehicular Circulation Option 1: Projected Passenger Loading Loop Operations

Proposed New Passenger Loading Loop with Valet Loop

Chapter 3, *Project Description* includes a description of the proposed new passenger loading loop with a valet loop (*"Option 2: With valet area")*. Under this option, an additional loading loop would be provided to serve valet operations, as shown in **Figure 4.13-8**. The Valet Loop would share an entrance with the Main and ED Loops and would be able to serve at least four vehicles simultaneously. The Valet Loop was estimated to serve roughly 15 vehicles per hour based on

[21] Due to the random nature of probabilistic models, a sufficiently large sample size is needed to achieve a stable result; testing iterations set this number at 10,000.

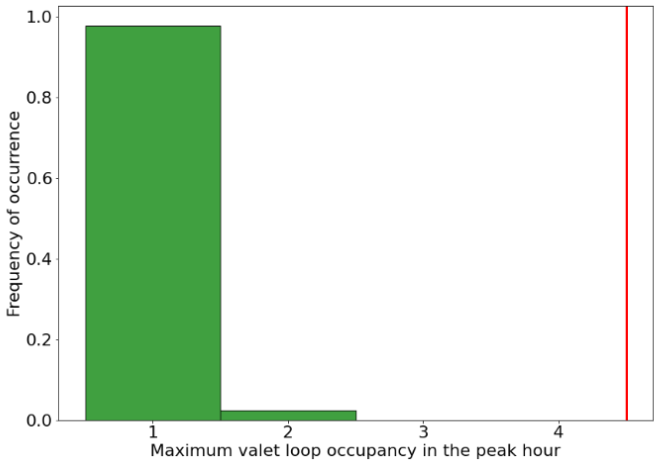
information from UCSF Health and UCSF Transportation Services, specifically patient and visitor demand at other UCSF campus site valet areas, typical and projected levels of valet staffing, and the location of the parking garages in relation to the valet loop.



SOURCE: Fehr & Peers, July 2021 — UCSF New Hospital Parnassus Heights

Figure 4.13-8
Vehicular Circulation Option 2: With Valet Area

The ability of the Valet Loop to meet projected demand was assessed using the same probabilistic mathematical model described previously. It was assumed that all dwell times would be between one and two minutes. The result, shown in **Figure 4.13-9**, indicates that, across all simulated peak hours, the most common peak minute occupancy of the Valet Loop is 1 vehicle, and the loop would never exceed capacity based on the model parameters described above.



SOURCE: Fehr & Peers, October 2021 — UCSF New Hospital Parnassus Heights

Figure 4.13-9
Vehicular Circulation Option 2: Projected Passenger Loading Loop Operations

VMT Estimates

The VMT analysis presented below reflects two different methodologies: one based on the *SF Guidelines* methodology for estimating VMT for San Francisco projects, and the other based on a project-specific methodology. The estimates based on *SF Guidelines* are presented for comparison purposes. The project-specific methodology used for the impact assessment calculates average daily VMT for specific campus populations with the NHPH, using the results of the travel demand analysis. Thus, the project-specific method incorporates UCSF-specific data on the travel patterns associated with the existing population and urban context of the campus site. Given that the NHPH does not include changes to the residential or retail uses at the campus site, the transportation assessment focuses on VMT per capita estimates for employees only; total VMT, which includes VMT generated by all uses of the project (both employment as well as medical visits) was calculated separately and used as an input for the air quality analysis presented in Section 4.2, *Air Quality*.

VMT Estimates based on SF Guidelines

Under the *SF Guidelines*, the Transportation Authority's SF-CHAMP travel demand forecasting model is used to estimate the daily VMT for existing and future (2040) cumulative conditions for the TAZ in which the proposed project is located (this approach is considered to be "map-based screening" for VMT impacts). Separate calculations of VMT are performed in the model for residential, office, and retail uses, each one of which is then divided by the applicable geographic household population, office jobs, or retail employment to calculate the VMT per capita. The *SF Guidelines* also indicate that medical land uses should be treated as office land use for screening and analysis.

Because the Parnassus Heights campus site encompasses multiple TAZs, the per capita values presented in the *SF Guidelines* could not be used directly. Instead, the existing and future total daily VMT for the office use of each TAZ were obtained from the SF-CHAMP model, aggregated for the five TAZs, and then divided by the applicable numbers of jobs for the study TAZs to calculate the average daily VMT per capita for office land uses.

VMT Estimates based on Project-specific Data

Given that the five TAZs encompass parts of the adjacent neighborhoods (mostly residential, but also retail, medical and other office uses unrelated to UCSF), a project-specific methodology was used to calculate the average daily VMT for each analysis scenario using travel information from the CPHP and NHPH presented in the "Travel Demand Estimates" section. The calculations take into account the various types and travel characteristics of the existing and future UCSF employees to estimate the average daily VMT specific to the campus site for each analysis scenario.

The average daily VMT was calculated by multiplying the number of existing and future site-generated vehicle trips originating from or destined for the four San Francisco superdistricts, the East Bay, North Bay, South Bay, and out of the Bay Area region by an average weighted distance

between the campus site and the estimated center of gravity for each of the eight zones.[22] These daily VMT estimates were then divided by the number of jobs to calculate the average daily VMT per employee for each analysis scenario. This method is considered a spreadsheet model based on project-specific data and local data on trip modes and lengths, which is consistent with the spreadsheet-based methods the Governor's Office of Planning and Research (OPR) indicates may be used to estimate VMT in its *Technical Advisory on Evaluating Transportation Impacts in CEQA* (*"Technical Advisory"*).[23]

Table 4.13-19 shows the existing and future average daily VMT per employee for the campus site with the NHPH, using both the *SF Guidelines* methodology and the project-specific methodology described above.

TABLE 4.13-19
EXISTING AND FUTURE AVERAGE DAILY VMT PER EMPLOYEE WITH NHPH[1]

Scenario	Project-specific Methodology[2]	SF Guidelines Methodology[3,4]
Existing (Pre-COVID)	9.9	8.9
Existing Plus NHPH	10.4	n/a
2030 Baseline Plus NHPH	11.3	n/a
Cumulative 2050	11.5	8.7

NOTES:
1 Represents UCSF faculty, physicians, nurses, students, trainees and other UCSF staff.
2 Represents UCSF campus site exclusively; Cumulative 2050 conditions represent full buildout of the UCSF CPHP.
3 Values for TAZs 226, 227, 545, 546, and 547; includes adjacent residential, retail, medical and other office uses unrelated to UCSF.
4 SF Guidelines methodology provides estimates for existing (2015) and cumulative (2040) conditions only and does not provide a 2030 estimate.

SOURCE: Adavant Consulting, 2021.

As presented in Table 4.13-19, the average daily VMT results for the Parnassus Heights area (five TAZs in the SF-CHAMP model) and the Parnassus Heights campus site (Parnassus Heights campus site boundaries) are relatively similar – within 1-3 miles of each other – under all conditions. Some variation is expected, since the differences between the two analysis areas reflect different study areas, associated land use mixes in their VMT calculations, and granularity of input data, such as populations. While the SF Guidelines approach shows little variation between existing and cumulative scenarios, the project-specific methodology provides higher (more conservative) average daily VMT estimates, which reflects the parking-constrained analysis approach.

22 The average weighted distances used in this analysis for locations outside San Francisco are slightly different than those presented in the UCSF CPHP EIR due to updated journey-to-work information subsequently made available by the Metropolitan Transportation Commission (MTC). The new data results in a change of plus or minus three to four miles traveled, depending on the specific trip destination, but in the aggregate the new data results in an increase of less than 0.6 vehicle miles per capita (less than 5 percent) of travel for the entire campus. Appendix TRANS summarizes the new distance and average daily VMT calculations.

23 This document is accessible at http://opr.ca.gov/docs/20190122-743_Technical_Advisory.pdf

Impact Analysis

Impact TRANS-1: Implementation of the NHPH would not conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities. (*Less than Significant*)

Consistency with UC Plans and Policies

New Hospital

Consistency with The University of California Sustainable Practices Policy. The New Hospital is consistent with the transportation-related goals and policies set forth in the *UC Sustainable Practices Policy*. As part of the larger CPHP's proposal to decrease campus-wide parking supply, the New Hospital supports UCSF's efforts to encourage a shift away from drive-alone commute trips, which are a primary contributor to commute GHG emissions and localized transportation impacts. Already, approximately 23 percent of UCSF employees currently drive alone to the campus site, which is below the *UC Sustainable Practices Policy* target of having no more 40 percent of employees commuting by this mode of travel by 2050. In the future, under implementation of the proposed New Hospital, it is anticipated that a lower percentage of employees would drive-alone to the campus site partially as result of the limited parking supply on the campus site (described above in more detail in the "Travel Demand Estimates" section).

Under the proposed New Hospital, UCSF would continue its existing TDM program described in the "Local Setting" section, such as priced permit parking, carpool/vanpool, and telecommuting programs, which have historically been effective TDM strategies to reduce the number of drive-alone trips to/from the campus site.

The proposed New Hospital does not propose any new parking and therefore does not require the preparation of a business-case analysis for new proposed parking structures, consistent with the *UC Sustainable Practices Policy*.

Consistency with the 2014 LRDP. The New Hospital is also consistent with the 2014 LRDP transportation-related goals and policies. The New Hospital includes elements to improve pedestrian facilities adjacent to the project site such as installation of a new pedestrian crossing across the eastern leg of the intersection of Parnassus Avenue and Hillway Avenue, consistent with 2014 LRDP goal to "incorporate pedestrian-friendly urban design principles" in and around the campus site.

Also, as described in the "Local Setting" section, UCSF would continue its existing TDM programs, which have historically been effective strategies to reduce the number of drive-alone trips to/from the campus site, with the implementation of the NHPH. UCSF continues to prioritize parking for use by patients and essential healthcare workers in their Millberry Union garage (public parking for patients) and Medical Building 1 garage (permit parking for faculty, staff with patient care responsibilities, and senior management).

The New Hospital is also consistent with the 2014 LRDP *Community Planning Principles* as UCSF will continue implementing its comprehensive TDM program, as well as coordinating with

relevant local and regional agencies to advance San Francisco's Transit First policy, minimize congestion and provide viable transportation alternatives to single-occupancy vehicles. Finally, by reducing net parking supply on the campus site, the proposed New Hospital would not build parking in excess of anticipated need.

Based on the above, the New Hospital would be consistent with the transportation-related goals and policies set forth in the *UC Sustainable Practices Policy* and the 2014 LRDP, and the impact would be less than significant.

Mitigation: None required.

Related Improvements

The proposed widening of Medical Center Way would improve the section of this roadway between Parnassus Avenue and the Central Receiving Area and New Hospital loading docks to meet San Francisco Fire Department access standards and provide wider sidewalks (five feet wide) on both sides of the street. No new on-street parking spaces would be added. In this way, this project would have a generally positive impact on both vehicle and pedestrian circulation and safety.

The proposed Parnassus Avenue pedestrian bridge and tunnel aim to improve pedestrian circulation options and facilitate patient transport across Parnassus Avenue. In this way, this project would have a generally positive impact on pedestrian circulation and patient service by providing additional ways to cross the street and reducing potential conflicts between pedestrian and vehicles on Parnassus Avenue.

Other related improvements – such as the renovation of Moffitt and Long Hospitals, diesel fuel and medical gas tanks replacement, and vegetation management and slope stabilization improvements – do not propose any modifications to city streets or other aspects of the transportation system, and would not conflict with a program, plan, ordinance, or policy addressing the circulation system.

Therefore, these related improvements would have a less than significant impact related to conflict with a program, plan, ordinance, or policy addressing the circulation system.

Mitigation: None required.

Consistency with Local Plans and Policies

New Hospital

Consistency with San Francisco's Transit First Policy. The New Hospital would be implemented in a way that would continue to give people walking, biking, and using public transit priority in the public rights-of-way. The design of the New Hospital would maintain the existing number of Muni bus stops on Parnassus Avenue adjacent to the project site. Therefore, the New Hospital would not conflict with San Francisco's Transit First Policy.

For a qualitative discussion of potential impacts on transit operations, see Appendix TRANS.

Consistency with San Francisco's Better Streets Plan. The proposed New Hospital would be implemented in a way that would continue to create a positive pedestrian environment in the vicinity of the project site, consistent with San Francisco's Better Streets Plan. The New Hospital would maintain or improve the existing sidewalks and crosswalks in the vicinity of the project site. Therefore, the proposed New Hospital would not conflict with the Better Streets Plan.

Consistency with the San Francisco Bicycle Strategy. The New Hospital would be implemented in a way that would continue to create a safe and attractive environment for bicycling, consistent with the San Francisco Bicycle Strategy. The New Hospital would maintain the existing bicycle facilities in the vicinity of the project site. The New Hospital would also provide new bicycle parking facilities such as short-term bicycle racks (Class 2) and a longer-term bicycle parking facility (Class 1), consistent with the San Francisco Bicycle Strategy and City of San Francisco Planning Code, which requires 55 Class 1 spaces and 60 Class 2 spaces. The New Hospital will also be designed to meet the LEED bicycle parking requirement, which requires 130 Class 1 spaces and 21 Class 2 spaces. Therefore, the proposed New Hospital would not conflict with the San Francisco Bicycle Strategy.

Since the New Hospital would not conflict with San Francisco's Transit First Policy, Better Streets Plan, or the San Francisco Bicycle Strategy, the impact would be less than significant.

Mitigation: None required.

Related Improvements

Medical Center Way, which is a campus-owned roadway, currently provides limited, narrow pedestrian facilities and the proposed roadway widening project would improve pedestrian facilities by providing sidewalks on both sides of the street. This project would therefore improve pedestrian circulation and would not conflict with a program, plan, ordinance, or policy addressing the circulation system.

The proposed Parnassus Avenue pedestrian bridge and tunnel project would improve pedestrian connections between the north and south sides of the street and would not conflict with a program, plan, ordinance, or policy addressing the circulation system.

The other related improvements – such as the renovation of Moffitt and Long Hospitals, diesel fuel and medical gas tanks replacement, and vegetation management and slope stabilization improvements – do not propose any modifications to city streets. There would be no conflicts with a program, plan, ordinance, or policy addressing the circulation system.

Since the related improvements would not conflict with San Francisco's Transit First Policy, Better Streets Plan, or the San Francisco Bicycle Strategy, the impact would be less than significant.

Mitigation: None required.

Impact TRANS-2: Implementation of the NHPH would not conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b). (*Less than Significant*)

CEQA Guidelines Section 15064.3, subdivisions (a) and (b) refer to the discontinuation of vehicle level of service (LOS) as an impact metric for transportation impact analysis and state that VMT is the most appropriate measure or metric that should be used for the evaluation of the transportation impacts of a proposed project. A project would have a significant impact related to VMT if it would cause substantial additional VMT or substantially induce additional automobile travel by increasing physical roadway capacity in congested areas (i.e., by adding new mixed-flow travel lanes) or by adding new roadways to the network. To determine whether a project would cause a substantial increase in VMT, the *Technical Advisory* recommends that the project's transportation efficiency (project VMT per resident or employee) be compared with the transportation efficiency of existing development in the project region (regional VMT per resident or employee) to determine whether the project would be more or less efficient than the existing development in the region. If the project is sufficiently more efficient, it would result in a less-than-significant transportation impact. In order to be considered more efficient and result in a less-than-significant impact, the project's VMT per resident or employee must be at least 15 percent below the existing regional average VMT per resident or employee. Conversely, a project would generate substantial additional VMT if it would exceed regional VMT per capita minus 15 percent.[24] Since the NHPH would increase the employee population on the campus site but not residential population, regional VMT per employee is used for comparison. As documented in OPR's *Technical Advisory*, "achieving 15 percent lower per capita… VMT than existing development is both generally achievable and is supported by evidence that connects this level of reduction to the state's emissions goals,"[25] and therefore represents a reasonable threshold for determining VMT impacts. Projects can cause VMT to increase under two sets of conditions. A project can increase the population living or working on the project site and thereby generate vehicle trips and cause the VMT to increase. A project can make modifications to streets to increase street capacity and thereby induce more vehicle travel and cause VMT to increase. The analysis below evaluates the potential for the NHPH to cause VMT increases under both sets of conditions.

VMT Change due to Increased Employment

New Hospital and Related Improvements

The construction of the New Hospital and the renovation of the Moffitt and Long Hospitals at the Parnassus Heights campus site would result in an increase in inpatient beds, from 475 in 2020 to 682 by 2030. Associated with the increase in beds, there would be an increase in the number of faculty, staff and students who would travel to and from the new and improved hospitals, resulting in an increase in VMT associated with the campus site. The other related improvements would not increase the campus site population and therefore would not directly affect VMT.

[24] OPR's transportation impact guidelines state that a project would cause substantial additional VMT if it were to exceed both existing city household VMT per capita minus 15 percent and existing regional household VMT per capita minus 15 percent. In San Francisco, the city's average VMT per capita is lower (8.4) than the regional average (17.2). Therefore, city average VMT is irrelevant for the purposes of the analysis.

[25] OPR, *Technical Advisory on Evaluating Transportation Impacts in CEQA*, December 2018, page 12.

Table 4.13-20 presents the VMT per capita estimates under the Existing Plus NHPH and 2030 Baseline Plus NHPH scenarios, and compares them to the project significance threshold of 15 percent below the existing regional average VMT per capita.

TABLE 4.13-20
EXISTING AND PROJECTED AVERAGE DAILY VMT PER EMPLOYEE[1]

Scenario	San Francisco Bay Area Regional Average[2]	Project Threshold (Region minus 15%)	Project-specific Methodology[3]
Existing	19.1	16.2	9.9
Existing Plus NHPH	n/a	16.2	10.4
2030 Baseline Plus NHPH	n/a	16.2	11.3
2050 Cumulative	23.8	20.2	11.5

NOTES:
1 Represents UCSF faculty, physicians, nurses, students, trainees and other UCSF staff, as well as childcare and hotel workers.
2 Regional VMT averages are available for existing and cumulative conditions only.
3 Represents UCSF campus site exclusively (see also Table 4.3-19); project conditions represent the estimated future mode split associated with the NHPH project and the 2050 Cumulative scenario that reflects the full implementation of the CPHP (Future Phase) project.

SOURCE: Adavant Consulting, 2021.

As the table above shows, the estimated VMT per employee for the Existing plus NHPH and the 2030 Baseline plus NHPH scenarios are substantially less than the regional average threshold value of 16.2 VMT per employee. The table also shows that under the 2050 Cumulative scenario (which includes the NHPH), the average daily work VMT per employee would also be less than the regional average threshold value of 20.2 daily VMT per employee. Therefore, the impact related to the change in VMT per employee from the implementation of the NHPH would be less than significant. As the impact would be less than significant, no mitigation is required.

VMT Change due to Induced Automobile Travel

In addition to the proposed population changes associated with the New Hospital and renovation of Moffitt and Long Hospitals, the New Hospital and its related improvements include some changes to local transportation infrastructure.

Transportation projects have the potential to induce additional automobile travel. However, OPR's recommended transportation impact guidelines include a list of transportation project types that would not be likely to lead to a substantial or measurable increase in VMT. If a project fits within the general types of projects (including combinations of types) described below, then it is presumed that VMT impacts would be less than significant, and a detailed VMT analysis is not required:

- Active Transportation, Rightsizing (aka Road Diet), and Transit Projects:
  - Infrastructure projects, including safety and accessibility improvements, for pedestrians and bicyclists.
  - Installation or reconfiguration of traffic-calming devices.

  - Creation of new or addition to roadway capacity on local or collector streets, provided the project also substantially improves conditions for people walking, bicycling, and, if applicable, riding transit (e.g., by improving neighborhood connectivity or improving safety).

- Other Minor Transportation Projects:
  - Rehabilitation, maintenance, replacement, and repair projects designed to improve the condition of existing transportation assets (e.g., highways, roadways, bridges, culverts, tunnels, transit systems, and bicycle and pedestrian facilities) that do not add additional motor vehicle capacity.
  - Installation, removal, or reconfiguration of traffic lanes that are not for through traffic, such as left-turn lanes, right-turn lanes, U-turn pockets, or emergency breakdown lanes that are not used as through lanes.
  - Installation, removal, or reconfiguration of traffic control devices, including transit signal priority features.
  - Timing of signals to optimize vehicle, bicycle, or pedestrian flow on local or collector streets.
  - Addition of transportation wayfinding signage.
  - Removal of off- or on-street parking spaces.
  - Adoption, removal, or modification of on-street parking or loading restrictions (including meters, time limits, accessible spaces, and preferential/reserved parking permit programs).

New Hospital

The New Hospital proposes the provision of two new passenger loading areas accessible off Parnassus Avenue: one specifically for the Emergency Department ("ED Loop") and one for non-emergency services ("Main Loop"). This composition constitutes the proposed new passenger loading loop without valet area ("Option 1"). Option 2 has the same composition as Option 1 with the addition of a loop to serve valet operations ("Valet Loop"). The Main and ED passenger loading loops would have separate entrances but a combined exit at Hillway Avenue as shown in Figures 4.13-6; the optional Valet Loop would share an entrance with the Main Loop as shown in Figure 4.13-8. The ED Loop would serve up to four vehicles simultaneously, and the Main Loop would serve up to eight vehicles simultaneously. The Valet Loop would serve at least four vehicles simultaneously. The new loops are intended to serve inpatients and inpatient visitors associated with the NHPH and, as well as Moffitt and Long hospitals, and would augment the existing Moffitt Loop, which can serve up to eight vehicles simultaneously and would be used for hospital discharges.

The new passenger loading areas would not be designed for through traffic, would not add additional vehicle capacity, and would not influence the VMT associated with the NHPH. Therefore, the proposed changes to transportation facilities included in the New Hospital would result in a less than significant impact on VMT.

Mitigation: None required.

Related Improvements

The proposed widening of Medical Center Way project is the only related improvement that would make changes to the transportation network. This project would widen and potentially regrade portions of Medical Center Way adjacent to the project site to meet the fire safety requirements for roadways of this type and improve pedestrian facilities. This widening project would not add additional vehicle lanes or increase vehicle capacity and therefore would not influence VMT associated with the NHPH.

The remaining related improvements would not result in any significant changes to the transportation network and do not include any transportation projects that would substantially induce additional automobile travel. Therefore, VMT impacts related to inducing additional automobile travel associated with these related improvements would be less than significant.

Mitigation: None required.

Impact TRANS-3: Implementation of the NHPH would not substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment). (*Less than Significant*)

New Hospital

As described in Impact TRANS-2, above, the New Hospital proposes one change to the roadway network within the study area: a new off-street roadway loop system (comprising the Main and ED loops) adjacent to the New Hospital building to serve hospital patients and visitors pick-up and drop-off activities, with an option for an additional loop to serve valet operations. The new passenger loading loops, including the optional valet loop, would require two curb cuts across the sidewalk on the south side of Parnassus Avenue to accommodate vehicles entering and exiting the loading loops. These two curb cuts would replace the two existing curb cuts along the south side of Parnassus Avenue that currently provide access and egress from the existing Emergency Department parking area. The loop entrance (western-most) curb cut for the valet loop option would be located approximately 30 feet to the west than the option that does not include the valet loop. This would have the effect of reducing the size of the eastern-most campus crosswalk that was proposed to be widened (from 20 to 80 feet) as part of the Parnassus Avenue Streetscape Plan and 2014 LRDP Final EIR but will not have the effect of increasing hazards as the crosswalk will still be widened substantially and located the appropriate design distance from the curb cut. Although the New Hospital would not increase the number of curb cuts along this portion of the roadway, it would increase the frequency of vehicles traveling across the sidewalk (via these curb cuts) – since the number of vehicles that are anticipated to use the proposed off-street roadway loop in the future is greater than the existing number of vehicles that use the Emergency Department parking area. All loop entrance and exit points would have marked pedestrian crossings that would facilitate pedestrian access along the south side of Parnassus Avenue (as shown in Figure 4.13-6).

The proposed off-street roadway loading would add a new leg to the Parnassus Avenue and Hillway Avenue intersection, as well as a new traffic signal. A new pedestrian crossing would be installed across the new intersection leg and a 10-20 foot "keep clear" indication will be introduced on the southbound leg. Although this location does not meet traffic signal warrants based on future projected daily or peak hour vehicle volumes, it is recommended based on potential traffic and safety benefits. These benefits include reducing potential conflicts, codifying right-of-way decisions, metering pedestrian flows across Parnassus Avenue, prioritizing traffic and transit flow along Parnassus Avenue, and facilitating vehicle egress from the Main Loop.

As described in the "Loading Supply" section, the New Hospital passenger loading areas have been sized to accommodate anticipated passenger loading demand. As they are loading areas, where both vehicles and pedestrians will be present, they have been designed with pedestrian visibility and slow vehicle speeds as priorities and thus the design will not introduce new hazards. The design of the new passenger loading area has also been coordinated with the planned Irving Street Arrival project and implementation of the Parnassus Avenue Streetscape Plan in order to accommodate the planned widening of the pedestrian crossing located between Medical Building 1 and Millberry Union.

The new passenger loading areas and traffic signal at Hillway would be designed consistent with applicable design standards such as the *San Francisco Public Works Standard Specification Standard Plans* or other relevant reference documents, with traffic control devices consistent with California Manual on Uniform Traffic Control Devices (CA MUTCD).[26]

They would also be subject to review, and approval by the relevant City departments, including SFPW, SFMTA, and San Francisco Public Utilities Commission (SFPUC). Since the new traffic signal, intersection leg, and passenger loading areas are designed to accommodate anticipated demand and based on appropriate design standards for new transportation facilities, they are not expected to substantially increase hazards. In addition, the New Hospital does not propose any incompatible uses. Therefore, the impact would be less than significant.

Mitigation: None required.

Related Improvements

As described in Impact TRANS-2, above, the proposed widening of Medical Center Way is the only related improvement that would affect the transportation network. This project would widen and potentially regrade portions of Medical Center Way adjacent to the project site to meet fire safety requirements. This roadway improvement would be designed based on applicable design standards, as described above, and would be subject to review and approval by the relevant City departments, including SFPW, SFMTA, and SFPUC. Therefore, this project would not substantially increase hazards due to a geometric design feature.

[26] Additional details can be found on the City's website at https://www.sfpublicworks.org/services/standards-specifications-and-plans.

The proposed Parnassus Avenue pedestrian bridge and tunnel project would also be designed based on applicable design standards for pedestrian bridges and tunnels in San Francisco, and would be subject to review and approval by relevant City departments.

The other related improvements would not result in any changes to the transportation network that would increase hazards due to a geometric design feature. In addition, the related improvements do not propose any incompatible uses. Therefore, the impact would be less than significant.

Mitigation: None required.

Impact TRANS-4: Implementation of the NHPH would not result in inadequate emergency access. (*Less than Significant*)

NHPH

Potential impacts on emergency access were assessed qualitatively. Specifically, the analysis assessed whether the proposed street network changes associated with the New Hospital would impair, hinder, or preclude adequate emergency vehicle access.

Under existing conditions, emergency vehicles travel on major local roadways, including Parnassus Avenue/Judah Avenue, Stanyan Street, Lincoln Way, and Seventh Avenue, when heading to and from an emergency and/or emergency facility. In the future, emergency vehicles would use these same streets to reach the campus site, including from the nearest fire department stations, police department stations, or other hospitals. On all streets surrounding the campus site, non-emergency vehicles would continue to yield the right-of-way, per the California Vehicle Code.

Stanyan Street (north of Frederick Street) and Lincoln Way are multi-lane arterial roadways that allow emergency vehicles to travel at higher speeds and permit other traffic to maneuver out of the path of the emergency vehicle. Although Parnassus Avenue/Judah Avenue and Seventh Avenue have one travel lane in each direction, they are each approximately 32 feet wide and have a two-way left-turn lane in the center. Although typical vehicle travel lanes in San Francisco are between 10 and 12 feet wide, a typical passenger vehicle is between 6 and 7 feet wide. The combination of the lane widths and center turn lanes would therefore allow non-emergency vehicles enough space to yield to emergency vehicles headed to the campus site.

The New Hospital would not make any changes to city streets adjacent to the project site or include elements that would conflict with adopted codes regarding street widths and turning movements. Furthermore, the New Hospital would not include any design features that would hinder or preclude emergency vehicle access. Additionally, UCPD would continue to maintain a substation on the Parnassus Heights campus site with implementation of both the NHPH and the full CPHP. Therefore, implementation of the New Hospital would not result in inadequate emergency access, and the impact would be less than significant.

Mitigation: None required.

Related Improvements

With implementation of the related improvements, such as the widening of Medical Center Way, Parnassus Avenue pedestrian bridge and tunnel, emergency vehicle access to the campus site would be similar to existing conditions. Therefore, similar to the discussion presented for the New Hospital, these and other related improvements would not result in inadequate emergency access, and the impact would be less than significant.

Mitigation: None required.

Impact TRANS-5: Construction of the New Hospital and related improvements could temporarily impact travel conditions along sidewalks and roadways serving the campus site. (*Potentially Significant; Less than Significant with Mitigation*)

New Hospital

The discussion of construction impacts is based on currently available information from UCSF, as summarized in Chapter 3, *Project Description*; local and State regulations regarding use of the public right-of-way; and experience with typical construction practices by UCSF in San Francisco. As discussed in Chapter 3, the majority of NHPH construction would occur between January 2023 and December 2030, and operations at the Parnassus Heights campus site would be preserved during the construction period. Exceptions to this schedule would be certain utility improvements which would begin in 2022; the interior renovation of Moffitt and Long Hospitals, which would extend to 2034; and the proposed Parnassus Avenue pedestrian bridge and/or tunnel(s), which is expected to occur at some point after 2030. The demolition of LPPI was included and assessed as part of the 2014 LRDP Final EIR and would occur before construction of the NHPH commences.

The primary potential sources for transportation impacts related to construction activity are the closure of facilities (e.g., parking lane or lot) to provide construction staging, closures of travel lanes and/or sidewalks, truck trips associated with the delivery of construction materials, the off haul of demolition debris, excavated soil and construction wastes, and vehicle trips to and from the site by construction workers. These trips would have the potential to cause temporary disruptions to nearby streets, transit services, and pedestrian and bicycle facilities.

As explained in the Project Description, potential on-site construction materials/construction worker staging areas would include: 1) the existing parking lot area located south of UC Hall; 2) the Surge parking lot, and/or 3) the top level of the Medical Building 1 parking lot. In addition, during the period from 2023 to 2029, construction and construction staging would occur along the project site's frontage on the south side of Parnassus Avenue, immediately to the east and west of Medical Center Way. This would result in the closure of the south-side sidewalk along an approximately 500-foot section of roadway, as well as use of the existing shoulder lane (consisting of six motorcycle spaces, a Muni bus stop, a UCSF shuttle stop, and one two-hour metered commercial loading space to the east of Medical Center Way and two two-hour metered commercial loading spaces and two one-hour metered parking spaces to the west of Medical

Center Way). The existing inbound Muni bus stop located at the southwest corner of the Parnassus Avenue and Hillway Avenue intersection would be relocated approximately 425 feet to the west and consolidated with the nearest inbound Muni bus stop located to the west of Moffitt Loop. A pedestrian detour would be provided, allowing pedestrians to use the north side of the street during the construction period. The crosswalk across the west leg of the Parnassus Avenue and Hillway Avenue intersection would be relocated to the east side of Hillpoint Avenue, approximately 350 feet to the east, to provide access to either side of the construction staging area. Additionally, the relocation of existing Muni poles and wires would be required to clear the area for the use of cranes on the north side of the construction site.

The arrival or departure of construction vehicles and delivery of construction materials may inhibit vehicle, transit, bicycle and pedestrian movement and access both intermittently and through the duration of construction due to necessary sidewalk and walkway closures, street closures, the temporary relocation of a transit stop, and a bicycle route detour, particularly on segments of Parnassus Avenue. During construction activities, on average between 23 to 30 heavy trucks hauling debris, making deliveries, mobilizing equipment, or trucks performing other construction functions are expected to travel to or from the project site each day. This equates to an average of 3 to 4 trucks per hour during the standard construction workday.

Construction workers who drive to the site and potential temporary parking restrictions would cause a temporary increase in parking demand. Construction workers would park within UCSF parking facilities, either in available or dedicated parking spaces, in satellite parking lots in which UCSF would lease temporary parking spaces, or in temporary surface parking lots within undeveloped blocks on the Parnassus Heights campus site. Construction of the NHPH is expected to result in between 75 and 500 workers on site, with the largest number of workers during the final phases of construction where hospital interiors are being completed.

Additionally, Medical Center Way would be partially closed for limited durations during construction for widening, regrading, and/or paving. Work to reconstruct Medical Center Way is expected to occur early in the construction process, for approximately six months starting in 2023. During this time, Medical Center Way may be closed except for deliveries; however, upon completion, construction traffic would be able to operate on Medical Center Way.

Prior to initiating construction, UCSF and the construction contractor(s) will meet with San Francisco Public Works and SFMTA staff to develop and review truck routing plans and any required temporary roadway or sidewalk closures or detours. The construction contractor will be required to comply with the SFMTA *Blue Book*[27] for any work in the public right-of-way, including the regulations regarding sidewalk and lane closures, and will meet with SFMTA staff to determine if any special traffic permits would be required. Prior to construction, the project contractor will coordinate with Muni's Street Operations and Special Events Office to coordinate construction activities and reduce any impacts to transit operations. Additionally, any temporary traffic controls implemented as part of a construction project will be required to conform to the California Manual of Uniform Traffic Control Devices.

[27] Available at https://www.sfmta.com/reports/construction-regulations-blue-book

Although construction activities would be temporary, construction impacts would be considered potentially significant given the magnitude and duration of the construction and need for on-going coordination and monitoring. **NHPH Mitigation Measure TRANS-5** is set forth to reduce this impact to a less-than-significant level.

NHPH Mitigation Measure TRANS-5: Construction Coordination and Monitoring Measures

Construction Traffic Control Plan. In order to reduce potential conflicts between construction activities and pedestrians, transit and autos during construction activities at the project site, UCSF shall require construction contractor(s) to prepare a traffic control plan for major phases of project construction (e.g., demolition, construction, or renovation of individual buildings). UCSF and their construction contractor(s) will meet with relevant City agencies to coordinate feasible measures to reduce traffic congestion, including temporary transit stop relocations (e.g., Parnassus Avenue) and utilities and other measures to reduce potential traffic and transit disruption and pedestrian circulation effects during major phases of construction of the NHPH. For any work within the public right-of-way, the contractor will also be required to comply with the City of San Francisco's *Regulations for Working in San Francisco Streets*, which establish rules and permit requirements so that construction activities can be done safely and with the least possible interference with pedestrians, bicyclists, transit, and vehicular traffic.

Reduce Drive Alone Mode Share for Construction Workers. In order to minimize parking demand and vehicle trips associated with construction workers, UCSF shall require the construction contractor to include in the Construction Traffic Control Plan methods to encourage walking, bicycling, carpooling, and transit access to the campus site by construction workers. Strategies that may be included in this plan could be to have a construction worker shuttle or allow preferential parking for carpools.

Project Construction Updates for Adjacent Residents and Businesses – In order to minimize construction impacts on access for nearby residences, institutions, and businesses, UCSF shall provide nearby residences and businesses with regularly-updated information regarding project construction, including construction activities, peak construction vehicle activities (e.g., concrete pours, excavation),and travel lane closures, via a newsletter, website, and/or quarterly construction update meetings with neighbors.

Significance after Mitigation: Less than Significant.

Related Improvements

The related improvements are not expected to result in additional impacts beyond those discussed above for the New Hospital. The number of expected heavy trucks described above, and the planned construction staging area, would also allow for the renovation of Moffitt and Long Hospitals, the widening of Medical Center Way, the diesel fuel and medical gas tanks replacement, and vegetation management and slope stabilization improvements.

Parnassus Avenue Pedestrian Bridge and Tunnels

The Parnassus Avenue pedestrian bridge and tunnel is not expected to begin construction until after completion of the New Hospital. Due to the size of this project, construction for this related project is expected to generate comparably fewer daily trucks than the New Hospital, but would

similarly result in sidewalk closures for pedestrians (i.e. temporary closures during excavation of a tunnel) and transit (i.e. temporary disruption to Muni, relocation of Muni lines, and relocation of utilities during construction of the bridge and excavation of the tunnel). As such, construction of the proposed pedestrian bridge and tunnel would be expected to have a potentially significant impact. Other related improvements would also generate construction traffic, and result in short construction related disruptions within the campus site. Compliance with **NHPH Mitigation Measure TRANS-5** would reduce this impact to less than significant.

Mitigation: Implement NHPH Mitigation Measure TRANS-5.

Significance after Mitigation: Less than Significant.

Cumulative Impacts

Impact C-TRANS-1: The NHPH, in combination with past, present, and reasonably foreseeable future projects, including the full CPHP (Future Phase), would not result in a cumulatively considerable contribution to significant transportation impacts. (*Less than Significant*)

Cumulative transportation impacts consider those that would result from the implementation of the NHPH and the rest of the development under the CPHP combined with other future land use and transportation changes anticipated to occur in the area around the campus site by 2050. The CPHP would be implemented over an approximately 30-year horizon and thus is anticipated to be completed by 2050. The NHPH's contribution to cumulative impacts would be considered considerable if it worsens or results in a significant cumulative impact. Cumulative transportation impacts in the project area may result from residential and commercial land use development projects that are reasonably expected to occur within the vicinity of the Parnassus Heights campus site, as well as changing travel patterns on transportation facilities within the vicinity of the Parnassus Heights campus site.

There are no identified land use development projects within the vicinity of the project and campus site, which would result in traffic growth and/or changing travel patterns on transportation facilities within the vicinity of the project site[28]. As such, the impacts presented in Impacts TRANS-1 through TRANS-4 above also represent the cumulative impacts of the proposed project. The analysis in those impacts provides the following findings:

- The NHPH, in combination with past, present, and reasonably foreseeable future projects, would not result in a conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities.

28 The City and County of San Francisco is currently preparing its Housing Element 2022 Update for the next eight years (2022 to 2030) and anticipates adoption of this update by early 2023. The Housing Element is the process for planning and allowing for new housing units, but it does not in and of itself lead to proposals for and development of housing units.

- The NHPH would not result in a conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b). With regard to cumulative VMT impacts, the *Technical Advisory* notes that "[a] project that falls below an efficiency-based threshold that is aligned with long-term environmental goals and relevant plans would have no cumulative impact distinct from the project impact. Accordingly, a finding of a less-than-significant project impact would imply a less than significant cumulative impact, and vice versa. This is similar to the analysis typically conducted for greenhouse gas emissions, air quality impacts, and impacts that utilize plan compliance as a threshold of significance." As this Draft EIR uses an efficiency-based metric to analyze the effect of the NHPH project, a separate analysis of cumulative impacts is not required. Nonetheless, Impact TRANS-2 includes an estimate of VMT per employee for the campus site under the 2050 Cumulative scenario which is the buildout of the campus site under the CPHP through 2050. That analysis shows that the VMT per employee for the 2050 Cumulative scenario is well below the impact threshold.

- The NHPH, in combination with past, present, and reasonably foreseeable future projects, including full implementation of the CPHP, would not substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).

- The NHPH, in combination with past, present, and reasonably foreseeable future projects, including full implementation of the CPHP, would not result in inadequate emergency access.

With respect to cumulative impacts from concurrent or overlapping construction projects, the construction of the planned Irving Street Arrival project, RAB and initial Aldea Housing projects will overlap with the construction of the NHPH. However, all UCSF projects at the Parnassus Heights campus site would implement construction management plans pursuant to mitigation measures adopted at the time of project approval. A key aspect of these plans will be the utilization of off-site material staging facility(ies) where many deliveries will be taken and triaged before transport to the NHPH or other construction sites on the Parnassus Heights campus site. The result of implementing staging facility(ies) and a process of just-in-time deliveries should work to reduce the quantity of trucks staging on Parnassus Avenue or other locations on the campus site. Construction management plans would ensure that construction impacts do not cumulate to result in a significant impact. The NHPH's contribution to the cumulative impact would be rendered not considerable with the implementation of NHPH Mitigation Measure TRANS-5. The cumulative impact would be less than significant.

Mitigation: None required.

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4.14 Utilities and Service Systems

This section assesses the potential for the NHPH to result in significant impacts on utilities and service systems. The section includes a description of the existing environmental setting as it relates to utility and service systems, and provides a regulatory framework that discusses applicable federal, State, and local regulations. The section presents the significance criteria used to evaluate impacts on utility and service systems, and the results of the impact assessment, including any significant impacts and associated mitigation measures. The section relies in part on the results of a Water Supply Evaluation prepared for the NHPH (see **Appendix WSE**).

For purposes of providing distinction between the various components of this project, references made in this EIR to "New Hospital" relate only to the New Hospital portion of the overall project, whereas references made to "NHPH" relate to the overall project, including the New Hospital and its related improvements.

4.14.1 Environmental Setting

Water

Water Supply

The San Francisco Public Utilities Commission (SFPUC) provides regional water services to approximately 2.7 million people in San Francisco, Santa Clara, Alameda, San Mateo, and Tuolumne Counties, including all of the City and County of San Francisco. Approximately 97 percent of the water provided to San Francisco is supplied by the SFPUC Regional Water System (RWS), which is made up of water from the Hetch Hetchy Reservoir and Bay Area reservoirs in the Alameda Creek and Peninsula watersheds. The remaining 3 percent is supplied by local water supplies, including recycled water, groundwater and non-potable water (SFPUC, 2021).

Regional Water System

Water from the Tuolumne River watershed stored in the Hetch Hetchy Reservoir accounts for 85 percent of the water supply delivered by the RWS, while the Alameda and Peninsula watersheds account for the remaining 15 percent. The RWS includes over 280 miles of pipelines, over 60 miles of tunnels, 11 reservoirs, five pump stations, and two water treatment plants, and currently delivers approximately 198 million gallons of water per day (mgd) to its customers (SFPUC, 2021).

Groundwater

A small portion of San Francisco's water is obtained from locally-produced groundwater, which is used primarily for irrigation in local parks and on highway medians. San Francisco is located atop all or part of seven un-adjudicated groundwater basins. All of the basins, except the Westside and Lobos basins, are generally inadequate to supply a substantial amount of groundwater for municipal supply because of low yields, contamination, or potential subsidence concerns (SFPUC, 2021).

The Westside Groundwater Basin is the largest groundwater basin in San Francisco. This basin is currently used to meet water demands for some irrigation and non-potable water needs in Golden Gate Park, the San Francisco Zoo, and landscaped medians along the Great Highway. Six deep well pumping stations extracted approximately 2.0 mgd of water from the basin in 2020, of which approximately 0.5 mgd was conveyed to in-City reservoirs for blending with the municipal drinking water supply (SFPUC, 2021).

Recycled Water

A small percentage of San Francisco's water is sourced from recycled water, which is used primarily for golf course irrigation in some parts of San Francisco. Presently recycled water provides about 0.3 mgd. Two planned recycled water projects will significantly increase the amount of recycled water available to City users. The Westside Recycled Water Project, which is currently under construction, will provide irrigation water to replace the existing groundwater and water from RWS used on the west side of the City. This project begins making deliveries in 2021 and will provide an annual average of 1.6 mgd in 2021 and 1.8 mgd in 2030 (SFPUC, 2021).

Non-Potable Water

Alternate water sources (i.e., rainwater, storm water, greywater and blackwater) also now may be used in San Francisco for approved non-potable use. The Non-Potable Water Ordinance allows for the collection, treatment, and use of alternate water sources for non-potable applications. In July 2015, the ordinance was amended to mandate the installation of on-site water systems to treat and reuse available alternate water sources for toilet flushing and irrigation in new developments that meet specified criteria. The use of onsite alternate water sources serves to offset demands for potable water, with a cumulative projected potable-water offset of 0.5 mgd by 2030, and 1.3 mgd by 2045 (SFPUC, 2021). This potable-water offset is part of SFPUC's water supply portfolio in the 2020 Urban Water Management Plan (UWMP) for the City (see discussion of SFPUC's UWMP under *Regulatory Setting*, below).

Water Demand

The SFPUC supplies water to both retail and wholesale customers, with about one third of its water supplies for retail customers (primarily located in San Francisco), including UCSF for use at its campus sites, and its remaining supplies reserved for 28 wholesale customers located in Alameda, Santa Clara, and San Mateo Counties, including the Groveland Community Services District.[1] Retail customers include the residents, businesses, and industries within the City as well as other customers such as the Town of Sunol, San Francisco International Airport, and the Lawrence Livermore National Laboratory, among others. Within the City, the SFPUC provides distribution and storage for water and fire protection for the local water system; this system includes 10 reservoirs, eight water tanks, 17 pump stations, and approximately 1,250 miles of transmission lines and water mains. In 2015, retail customers demanded 69 mgd, which was lower than that anticipated in the 2015 UWMP update. Of this demand, in-City retail customers

[1] As reported in the SFPUC's 2020 *Urban Water Management Plan*, wholesale customers used about 132 mgd in 2020.

used approximately 65.3 mgd, of which 1.9 mgd was met with groundwater, and 0.1 mgd was met with recycled water, and the remainder was met with RWS supplies (SFPUC, 2021).

Water use within San Francisco (i.e., the in-City retail service area) continues to be among the lowest in the State and below historical levels of consumption. Both total consumption and per capita water use (i.e., gallons of water consumed per person per day [GPCD]) have been on a general decline since the mid-1970s. Many factors have contributed to this reduction in water use, including substantial changes to the mix of industrial and commercial businesses and their associated water demand, and the general characteristics of water use by San Franciscans.

Water Supply Reliability

Reliability of the RWS is expressed in terms of the system's ability to deliver water during droughts. Reliability may be quantified by the amount and frequency of water delivery reductions (i.e., deficiencies) required to balance customer demands with available supplies. The SFPUC plans deliveries under the premise that a drought more severe than the worst drought on record may occur. To address the reliability of its supplies, SFPUC has developed a Water System Improvement Program (WSIP) and Water Shortage Allocation Plans (WSAP). These plans are discussed in further detail below.

Water System Improvement Program

In 2008, the SFPUC adopted the Phased Water System Improvement Program (WSIP) to ensure the ability of the regional water system to meet certain level of service goals for water quality, seismic reliability, delivery reliability, and water supply through 2018.[2] The SFPUC's level of service goals for regional water supply are to meet customer water needs in non-drought and drought periods and to meet dry-year delivery needs while limiting rationing to a maximum of 20 percent system-wide. In approving the WSIP, the SFPUC established a supply limitation of up to 265 mgd to be delivered from its water supply resources in the Tuolumne, Alameda and Peninsula watersheds in years with normal (average) precipitation.[3] The SFPUC's water supply agreement with its wholesale customers provides that approximately two-thirds of this total (up to 184 mgd) is available to wholesale purchasers and the remaining one-third (up to 81 mgd) is available to retail customers.

The total amount of water the SFPUC can deliver to retail and wholesale customers in any one year depends on several factors, including the amount of water that is available from natural runoff, the amount of water in reservoir storage, and the amount of that water that must be released from the system for purposes other than customer deliveries (e.g., required instream flow releases below reservoirs). A "normal year" is based on historical hydrological conditions that allow the reservoirs to be filled by rainfall and snowmelt, allowing full deliveries to customers;

[2] On December 11, 2018, the SFPUC Commission extended the timing of the WSIP water supply decision through 2028 in its Resolution No. 18-0212.

[3] SFPUC Resolution No. 08-200, *Adoption of the Water System Improvement Program Phased WSIP Variant,* October 30, 2008.

similarly, a “wet year” and a “dry year” are based on historical hydrological conditions with above and below “normal” rainfall and snowmelt, respectively.

For planning purposes, the SFPUC uses a hypothetical drought that is more severe than what has historically been experienced. This drought sequence is referred to as the “design drought” and serves as the basis for planning and modeling of future scenarios. While the most recent drought (2012 to 2015) included some of the driest years on record for the SFPUC’s watersheds, the design drought still represents a more severe drought in duration and overall water supply deficit.

The WSIP aims to meet customer water needs in non-drought and drought conditions through the completion of defined improvements to the RWS that improve seismic, delivery, water quality, and water supply reliability for the RWS. The WSIP includes both local projects (located within San Francisco) and regional projects (spread over seven different counties from the Sierra foothills to San Francisco). The current forecasted date to complete the overall WSIP is May 2023.

Water Shortage Allocation Plans

Each year, the SFPUC evaluates the amount of total water storage expected to occur throughout the RWS. If the evaluation finds the projected total water storage to be less than an identified level sufficient to provide sustained delivery during drought, then the SFPUC may impose delivery reductions or rationing in accordance with: (1) the Water Shortage Allocation Plan (WSAP), which defines how RWS supplies will be split between the SFPUC’s retail customers and the wholesale customers collectively; and 2) the Retail Water Storage Allocation Plan (RWSAP), which defines how a retail water shortage will be allocated amongst the retail customers. The WSAP includes specific allocations of the available water supply between the SFPUC’s retail customers and the wholesale customers collectively for varying system-wide shortages of up to 20 percent (SFPUC, 2021).

The SFPUC last implemented customer water rationing during the most recent drought.

Parnassus Heights Water Infrastructure

The existing domestic and fire water system on the Parnassus Heights campus site comprises distribution pipes, storage tanks, pump stations, valves, fire hydrants, and connections to the City’s water system. A description of each of these systems is provided below.

Domestic Water System

Domestic water within the Parnassus Heights campus site is currently supplied from two water mains, with the first one located in Parnassus and 5th Avenues, and the second one in Clarendon Avenue. A City-owned 8-inch-diameter domestic water main along Parnassus Avenue and 5th Avenue supplies domestic water to most of the buildings within the campus core on both sides of Parnassus Avenue, including Long Hospital and LPPI. The SFPUC, as part of its ongoing maintenance and improvement program, plans to construct a new 12-inch-diameter main in Parnassus Avenue to supplement the existing 8-inch-diameter main. The new main is scheduled to begin construction in 2023. A City-owned 12-inch-diameter high pressure domestic water main along Clarendon Avenue supplies domestic water to buildings within the Aldea Housing

complex, the Central Utility Plant (CUP), Moffitt Hospital, Medical Sciences, and Health Science Instruction Research (HSIR) East buildings. The high-pressure domestic water main also supplies the two domestic water tanks along Medical Center Way and the Forest Knolls Tank to the northwest of the Aldea Housing complex through the Forest Knolls Pump Station (UCSF, 2019).

Fire Water System

Fire water within the Parnassus Heights campus site is supplied from four water mains. The City-owned 8-inch-diameter domestic water main along Parnassus Avenue and 5th Avenue discussed above supplies water to fire hydrants and sprinkler systems for buildings north of Parnassus Avenue, along 5th Avenue, and along Kirkham Street. The 12-inch-diameter high pressure domestic water main along Clarendon Avenue discussed above supplies water to the fire hydrants in the Aldea Housing complex, two fire water tanks on Mount Sutro along Medical Center Way, and to most of the major campus site buildings south of Parnassus Avenue. A 12-inch-diameter Auxiliary Water Supply System[4] (AWSS) main along Parnassus Avenue serves as a secondary defense against fires if the municipal water supply system fails and supplies hydrants on the south side of Parnassus Avenue. Finally, a 30-inch-diameter domestic water main along Parnassus Avenue supplies one fire hydrant at the east end of the Parnassus Heights campus site (UCSF, 2019).

Wastewater / Stormwater

Parnassus Heights campus site straddles two City watershed basins. The west side of the Parnassus Heights campus site is located in the City's Sunset drainage basin within the larger Western Basin; and the east side of the campus site is in the City's Channel drainage basin within the larger Eastern Basin.

The City's combined sewer system (CSS) is a network of pipes and tunnels that convey combined stormwater and sanitary sewage flows, referred to as combined sewer discharge, to City wastewater treatment plants. The CSS routes flows to two treatment plants: the Southeast Treatment Plant (SEP) in the Bayview/Hunters Point neighborhood, and the Oceanside Treatment Plant (OSP) east of the Great Highway near the San Francisco Zoo. The SEP receives approximately 80 percent of the combined wastewater and stormwater flows from the city (including from the east side of the campus site, inclusive of the NHPH site) and discharges treated effluent into San Francisco Bay. On average, the SEP treats approximately 60 mgd of combined flows each day. The SEP has a dry-weather design flow capacity of 84.5 mgd. During a rainstorm, the SEP has the capacity to treat up to 150 mgd of wet weather flows to a secondary treatment level, and an additional capacity of 100 mgd to a primary treatment level plus disinfection (for a total wet weather treatment capacity of 250 mgd of combined flows). Treated wet-weather discharges of up to 250 mgd from the SEP occur through the Pier 80 outfall directly to the Bay or through the Quint Street outfall to Islais Creek Channel on the south bank of Islais Creek. Only wastewater treated to a secondary level is discharged at the outfall.

[4] The Auxiliary Water Supply System (AWSS) is a system of mains and high pressure fire hydrants, independent of the domestic water supply, built solely for the purpose of firefighting.

When the SEP reaches capacity, the North Point Wet Weather Facility (NPF), located on the north side of the City at 111 Bay Street, handles an additional 150 mgd of wet weather flows. Primary treated effluent from this facility is discharged through four deep water outfalls, approximately 800 feet from the bay shoreline. Two of the deep water outfalls terminate at the end of Pier 33 and two terminate at the end of Pier 35 on the northeastern Bay shore.

The CSS includes storage and transport boxes that, during wet weather, temporarily retain the combined stormwater and sewage flows that exceed the capacities of the SEP and the NPF for later treatment. When rainfall intensity results in combined flows that exceed the total capacity of the SEP, the NPF, and the storage and transport structures, the excess flows are discharged through the 29 combined sewer discharge (CSD) structures located along the City's bayside waterfront in compliance with NPDES permits. Citywide, discharges from these discharge structures receive "flow-through treatment," which is similar to primary treatment, to remove settleable solids and floatable materials. Wet weather flows are intermittent throughout the rainy season, and CSD events vary in nature and duration depending largely on the intensity of individual rainstorms. Please see Section 4.9, *Hydrology and Water Quality*, for additional detail on applicable City CSS collection, storage and treatment facilities, as well as information regarding compliance with NPDES permits that govern the discharge of treated effluent into receiving waters. Please also refer to Section 4.14.2, *Regulatory Framework*, below, and Section 4.9, *Hydrology and Water Quality*, with respect to additional detail on plans, policies, and permits governing water quality.

The Parnassus Heights campus site is served by public and private stormwater and combined sewer pipe networks of varying pipe size, material and condition. Please refer to Section 4.9, *Hydrology and Water Quality*, for a detailed description of the UCSF's existing private CSS system within the NHPH site as well as the overall campus site. SFPUC's public combined sewers are located wholly within public streets, and receive the effluent from UCSF's CSS (UCSF, 2019).

Electric and Natural Gas Facilities

The CUP provides electricity to the campus core along Parnassus Avenue through a 12.47 kilovolt (kV) distribution network. The CUP has two gas turbine generators nominally generating 5 megawatts (MW) each, and one steam turbine generator nominally generating 3.75 MW. As a result, the combined capacity of the CUP is 13.75 MW (UCSF, 2019).

Three separate Pacific Gas and Electric (PG&E) 12.47 kV feeders provide supplemental electricity to the campus core along Parnassus Avenue when necessary. In the event of a CUP outage, the PG&E service can pick up the demand without any power interruption to the campus site. The combined electrical capacity from the three PG&E connections is 22.5 MW, of which 15 MW is available at any one time (UCSF, 2019).

PG&E also provides natural gas service to the campus core from existing lines along Parnassus Avenue. Branch lines provide natural gas service to the CUP and individual buildings.

Heating and Chilled Water Facilities

The CUP provides heating for the entire campus core via steam networks, and cooling for six campus site buildings (Clinical Sciences Building, Medical Science Building, Dolby Regeneration Medicine Building, Health Sciences Instruction and Research Towers West and East, and Parnassus Services Building). The remaining buildings have cooling systems (e.g., absorption chillers, rooftop units). Steam is distributed through three networks to the campus for use in heating and process loads (e.g., sterilization). High pressure steam and low pressure steam are distributed to the majority of campus site buildings, while medium pressure steam is supplied to the clinical and medical buildings only. For Kalmanovitz Library, high pressure steam is used to power an absorption chiller for cooling. The chilled water system consists of 26-inch pipe secondary chilled water supply and return piping, which narrows in diameter as it extends to each served building (UCSF, 2019).

Telecommunications Facilities

The Parnassus Heights campus site is currently supplied with telecommunications services through various private companies. Typical telecommunications systems on campus include voice frequency, digital, fiber optic, wireless, Ethernet video over Internet Protocol, and voice over Internet Protocol. The infrastructure is located underground in vaults and conduits and aboveground on overhead power lines with pole mounted cable and transformers. Antennas are also mounted in towers or on roofs (UCSF, 2019).

4.14.2 Regulatory Framework

State Urban Water Management Plan

In 1983, the California Legislature enacted the Urban Water Management Planning Act (California Water Code Sections 10610 through 10656). The act states that every urban water supplier that provides water to 3,000 or more customers, or that provides over 3,000 acre-feet of water annually, should make every effort to ensure reliable water service sufficient to meet the needs of its various categories of customers during normal, dry, and multiple dry years. The act requires the urban water suppliers to prepare an Urban Water Management Plan (UWMP) and update it every five years. Details of the UWMP for the SFPUC are described below, under City of San Francisco plans and policies.

Water Supply Assessment

The State of California adopted Senate Bill 610 (SB 610) effective January 1, 2002. SB 610 requires cities and counties, when evaluating large development and redevelopment projects, to request an assessment of the availability of water supplies from the water supply entity that will provide water to a project. The Water Supply Assessment (WSA) is performed in conjunction with the land use approval process associated with a project and must include an evaluation of the sufficiency of the water supplies available to the water supplier to meet existing and future demands, including the demand for a project over a 20-year time period that includes normal, single-dry, and multiple dry years.

When a new development project is accounted for in the demand projections of an UWMP, the WSA can refer to the UWMP and no further analysis is necessary. The SFPUC allows for all development projects requiring a WSA under SB 610 to rely solely on the SFPUC's adopted UWMP without having to prepare individual WSAs.

Water Code Section 10910 and 14 CCR 15155 (entitled "City or County Consultation with Water Agencies") apply only to cities and counties. Water Code Section 10910(a) states: "Any city or county that determines that a project, as defined in Section 10912, is subject to the California Environmental Quality Act (Division 13 (commencing with Section 21000) of the Public Resources Code) under Section 21080 of the Public Resources Code shall comply with this part."

2018 Bay-Delta Plan Amendment

In December 2018, the State Water Resources Control Board adopted amendments to the Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary, which establishes water quality objectives to maintain the health of the rivers and the Bay-Delta ecosystem.[5] Among the goals of the adopted Bay-Delta Plan Amendment is to increase salmonid populations in three San Joaquin River tributaries (including the Tuolumne River) and the Bay-Delta. Specifically, the plan amendment requires increasing flows in the Stanislaus, Tuolumne, and Merced Rivers of 30 to 50 percent of unimpaired flow[6] from February through June every year, whether it is wet or dry. During dry years, this would result in a substantial reduction in the SFPUC's water supplies from the Tuolumne River watershed (see additional detail below, in the section titled *Relationship of Bay-Delta Plan Amendment to SFPUC Water Supply*).

RWQCB Permits

The Porter-Cologne Water Quality Control Act authorizes the SWRCB, which, in turn, delegated certain authority to the several Regional Water Quality Control Boards (RWQCB) to issue and enforce NPDES permits. In addition, the SWRCB develops water quality standards and performs other functions to protect California's waters. The RWQCBs, pursuant to their delegated powers, carry out the SWRCB regulations and standards as well as issue and enforce permits. The SEP, the NPF, and all of the Bayside wet-weather facilities are covered by an NPDES permit (RWQCB Order No. R2-2013-0029) adopted by the San Francisco Bay RWQCB in August 2013. See Section 4.9, *Hydrology and Water Quality*, for further discussion of the City's NPDES permits.

University of California

UC Sustainable Practices Policy

The UC Sustainable Practices Policy, developed in 2004 and updated as recently as 2019, establishes goals in 10 areas of sustainable practices for both individual building projects and

5 State Water Resources Control Board Resolution No. 2018-0059, *Adoption of Amendments to the Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary and Final Substitute Environmental Document*, December 12, 2018, available at https://www.waterboards.ca.gov/plans_policies/docs/2018wqcp.pdf.

6 "Unimpaired flow" represents the water production of a river basin, unaltered by upstream diversions, storage, or by export or import of water to or from other watersheds.

overall facilities operations: green building design, clean energy, transportation, climate protection, sustainable building operations, waste reduction and recycling, environmentally preferable purchasing, sustainable foodservice, sustainable water systems, and sustainability at UC Health locations (UCOP, 2019). Most relevant to this discussion are the goals and policies related to energy use (i.e., green building design, clean energy, sustainable building operations), solid waste (i.e., waste reduction and recycling), water supply (i.e., sustainable water systems), and sustainability at UCSF locations.

Specifically, with regard to green building design, UCSF is committed to meeting UC system–wide goals of achieving LEED Silver certification or better for all new buildings and LEED certification (not necessarily Silver) for all major renovations. The policy also requires that all new non-acute care facilities or major renovation projects outperform California Energy Code, Title 24, requirements by at least 20 percent and strive to outperform the requirements by 30 percent. UCSF saves millions of gallons of potable water annually through implementation of a comprehensive Water Action Plan, which outlines the campus's methods for reducing dependence on potable water and identifies broader opportunities for water conservation (UCSF, 2018). Development on the Parnassus Heights campus site must comply with the goals set forth in the Water Action Plan. The UC Sustainable Practices Policy identifies the goal of a 20 percent reduction in growth-adjusted potable water consumption by 2020 and 36 percent by 2025 (compared to a 3-year average baseline of FY 2005–06, FY 2006–07, and FY 2007–08) (UCOP, 2019).

The UC produces an annual report to track its progress toward achieving the system-wide goal of sustainability by 2025. The annual report outlines ongoing progress of the UC's comprehensive sustainability program, including advancement in all areas of the UC Sustainable Practices Policy; research and education; Presidential Initiatives; and student, faculty, and staff engagement.

City of San Francisco

2020 Urban Water Management Plan

The current urban water management plan for the City and County of San Francisco is the 2020 Urban Water Management Plan (UWMP).[7] The 2020 UWMP presents information on the SFPUC's retail and wholesale service areas, the RWS and other water supply systems operated by the SFPUC, system supplies and demands, water supply reliability, Water Conservation Act of 2009 compliance, water shortage contingency planning, and water demand management.

The water demand projections in the 2020 UWMP reflect anticipated population and employment growth, socioeconomic factors, and the latest conservation forecasts. The 2020 UWMP update coincides with additional planning efforts conducted by the SFPUC, including its 2020 Retail Water Conservation Plan update. The 2020 UWMP presents water demand projections in five-year increments over a 25-year planning horizon through 2045. The plan compares anticipated water supplies to projected demand through 2045 for normal, single-dry, and multiple-dry water years. Retail water supplies are comprised of RWS, groundwater, recycled water, and non-potable

[7] San Francisco Public Utilities Commission, *2020 Urban Water Management Plan for the City and County of San Francisco*, June 2021. This document is available at https://sfpuc.org/sites/default/files/programs/local-water/SFPUC_2020_UWMP2020_%20FINAL.pdf

water. Under normal hydrologic conditions, the total retail supply is projected to increase from 70.7 mgd in 2015 to 80.6 mgd in 2045.

In acknowledgment of the uncertainty of whether and when the Bay-Delta Plan Amendment will come into effect (see *Relationship of Bay-Delta Plan Amendment to SFPUC Water Supply*, below), the 2020 UWMP presents future supply scenarios both with and without it. These two scenarios are intended to bookend the potential future supply conditions for the RWS. As described further below, without the implementation of the Bay-Delta Plan Amendment, the SFPUC will not experience shortages until the 4th and 5th year of a multi-year drought at 2045 levels of projected demand. If the Bay-Delta Plan Amendment is implemented, the SFPUC will be able to meet the projected water use demands presented in this UWMP in normal years but would experience substantial supply shortages in single dry years and multiple dry years.

SFPUC has initiated an Alternative Water Supply Planning Program to ensure that San Francisco can meet its retail and Wholesale Customer water needs, address projected dry year shortages, and limit rationing to a maximum of 20 percent system-wide in accordance with adopted SFPUC policies.

In 2020, water suppliers were also required by the State of California to develop and adopt a Water Shortage Contingency Plan (WSCP). The SFPUC's WSCP describes the SFPUC's approach to meeting six standard water shortage stages, ranging from 10 percent to greater than 50 percent shortages. The WSCP compares total system water storage to demands to evaluate the likelihood of a shortage in the coming year. Should a shortage be identified, the WSCP identifies appropriate shortage response actions, such as voluntary and mandatory rationing. The WSCP also describes the SFPUC's extensive emergency preparedness and planned response in the event of catastrophic interruptions of water supplies.

Relationship of Bay-Delta Plan Amendment to SFPUC Water Supply

As discussed above, in December 2018, the SWRCB adopted the Bay-Delta Plan Amendment to establish water quality objectives with the stated goal of increasing salmonid populations in three San Joaquin River tributaries and the Bay-Delta. It remains unclear if and when the Bay-Delta Plan Amendment will be implemented. Assuming full implementation of the Bay-Delta, during normal hydrologic years, the SFPUC would have adequate supplies to meet its projected retail water demands. However, implementation of the Bay-Delta Plan Amendment would result in supply shortfalls throughout the SFPUC's RWS service area, including San Francisco in single and multiple dry years. The SWRCB has stated that it intends to implement the Bay-Delta Plan Amendment by the year 2022, assuming all required approvals are obtained by that time. However, at this time, the implementation of the Bay-Delta Plan Amendment is uncertain for several reasons. First, under the federal Clean Water Act, the United States Environmental Protection Agency (USEPA) must approve the water quality standards identified in the plan amendment. It is uncertain what determination the USEPA will make and its decision could result in litigation.

Second, since adoption of the Bay-Delta Plan Amendment, over a dozen lawsuits have been filed in state and federal court, challenging the water board's adoption of the plan amendment,

including legal challenges filed by the federal government at the request of the U.S. Bureau of Reclamation. That litigation is in the early stages, and there have been no dispositive court rulings as of this date.

Third, the Bay-Delta Plan Amendment is not self-executing and does not allocate responsibility for meeting its new flow requirements to the SFPUC or any other water rights holders. Rather, the plan amendment merely provides a regulatory framework for flow allocation, which must be accomplished by other regulatory and/or adjudicatory proceedings, such as a comprehensive water rights adjudication or, in the case of the Tuolumne River, the Clean Water Act, Section 401 certification process in the Federal Energy Regulatory Commission's relicensing proceeding for Don Pedro Dam. The license amendment process is currently expected to be completed in the 2022–2023 timeframe. This process and other regulatory and/or adjudicatory proceeding would likely face legal challenges and have lengthy timelines, and quite possibly could result in a different assignment of flow responsibility for the Tuolumne River than currently exists (and therefore a different water supply effect on the SFPUC).

Fourth, in recognition of the obstacles to implementation of the Bay-Delta Plan Amendment, the SWRCB directed its staff to help complete a "Delta watershed-wide agreement, including potential flow measures for the Tuolumne River." On March 1, 2019, the SFPUC, in partnership with other key stakeholders, submitted a proposed project description for the Tuolumne River that could be the basis for a voluntary agreement with the state water board that would serve as an alternative path to implementing the Bay-Delta Plan's objectives. On March 26, 2019, the SFPUC adopted Resolution No. 19-0057 to support its participation in the voluntary agreement negotiation process. To date, those negotiations are ongoing.

For these reasons, whether, when, and the form in which the Bay-Delta Plan Amendment will be implemented, and how those amendments will affect the SFPUC's water supply, is currently unknown.

Alternative Water Supply Planning Program

In early 2020, the SFPUC began implementation of the Alternative Water Supply Planning Program (AWSP), a program designed to investigate and plan for new water supplies to address future long-term water supply reliability challenges and vulnerabilities on the RWS.

In light of the adoption of (1) the Bay-Delta Plan Amendment and the resulting potential limitation to the SFPUC's RWS supply during dry years, (2) the net supply shortfall following the implementation of WSIP, (3) San Francisco's perpetual obligation to supply 184 mgd to the wholesale customers, (4) adopted Level of Service (LOS) Goals and Objectives to limit rationing to no more than 20 percent system-wide during droughts, and (5) the potential need to identify water supplies that would be required to offer permanent status to interruptible customers, the SFPUC is expanding and accelerating its efforts to develop additional water supplies and explore other projects that would improve overall water supply resilience through the Alternative Water Supply Planning Program. Developing these supplies would reduce water supply shortfalls and reduce rationing associated with such shortfalls.

The capital projects that are under consideration would be costly and are still in the early feasibility or conceptual planning stages. These projects would take 10 to 30 or more years to implement and would require environmental permitting negotiations, which may reduce the amount of water that can be developed. The yield from these projects is unknown and not currently incorporated into the SFPUC's supply projections.

The SFPUC will prepare an Alternative Water Supply Plan by July 2023, which will include a planning framework that will consider water supply needs and related tradeoffs, guide the decisions to proceed with environmental review, and continue the development of projects that can best meet anticipated water supply needs. In the meantime, the SFPUC has been preparing quarterly reports that provide an update on the status of planning efforts regarding the regional and local water supply, storage, and related infrastructure planned projects.

The following capital projects are the alternative local and regional water supply and storage projects that represent the SFPUC's early planning to meet future water supply challenges and vulnerabilities:

Local Projects

- San Francisco Purified Water
- Satellite Recycled Water
- Innovations Program
- Potable Offset Potential

Regional Projects

- Daly City Recycled Water Expansion
- Alameda County Water District-Union Sanitary District Purified Water Partnership
- Crystal Springs Purified Water
- Additional Storage Capacity in Los Vaqueros Reservoir from Expansion
- Conveyance Alternatives
- Bay Area Regional Reliability (BARR) Shared Water Access Program
- Bay Area Brackish Water Desalination
- Calaveras Reservoir Expansion
- Groundwater Banking
- Inter-Basin Collaborations
- Dry-Year Transfers

4.14.3 Impacts and Mitigation Measures

Significance Criteria

Would implementation of the NHPH:

a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?

b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?

c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?

e) Comply with federal, State, and local management and reduction statutes and regulations related to solid waste?

Criteria Not Analyzed

Based on the Initial Study there would a less-than-significant impact related to the following topics for the reasons described below:

- ***Generate solid waste in excess of applicable standards or the capacity of local infrastructure; otherwise impair the attainment of solid waste reduction goals; and comply with applicable management and reduction statutes and regulations.*** During construction of the NHPH, construction debris generated would be transported by a registered transporter to a registered facility that must recover for reuse or recycling and divert from landfill at least 65 percent of all received construction and demolition debris. During operation of the NHPH, UCSF employees, students, visitors and patients at the New Hospital would continue to participate in UCSF's recycling and composting programs and other efforts to reduce the total amount of waste produced and/or requiring landfill disposal. UCSF has consistently increased its landfill diversion rate, rising to 78 percent in 2018, as it strives to meet the UC Policy on Sustainable Practices goal of zero waste. Given the existing and potential future landfill capacities of the landfills where UCSF solid waste is disposed, construction and operation of the proposed NHPH would not result in solid waste generation that exceeds the permitted capacity of the landfills that serve the campus, or result in non-compliance with federal, State, and local statutes and regulations related to solid waste. Therefore, this impact would be less than significant.

Approach to Analysis

The environmental impact analysis for utilities and service systems begins with an assessment of existing utility use and infrastructure services at the Parnassus Heights campus site. The projected demands for utilities and infrastructure services generated by the proposed project are then calculated and compared to existing usage to estimate the net increase resulting from implementation of the proposed NHPH. Typically, utility assessments focus on supply, treatment or generation capacity

and distribution or collection infrastructure requirements. For each utility, the analysis compares the net increase resulting from implementation of the proposed NHPH against the significance criteria set forth above. If the impact would be significant, the analysis identifies feasible mitigation measures that would eliminate the impact or reduce it to a less-than-significant level.

As UCSF is neither a city nor a county it is not subject to SB 610. However, UCSF has voluntarily elected to prepare a WSA-like document, a Water Supply Evaluation (WSE), to determine and demonstrate the sufficiency of the SFPUC's water supplies to satisfy the water demand of the NHPH (see Appendix WSE). The project's impact on water supply discussed below is based on the analysis in the WSE.

Impact Analysis

Impact UTIL-1: Implementation of the proposed NHPH would require or result in the construction of new or expanded water, wastewater treatment or storm water drainage, electric power, or telecommunications facilities, the construction or relocation of which would not cause significant environmental effects. (*Less than Significant*)

New Hospital

Utility improvements and/or extensions to serve the New Hospital would include domestic water, fire water, wastewater, stormwater, electrical, emergency fuel, telecommunications, steam and condensate, chilled water, and heating hot water. The utility infrastructure improvements required to serve the proposed NHPH are summarized in Chapter 3, *Project Description.*

Construction activities associated with the utility improvements described above would have the potential to result in significant or potentially significant impacts. However, implementation of mitigation measures and compliance with other construction-related regulatory requirements discussed in other sections of this EIR, including Section 4.2, *Air Quality*; Section 4.3, *Biological Resources*; Section 4.4, *Cultural Resources*; Section 4.6, *Geology and Soils*; Section 4.8, *Hazards and Hazardous Materials*; Section 4.9, *Hydrology and Water Quality*; Section 4.11, *Noise and Vibration*; and Section 4.13, *Transportation*, would reduce construction-related effects associated with the utility improvements to a less-than-significant level. As a result, the impacts associated with the construction of new utilities to serve the proposed New Hospital would be less than significant.

Mitigation: None required.

Related Improvements

Renovation of Moffitt and Long Hospitals

The renovation of Moffitt and Long Hospitals will mostly involve interior renovations, with a minor increase in building size, and certain structural improvements at Moffitt Hospital related to seismic retrofitting. As a result, the need for construction of new or expanded utilities to serve these hospitals would not be expected to be substantial. Similar to the New Hospital, implementation of mitigation measures and compliance with other construction-related regulatory requirements discussed in other sections of this EIR would reduce construction-related effects

associated with any utility improvements for the renovation of Moffitt and Long Hospitals to a less-than-significant level.

Mitigation: None required.

Widening of Medical Center Way

The proposed widening of Medical Center Way would require new storm drainage facilities, and electrical service for street lighting along the roadway. In addition, new utilities to serve NHPH or other campus facilities would be installed and extend within Medical Center Way, including domestic and fire water, irrigation water, sanitary sewer, and medical gas and diesel fuel lines. However, similar to the New Hospital, implementation of mitigation measures and compliance with other construction-related regulatory requirements discussed in other sections of this EIR would reduce construction-related effects associated with any utility improvements within Medical Center Way to a less-than-significant level.

Mitigation: None required.

Replacement of Diesel Fuel Tanks and Medical Gas Tanks

As indicated above, medical gas and diesel fuel lines would be extended from the proposed diesel fuel tanks and medical gas tanks replacement sites beneath Medical Center Way to the New Hospital. Similar to the New Hospital, implementation of mitigation measures and compliance with other construction-related regulatory requirements discussed in other sections of this EIR would reduce construction-related effects associated with any utility improvements for the replacement of the diesel fuel tanks and medical gas tanks to a less-than-significant level.

Mitigation: None required.

Vegetation Management and Slope Stabilization Improvements

The proposed management and slope stabilization improvements are not anticipated to require any substantial supporting utilities. Consequently, environmental impacts related to construction of new or expanded utilities would be less than significant.

Mitigation: None required.

Parnassus Avenue Pedestrian Bridge and Tunnel

The proposed Parnassus Avenue pedestrian bridge would not require any substantial supporting utilities. The proposed tunnel would, however, accommodate a variety of utility lines that would extend beneath Parnassus Avenue. Similar to the New Hospital, implementation of mitigation measures and compliance with other construction-related regulatory requirements discussed in other sections of this EIR would reduce construction-related effects associated with any utility improvements for the proposed Parnassus Avenue pedestrian bridge and tunnel to a less-than-significant level.

Mitigation: None required.

Impact UTIL-2: Sufficient water supply would be available from the SFPUC to serve the NHPH and reasonably foreseeable future development under normal, dry and multi-dry years even if the Bay Delta Plan Amendment is implemented. If the Bay Delta Plan Amendment is implemented, the SFPUC would address the anticipated shortfalls through rationing and/or develop new or expanded water supply facilities to address shortfalls in single and multiple dry years. The NHPH would not make a considerable contribution to environmental impacts from increased rationing or from the development of new supply sources. (*Less than Significant*)

Construction

NHPH

Construction of the NHPH would result in a temporary demand for water at the Parnassus Heights campus site. This would include water needed for purposes such as dust control, certain construction processes (e.g., shoring batch plant operations, application of fireproofing), hydrostatic testing of systems, initial landscaping installation, general cleaning, and worker restrooms and drinking water. These temporary water demand sources would be comparable to other similarly sized construction projects of this nature. UCSF conservatively estimates that these construction activities could generate an average demand of up to approximately 4,800 gallons per workday; over the course of the NHPH construction period, this would amount to a total construction-related water demand of approximately 6.2 million gallons. Given this would be a temporary demand for water, it would not have any long-term effect on available water supplies and as a result, the impact of this temporary demand would be considered less than significant.

It should be noted that there is a non-potable groundwater well on the campus site that is not currently in operation. Should UCSF rehabilitate the well for use and receive appropriate approval from the City, it could be used to partially serve the proposed project's demand non-potable water during construction.

Operation

New Hospital and Renovation of Moffitt and Long Hospitals

Implementation of the NHPH would result in an increased operational demand for water at the Parnassus Heights campus site, which is supplied to the campus site by the SFPUC. The analysis herein evaluates whether: (1) sufficient water supplies are available to serve the proposed NHPH and reasonably foreseeable future development in normal, dry, and multiple dry years, and (2) the proposed NHPH would require substantial rationing or the development of new or expanded water supply facilities, the construction of which would have significant environmental impacts.

The supply capacity of the Hetch Hetchy RWS that provides the majority of the city's drinking water far exceeds the potential demand of any single development project in San Francisco. No single development project alone in San Francisco would require the development of new or expanded water supply facilities or require the SFPUC to take other actions, such as imposing a higher level of rationing across the city in the event of a supply shortage in dry years. Therefore, a separate project-only analysis is not provided for this topic. The following analysis instead

considers whether the proposed NHPH in combination with both existing development and projected growth through 2045 would be served by existing and planned supplies or would require new or expanded water supply facilities, the construction or relocation of which could have significant cumulative impacts on the environment. It also considers whether a high level of rationing would be required that could have significant cumulative impacts. Further, due to the recent 2018 Bay Delta Plan Amendments that were previously discussed, the analysis below considers the NHPH related water demand under two water supply scenarios.

Estimated Water Demand with NHPH and CPHP

UCSF is an in-City retail customer and purchases all of its water supplies from the SFPUC. Based on Fiscal Year 2018/19 data, existing development on the Parnassus Heights campus site currently demands approximately 0.33 mgd of water. The NHPH components that would change the operational demand for potable water compared to existing conditions include the proposed New Hospital and the renovated Moffitt and Long Hospitals. Under the NHPH, the New Hospital would provide 336 new inpatient beds; and the proposed renovation of Moffitt and Long Hospitals would result in a decrease of 129 inpatient beds at these two hospitals. As a result, under the NHPH there would be a net increase of 207 inpatient beds over existing conditions, for a total of up to 682 beds at the campus site. The resulting net increase in water demand based on the net increase in inpatient beds under the NHPH is projected to be approximately 0.06 mgd.[8] With this projected increase in water demand due to the NHPH, the total future water demand for the Parnassus Heights campus site is projected to be approximately 0.39 mgd in 2030 when the project would be operational.

When considering the NHPH in conjunction with other development planned on the Parnassus Heights campus site under the Comprehensive Parnassus Heights Plan (CPHP), the total campus site water demand would increase to approximately 0.40 mgd by 2030, and to 0.53 mgd by CPHP buildout in 2050.[9]

These projected water demand estimates conservatively do not take into consideration ongoing projects by UCSF to reduce water demands at the Parnassus Heights campus site. Over the past 10 years, potable water demand at the Parnassus Heights campus site has decreased from a maximum of 0.56 mgd in FY 2010/11 to 0.33 mgd in FY 2018/19 as a result of the UCSF Water Action Plan. With full implementation of the ongoing water conservation projects described in the UCSF Water Action Plan, it is estimated that UCSF would reduce the existing FY 2018/19 water demand by about 20 percent, not including the demand from the proposed NHPH or other planned development under the CPHP.

The total Parnassus Heights campus site water demand (0.53 mgd) as a result of the existing campus water demand plus that of the NHPH and other planned development under the CPHP represents a small fraction (0.7 percent) of SFPUC's overall 2045 total retail demand which is projected to be about 80.6 mgd. If the incremental demand (0.06 mgd) due to the NHPH is

8 Water demand is based on UCSF water demand of 280 gallons per year/Adjusted Patient Day.

9 It should also be noted that while the proposed New Hospital would be operational by 2030, full development under the CPHP would not occur until 2050. The SFPUC's 2020 UWMP provides supply and demand projections through 2045. In the absence of projections that go out to 2050, the CPHP's 2050 incremental water demand is compared to the SFPUC's 2045 supply and demand. This provides for a conservative analysis as the campus site water demand in 2045 actually would be lower than the amount analyzed in this section.

compared to the SFPUC 2045 total retail demand, it would represent an even smaller fraction (about 0.1 percent). To the extent that the estimated 20 percent reduction in existing use is factored in, the net increases in campus water demand and resulting percentage of SFPUC's overall retail demand would be even less. Further, some of the incremental water demand at the Parnassus Heights campus site is likely included in SFPUC's 2045 demand projections. However, even if all of the incremental water is considered not accounted for, it represents a very small amount when compared to the extensive SFPUC RWS.

Impact Analysis

As discussed above in *Section 4.14.2, Regulatory Framework*, with the adoption of the Bay-Delta Plan Amendment by the SWRCB in 2018, a substantial amount of uncertainty regarding future water supplies was created. It is uncertain as to whether, when, and the form in which the Bay-Delta Plan Amendment will be implemented, and how those amendments will affect the SFPUC's water supply. Two scenarios are set forth below to characterize potential future water supply scenarios and the NHPH's demand is analyzed for its impact in the context of these potential scenarios.

Scenario 1 – Without Implementation of Bay-Delta Plan Amendment. Scenario 1 assumes no change to the way in which water is currently supplied, and without implementation of the Bay-Delta Plan Amendment. As discussed above, the incremental increase in water needed at the Parnassus Heights campus site with the NHPH would be 0.06 mgd and the total Parnassus Heights campus site water demand (including the campus site's existing water demand, NHPH and other CPHP development) would represent a very small fraction (0.1 percent) of the total retail demand and supply in 2045. Under this scenario, adequate water supplies would be available to meet the demand of the proposed NHPH, in combination with other development planned under the CPHP, existing development and projected growth in all years, including multiple dry years. According to the 2020 UWMP, the WSAP Tier One Allocation Plan, as amended in 2018, requires retail customers to conserve a minimum of 5 percent during droughts. Therefore, during multiple dry water years, the SFPUC may prohibit certain discretionary outdoor water uses and/or call for voluntary rationing by its retail customers, including UCSF. This level of rationing is well within the SFPUC's RWS supply level of service goal of limiting rationing to no more than 20 percent on a system-wide basis. Further, under this scenario, while SFPUC may choose to develop new water sources, the SFPUC would not be required to develop new or expanded water supply facilities to serve the projected growth in demand and there would be no significant cumulative environmental impacts from the development of new supplies. The impact would be less than significant.

Scenario 2 – With Implementation of Bay-Delta Plan Amendment. Under Scenario 2, the 2018 Bay-Delta Plan Amendment would be fully implemented. As discussed above, there is considerable uncertainty whether, when, and in what form the plan amendment will be implemented. However, because implementation of the plan amendment cannot be ruled out at this time, an analysis of the cumulative impact of projected growth on water supply resources under this scenario is included in this document to provide a worst-case impact analysis.

Under Scenario 2, which is assumed to be implemented after 2022, greater supply shortfalls are projected in the SFPUC 2020 UWMP than were projected in the SFPUC 2015 UWMP requiring

additional water demand reductions in dry years. Shortfalls of up to 25.4 percent would occur in single dry years, and up to 35.4 percent in multiple dry years. Existing and planned dry-year supplies would be insufficient for the SFPUC to satisfy its RWS supply level of service goal of no more than 20 percent rationing system-wide. The Water Shortage Allocation Plan does not specify allocations to retail supply during system-wide shortages above 20 percent. However, the plan indicates that if a system-wide shortage greater than 20 percent were to occur, the RWS supply would be allocated among retail and wholesale customers per the rules corresponding to a 16- to 20-percent system-wide reduction, subject to consultation and negotiation between the SFPUC and its wholesale customers to modify the allocation rules. Based on these allocation rules, shortfalls of up to 35.4 percent across the retail service area as a whole are estimated under Scenario 2. Therefore, with full implementation of the Bay-Delta Plan Amendment, water supplies for in-City retail customers could be curtailed by up to approximately 35 percent, although given that the Parnassus Heights campus site includes a variety of medical uses, and the SFPUC General Manager has some discretion in allocating dry year demand reductions, the SFPUC rationing during periods of drought may not be as severe for the Parnassus Heights campus site as for other retail customers. In summary, significant dry-year shortfalls would occur in San Francisco, regardless of whether or not the proposed NHPH and other planned development under the CPHP are implemented at the Parnassus Heights campus site.

It is anticipated that should the Bay-Delta Plan Amendment be implemented, the SFPUC will increase and accelerate its efforts to develop additional water supplies and explore other projects that would increase overall water supply resilience. The SFPUC has identified possible projects that it will study. The SFPUC is beginning to study water supply options, but it has not determined the feasibility of the possible projects, has not made any decision to pursue any particular supply projects, and has determined that the identified potential projects would take anywhere from 10 to 30 years or more to implement. Please refer to *Alternative Water Supply Planning Program* in Section 4.14.2, *Regulatory Framework*, for a list of alternative local and regional water supply and storage projects to meet future water supply challenges and vulnerabilities.

There is also a substantial degree of uncertainty associated with the implementation of the Bay-Delta Plan Amendment and its ultimate outcome, and therefore, there is substantial uncertainty in the amount of additional water supply that may be needed, if any. Moreover, there is uncertainty and lack of knowledge as to the feasibility and parameters of the possible water supply projects the SFPUC is beginning to explore. Consequently, the physical environmental impacts that could result from future supply projects would be speculative at this time and would not be expected to be reasonably determined for a period of time ranging from 10 to 30 years. Although it is not possible at this time to identify the specific environmental impacts that could result, this analysis assumes that if new or expanded water supply facilities, such as those listed above under *Alternative Water Supply Planning Program*, were developed, the construction and/or operation of such facilities could result in significant adverse environmental impacts, and this would be a significant cumulative impact.

As discussed above, the proposed NHPH's incremental water demand would represent approximately 0.1 percent of total retail demand in San Francisco in 2045, whereas implementation of the Bay Delta Plan Amendment would result in a retail supply shortfall of up to 35.4 percent.

Thus, new or expanded dry-year water supplies would be needed under Scenario 2 regardless of whether the proposed NHPH or other development planned under the CPHP is implemented. As such, any significant physical environmental impacts related to the construction and/or operation of new or expanded water supplies would occur with or without the proposed NHPH. Therefore, the proposed NHPH would not have a considerable contribution to any significant cumulative impacts that could result from the construction or operation of new or expanded water supply facilities developed in response to the Bay-Delta Plan Amendment.

Given the long lead times associated with developing additional water supplies, in the event the Bay-Delta Plan Amendment were to take effect sometime after 2022 and result in a dry-year shortfall, the expected action of the SFPUC for the next 10 to 30 years (or more) would be limited to requiring increased rationing. The analysis below focuses on whether rationing at the levels that might be required under the Bay-Delta Plan Amendment could result in any cumulative impacts, and if so, whether the NHPH would make a considerable contribution to these impacts.

The SFPUC has established a process through its Retail Water Shortage Allocation Plan for actions it would take under circumstances requiring rationing. Rationing at the level that might be required under the Bay-Delta Plan Amendment would require changes to how businesses operate, changes to water use behaviors (e.g., shorter and/or less-frequent showers), and restrictions on irrigation and other outdoor water uses (e.g., car washing), all of which could lead to undesirable socioeconomic effects. However, any such effects would not constitute physical environmental impacts under CEQA.

High levels of rationing could, however, lead to adverse physical environmental effects, such as the loss of vegetation cover resulting from prolonged restrictions on irrigation. Prolonged high levels of rationing within the city could also make San Francisco a less desirable location for residential and commercial development compared to other areas of the state not subject to such substantial levels of rationing, which, depending on location, could lead in turn to increased urban sprawl. Sprawl development is associated with numerous environmental impacts, including, for example, increased greenhouse gas emissions and air pollution from longer commutes and lower density development, higher energy use, loss of farmland, and increased water use from less water-efficient suburban development.[10] Thus, the higher levels of rationing on a citywide basis that could be required under the Bay-Delta Plan Amendment could lead directly or indirectly to significant cumulative impacts. The question, then, is whether the NHPH would make a considerable contribution to impacts that may be expected to occur in the event of high levels of rationing.

As discussed above, implementation of the Bay-Delta Plan Amendment would result in substantial system-wide water supply shortfalls in dry years. These shortfalls would occur with or without the proposed NHPH, and the NHPH's incremental increase in potable water demand (0.1 percent of total retail demand) would have a negligible effect on the levels of rationing that would be required throughout San Francisco under Scenario 2 in dry years. Furthermore, UCSF would also comply with the SFPUC's directives related to rationing. Thus, the proposed NHPH would not make a considerable contribution to any significant cumulative impacts that may result

[10] Pursuant to the SFPUC 2015 Urban Water Management Plan, San Francisco's per capita water use is among the lowest in the state.

from increased rationing that may be required with implementation of the Bay-Delta Plan Amendment, were it to occur.

Based on the technical analyses presented in the WSE and the SFPUC 2020 UWMP, the increase in potable water demand for the Parnassus Heights campus site upon implementation of the NHPH would not be so large as to affect the ability of the SFPUC to meet demand with existing and planned supplies during normal, single dry, and multiple dry years through 2045, which is the farthest year of analysis included in the SFPUC 2020 UWMP. For all of the reasons described above, under both water supply scenarios, this impact would be considered less than significant.

Mitigation: None required.

Widening of Medical Center Way, Replacement of Diesel Fuel Tanks and Medical Gas Tanks, Vegetation Management and Slope Stabilization Improvements, and Parnassus Avenue Pedestrian Bridge and Tunnel

None of these related improvements would require substantial potable water during operation. It should be noted, as discussed in Section 4.9, *Hydrology and Water Quality*, that stormwater collected and retained on the NHPH site may serve a beneficial use for providing water for landscaping on the campus site, including potentially, the areas subject to vegetation management under the NHPH.

As such, these related improvements would not substantially affect existing water supplies serving the campus site and reasonably foreseeable development during normal, dry and multiple dry years.

Mitigation: None required.

Impact UTIL-3: The wastewater treatment provider would have adequate wastewater treatment capacity to serve the NHPH. (*Less than Significant*)

Construction

NHPH

Construction of the NHPH would temporarily generate wastewater at the Parnassus Heights campus site that would require treatment. As described in the Chapter 3, *Project Description*, in areas where deep excavation occurs, limited and temporary dewatering may be required during construction; in which case, water would be discharged to the City's CSS, after treatment, if necessary. Other sources of wastewater during construction that would be discharged to the City's CSS would be associated with hydrostatic testing of systems, general cleaning, and construction worker restrooms. Given this would be a temporary generation of wastewater, it would not have any long-term effect on wastewater treatment capacity, and as a result, the impact associated with construction-phase wastewater discharge would be considered less than significant.

Operation

New Hospital and Renovation of Moffitt and Long Hospitals

The NHPH components that would generate an operational increase in wastewater over existing conditions and therefore increase the need for wastewater treatment capacity include the proposed New Hospital and the renovated Moffitt and Long Hospitals. Using the NHPH water demand estimate from the WSE, and assuming wastewater generation as 90 percent of water usage, the net increase in wastewater generation resulting from these NHPH components would be approximately 0.054 mgd. All wastewater generated under the NHPH would be discharged to the City CSS and conveyed east to the SEP for treatment. The SEP has an average dry weather design flow capacity of approximately 84.5 mgd and is currently treating approximately 60 mgd. Therefore, during non-storm conditions, based on current dry weather flows, the City's treatment plant has excess dry weather treatment capacity, which is adequate to accommodate the increase in wastewater flow generated by the proposed NHPH. As a result, the proposed NHPH would not result in a determination by the SFPUC that it has inadequate dry weather capacity to serve the projected demand, and the impact would be less than significant.

As discussed above in Section 4.14.1, *Environmental Setting*, stormwater and wastewater flows from the NHPH site are combined in the City's CSS and conveyed to the SEP for treatment. During wet weather, the CSS and SEP handle higher flows than during the dry season when the flows are largely wastewater, and the City uses the NPF and underground storage and transport boxes to provide additional storage and treatment capacity. Impact HYD-1 in Section 4.9, *Hydrology and Water Quality* provides estimates of the increase in combined wastewater and stormwater flows from the implementation of the proposed NHPH and analyzes the effect of the combined flows on the City's wet weather collection and treatment capacity. As that analysis shows, with the inclusion of on-campus stormwater storage facilities that would hold runoff in the amount of increased runoff and increased wastewater generated by the project, the NHPH would avoid increasing the likelihood of surcharges at downstream manholes, avoid increasing the extent or duration of ponding or overland flow, and avoid discharges to the City's CSS that could increase the frequency or volume of combined sewer discharges to receiving waters. As such, the proposed NHPH would not adversely affect the City's wet weather storage and treatment capacity, and the impact would be less than significant.

Mitigation: None required.

Widening of Medical Center Way, Replacement of Diesel Fuel Tanks and Medical Gas Tanks, Vegetation Management and Slope Stabilization Improvements, and Parnassus Avenue Pedestrian Bridge and Tunnel

None of these related improvements would generate wastewater during operation. As such these related improvements would not require wastewater treatment, and thus no impact to available treatment capacity would occur.

Mitigation: None required.

Cumulative Impacts

Impact-C-UTIL-1: Development under the proposed NHPH, in combination with past, present, and reasonably foreseeable future projects in the vicinity of the Parnassus Heights campus site, would not substantially contribute to cumulative impacts related to utilities and services systems. (*Less than Significant*)

Utility Infrastructure

The NHPH, when combined with foreseeable growth on and in the vicinity of the Parnassus Heights campus site, could increase the demand for utilities and service systems. As the vicinity of the campus site is a densely developed urban area, development in the vicinity of the Parnassus Heights campus site would occur as replacement or in-fill on otherwise built-out sites. City utility systems that serve the area have sufficient capacities to serve those sites and r the proposed NHPH. To the extent that cumulative demands on water, wastewater or stormwater conveyance systems from reasonably foreseeable growth in the City would require the construction of new or expansion of existing conveyance systems, such construction may have the potential to cause environmental impacts. However, in general, impacts would be limited to temporary construction effects and would be minimized by best practices that are routinely imposed by the City on infrastructure projects. As discussed above, with mitigation and compliance with construction-related regulatory requirements, construction-related effects associated with utility improvements needed to serve the proposed NHPH would be reduced to less than significant. As a result, the cumulative impact with regard to utility infrastructure would be less than significant.

Water Supply

The analysis conducted in Impact UTIL-2, and the WSE it is based on, is a cumulative analysis of the NHPH's water demand within the context of the overall cumulative water demand through 2045 based on current water supply planning. As noted in Impact UTIL-2, the NHPH would not make a considerable contribution to cumulative impacts on water supply, and the impact would be less than significant.

Wastewater Treatment

The proposed NHPH, when combined with foreseeable growth on and in the vicinity of the Parnassus Heights campus site, would also increase the demand for the wastewater treatment facilities. Reasonably foreseeable cumulative projects would need to meet the wastewater pre-treatment requirements of the SFPUC and SWRCB. The areas served by the SEP are largely built out. Any future development in the service area would likely consist of replacement or in-fill on otherwise built-out sites. As stated above, sufficient dry weather capacity currently exists at the SEP. Furthermore, based on analysis in Section 4.9, *Hydrology and Water Quality*, the NHPH would provide on-campus stormwater storage to eliminate project increases in peak stormwater flows and volume that would occur under the NHPH, and offset the increase in operational wastewater flows that would be generated under the NHPH such that there would be no net increase in combined stormwater and wastewater flows form the NHPH implementation over existing conditions. As such, the NHPH would or avoid the project's contribution to any cumulative increases in combined flows to the City's CSS, SEP and additional bayside storage and treatment facilities. There is enough capacity to serve development envisioned under the

proposed NHPH and reasonably foreseeable future redevelopment and infill development in the service area. Therefore, cumulative impacts with regard to wastewater treatment capacity would be less than significant.

Mitigation: None required.

4.14.4 References

San Francisco Bay Regional Water Quality Control Board (RWQCB), 2013. Order No. R2-2013-0029, NPDES No. CA0037664, *Waste Discharge Requirements for the City and County of San Francisco Southeast Water Pollution Control Plant, North Point Wet Weather Facility, Bayside Wet Weather Facilities, and Wastewater Collection System.* Adopted August 13, 2013.

San Francisco Public Utilities Commission (SFPUC), 2021. 2020 Urban Water Management Plan for the City and County of San Francisco. Adopted, June 2021.

University of California, Office of the President (UCOP), 2019. *University of California – Policy on Sustainable Practices*, July 1, 2019.

University of California, San Francisco (UCSF), 2019. *UCSF Parnassus Heights Utility Master Plan*, October 1, 2019.

West Yost, 2021. *UCSF New Hospital at Parnassus Heights Water Supply Evaluation*, November 9, 2021.

CHAPTER 5
CEQA Statutory Sections

5.1 Introduction

Section 15126 of the CEQA Guidelines requires that when evaluating a project's impact on the environment all phases of the project must be considered, including planning, construction, and operation, taking account of the impacts both in the short-term and long-term. More specifically, Section 15126.2 requires disclosure of (1) Significant Environmental Effects Which Cannot be Avoided if the Proposed Project is Implemented (CEQA Guidelines Section 15126.2(c)), (2) Significant Irreversible Environmental Changes Which Would be Caused by the Proposed Project Should it be Implemented (CEQA Guidelines Section 15126.2(d)), and (3) Growth-Inducing Impact of the Proposed Project (CEQA Guidelines Section 15126.2(e)).

Chapter 2, *Summary*, and Chapter 4, Sections 4.1 through 4.15 provide a comprehensive presentation of the potential environmental effects that could result from implementation of the proposed NHPH, proposed mitigation measures, and conclusions regarding the level of significance of each impact before and after mitigation. Chapter 6, *Alternatives*, presents a comparative analysis of alternatives to the proposed NHPH. Other CEQA-required analyses described above are presented below.

5.2 Significant and Unavoidable Impacts

Section 15126.2(c) of the CEQA Guidelines requires that an EIR describe any significant impacts that cannot be avoided, even with the implementation of feasible mitigation measures. The environmental effects of the proposed NHPH on various aspects of the environment are discussed in detail in Chapter 4, *Environmental Setting, Impacts, and Mitigation Measures*. Significant impacts of the NHPH that cannot be avoided if the NHPH is approved as proposed are summarized in **Table 5-1**, below.

Section 15126.2(c) also requires: "Where there are impacts that cannot be alleviated without imposing an alternative design, their implications and reasons why the project is being proposed, notwithstanding their effect, should be described." The discussion of the feasibility of alternatives to address significant impacts of the proposed NHPH is found in Chapter 6, *Alternatives*.

TABLE 5-1
SIGNIFICANT AND UNAVOIDABLE IMPACTS OF THE PROPOSED NHPH

Impacts
4.1 Aesthetics, Wind and Shadow
Impact AES-4: Implementation of the NHPH would potentially create wind hazards in publicly accessible areas of substantial pedestrian use.
Impact C-AES-3: Implementation of the NHPH, combined with cumulative projects, would potentially create wind hazards in publicly accessible areas of substantial pedestrian use.
4.11 Noise and Vibration
Impact NOI-1: Construction activities under the NHPH would generate a substantial temporary increase in ambient noise levels in the vicinity of the construction project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.
Impact C-NOI-1: Implementation of the NHPH, combined with cumulative construction noise in the project area, would generate a substantial temporary increase in ambient noise levels from construction activity in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.

5.3 Significant Irreversible Environmental Effects

Under CEQA, an EIR must analyze the extent to which a project's primary and secondary effects would commit future generations to the allocation of nonrenewable resources and to irreversible environmental damage (CEQA Guidelines Section 15126.2(d)). Specifically, Section 15126.2(d) states:

> Uses of nonrenewable resources during the initial and continued phases of the project may be irreversible, since a large commitment of such resources makes removal or nonuse thereafter unlikely. Primary impacts and, particularly, secondary impacts (such as highway improvement which provides access to a previously inaccessible area) generally commit future generations to similar uses. Also, irreversible damage can result from environmental accidents associated with the project. Irretrievable commitments of resources should be evaluated to assure that such current consumption is justified.

Generally, a project would result in significant irreversible environmental changes if:

- The primary and secondary impacts would generally commit future generations to similar uses;
- The project would involve a large commitment of nonrenewable resources;
- The proposed consumption of resources is not justified (e.g., the project involves the wasteful use of energy); and/or
- The project would involve uses in which irreversible damage could result from any potential environmental accidents associated with the project.

With respect to the potential of the proposed NHPH to commit future generations to similar uses, the Parnassus Heights campus site is largely built out and the proposed NHPH would not alter the types of land uses and activities conducted at the campus site. As discussed in Chapter 3, *Project Description*, the great majority of the NHPH would be contained within the largely developed

areas within the Parnassus Heights campus site. An exception would be the proposed medical gas replacement tanks, which would result in the need to modify the Reserve boundary, changing the functional zone from Open Space Reserve to Support. However, as discussed in Chapter 3, *Project Description*, the area previously removed from the Reserve under 2014 LRDP Amendment #7 to accommodate the New Hospital footprint is now proposed to be returned to the Reserve. Furthermore, land that was added to the Reserve under the 2014 LRDP Amendment #7 would remain as Reserve land. The minor functional zone change proposed under the NHPH for the medical gas replacement tanks would not place a new use adjacent to existing developed land uses outside of the campus site boundaries to create a land use conflict.

With respect to the commitment of non-renewable resources, and consumption of resources, these would occur during both construction and operation of the proposed NHPH. Construction of the proposed NHPH would require the use of fossil fuels, construction materials, and water. During operation, the proposed NHPH would also require an irreversible commitment of energy, primarily in the form of fossil fuels for heating and cooling of buildings, for vehicle fuel, and for energy production, as well as potable and non-potable water for consumption, landscaping, and other uses.

However, as discussed in Section 4.5, *Energy*, the University would be required to adhere to all relevant UC *Sustainable Practices Policy* provisions that are designed to conserve and reduce energy consumption. These provisions require new construction and renovation projects to have energy performance that is at least 20 percent or better than California Code of Regulations Title 24, and to strive to achieve 30 percent; and requires all new construction and major renovations to meet a minimum standard of LEED-NC Silver and strive for LEED-NC Gold when possible. In addition, the projects and activities under the proposed NHPH would address UCSF's achievement of goals set forth in the adopted Carbon Neutrality Initiative (CNI), which has goals more stringent than the statewide target of achieving 80 percent below 1990 emission levels by 2050. Campus programs that are implemented to achieve the goals would have the effect of reducing overall energy usage.

As described further in Section 4.14, *Transportation*, future average daily vehicle miles traveled (VMT) per capita under the proposed NHPH would be substantially lower than the San Francisco Bay Area average. The VMT rates would be supported by the University's Transportation Demand Management program. Lower VMT would result in lower mobile fuel use per worker and per resident than the regionwide and countywide average.

In addition, as described in Section 4.7, *Greenhouse Gas Emissions*, the operation of the NHPH would result in an increase in greenhouse gas (GHG) emissions. Feasible GHG reduction measures are included in UCSF's GHGRS. In addition, NHPH Mitigation Measure GHG-1 is identified to reduce the project's GHG emissions to a net zero increase and a less than significant impact with mitigation. NHPH Mitigation Measure GHG-1 sets forth a numerical performance standard based on the estimated GHG emissions generated for the proposed NHPH to be offset, thereby achieving a net zero increase.

With respect to irreversible damage that could result from an environmental accident associated with the proposed NHPH, the potential for such effects is discussed in detail in Section 4.8, *Hazards*

and Hazardous Materials. As discussed there, the proposed NHPH would involve the transport, handling, storage and disposal of varied and large quantities of hazardous materials, including biohazardous materials, chemical materials, and low-level radioactive waste. If not handled appropriately, upset and accident conditions could result in releases of hazardous materials or wastes that could result in adverse effects to residents, workers, the public or the environment. However, compliance with hazardous storage and transportation regulations, and continuation of the programs and controls currently in place to manage hazardous materials, as mandated by State and federal laws, the potential impact to workers, residents, visitors, or the environment would be reduced to a less-than-significant level.

5.4 Growth-Inducing Effects

As required under CEQA, an EIR must include a discussion of the ways in which the proposed NHPH could directly or indirectly foster economic or population growth, or the construction of additional housing and how that growth would, in turn, affect the surrounding environment (CEQA Guidelines Section 15126.2(e)). Growth can be induced in a number of ways, including the elimination of obstacles to growth, or through the stimulation of economic activity within the region. The discussion of removal of obstacles to growth relates directly to the removal of infrastructure limitations or regulatory constraints that could result in population growth or development unforeseen at the time of project approval. Under CEQA, growth is not necessarily considered beneficial, detrimental, or of little significance to the environment.

5.4.1 Direct Population and Employment Growth

As discussed in Section 4.12, *Population and Housing*, the proposed NHPH would directly result in an expansion of the hospital facilities at the Parnassus Heights campus site and associated population and employment growth. UCSF anticipates that the campus site population associated with the NHPH, including faculty and staff, hospital inpatients and visitors, and vendors/other support, would grow by approximately 2,275 persons by 2030 that would be maintained through buildout of the CPHP in 2050.

While implementation of the proposed NHPH would induce population growth in San Francisco and the broader Bay Area, the population growth would not be substantial in comparison to the growth that is projected and planned for San Francisco and the four study area counties (Alameda, Contra Costa, Marin and San Mateo counties) in *Plan Bay Area 2040* and the local General Plans for the study area communities.

The potential physical environmental impacts associated with the direct population growth on the Parnassus Heights campus site as a result of the proposed NHPH are evaluated in the environmental analysis sections of this EIR (e.g., Section 4.2, *Air Quality*; Section 4.5, *Energy*; Section 4.13, *Public Services*; Section 4.13, *Transportation*; and 4.14 *Utilities and Service Systems*).

With regard to indirect effects of the NHPH-related population on housing, UCSF currently has 222 housing units on the Parnassus Heights campus site, which would increase to 364 housing units by 2030 under the 2014 LRDP, as amended. The residential units planned on the Parnassus

Heights campus site will provide more [on-campus housing, including for employees, near their workplaces, including those that work in the New Hospital and Moffitt and Long Hospitals, thereby reducing demand for off-campus housing in San Francisco and the Bay Area. In addition, as part of a Memorandum of Understanding (MOU) between UCSF and the City of San Francisco (January 22, 2021) regarding the CPHP, UCSF committed to providing additional housing beyond that called for in the CPHP. Specifically, UCSF agreed to deliver a total of 1,263 net new units in San Francisco by 2050 (inclusive of the 762 units in the CPHP), half delivered by 2030, with the remaining half divided equally by 2040 and 2050. This would double UCSF's current housing portfolio citywide. With regard to indirect effects of the NHPH-related population that would reside off-campus, in general, the potential effects of this population growth could include: increased traffic congestion; increased air pollutant emissions; loss of open space; increased demand on public utilities and services, such as fire and police protection, water, recycled water, wastewater, solid waste, electricity, and natural gas; and increased demand for housing. An increase in population growth would also require governmental services including, but not limited to, public schools, libraries, and parks. The increased demand for housing could trigger new housing development in the study area. However, the General Plans of jurisdictions where new off-site housing would be developed contain policies and other measures that address the environmental effects of new housing development. Specific housing development projects also would be subject to the environmental review process of affected jurisdictions.

5.4.2 Indirect Economic Growth

In addition to the employment growth generated by the proposed NHPH, additional local employment could be generated through what is commonly referred to as the "multiplier effect." The multiplier effect refers to the secondary economic effects caused by spending of the project-related residents and employees.

The multiplier effect also calculates induced employment. Induced employment follows the economic effect of employment beyond the expenditures of the project employees to include jobs created by the stream of goods and services necessary to construct or operate the proposed NHPH. For example, when a manufacturer buys products or sells products, the employment associated with those inputs or outputs is considered induced employment. As an additional example, when a staff member from the NHPH goes out to lunch, the person who serves the student or employee lunch holds a job that was indirectly caused by the proposed NHPH. When the server then goes out and spends money in the economy, the jobs generated by this third-tier effect are considered induced.

The multiplier effect tends to be greater in regions with larger diverse economies (such as the Bay Area) due to a decrease in the requirement to import goods and services from outside the region, as compared to the effects of spending in smaller economies where goods and services must be imported from elsewhere.

The number of indirect and induced jobs generated by an institution is commonly calculated by applying a ratio, or job multiplier, to the number of jobs provided directly by the institution. The projected increase in jobs under the proposed NHPH is approximately 1,449 staff and faculty

positions. Using a job multiplier of 0.73[1], at full implementation of the NHPH, an additional 1,058 jobs could be indirectly caused by or induced elsewhere in the Bay Area by the proposed NHPH.

5.4.3 Environmental Effects of Indirectly Caused and Induced Growth

The residence locations of people working in indirect and induced jobs is unknown. It would be speculative to conclude where such workers would reside or be employed in the Bay Area (or beyond), or to determine any associated environmental effects.

Employment growth induced by the proposed NHPH would likely affect the greater Bay Area region. While it is acknowledged above that the precise nature, location, and magnitude of effects of indirect and induced growth cannot be determined, the proposed NHPH would likely increase overall demand in the region for housing, commercial and industrial space, and associated infrastructure. Potential effects could include: increased traffic congestion; increased air pollutant emissions; loss of agricultural land and open space; loss of habitat and associated flora and fauna; increased demand on public utilities and services, such as fire and police protection, water, recycled water, wastewater, solid waste, energy, and natural gas; and increased demand for housing. An increase in housing demand in the Bay Area region would also require governmental services including, but not limited to, schools, libraries, and parks to serve new commercial and residential development.

Indirect and induced employment and population growth could further contribute to the loss of open space because it would encourage conversion to urban uses for housing, commercial space, and infrastructure, although most jurisdictions have adopted smart-growth policies that discourage or prohibit this type of development.

5.4.4 Removal of Obstacles to Growth

The elimination of physical obstacles to growth is considered a growth-inducing effect. The proposed NHPH would result in additional hospital facilities on the Parnassus Heights campus site. The proposed NHPH would include infrastructure improvements designed to accommodate growth associated with the NHPH on the Parnassus Heights campus site through 2050. Proposed improvements include underground pipelines, electrical transmission lines, water supply infrastructure, roadway extensions and modifications, pathways, and other similar types of improvements. The scale and nature of these improvements would be to accommodate the growth and development on the Parnassus Heights campus site directly attributable to the proposed NHPH. The infrastructure improvements undertaken would be designed to serve the planned development on the campus site and would not be designed to support growth outside the

[1] Multipliers identified in studies of other college campuses range from 0.33 to 1.36 (Stanford, 2017). At 0.73 indirect and induced workers per University of San Francisco (USF) worker, the study conducted for USF may provide the best "order of magnitude" estimate for regional impacts of the proposed project at UCSF, as it is in the same Bay Area region with the same range of available local goods and services.

Parnassus Heights campus site, and thus would not remove an obstacle to growth in the City and County of San Francisco.

5.5 References

Stanford University, 2017. *2018 General Use Permit Application*, Technical Data to Address Population and Associated Housing Demand, July 25, 2017.

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CHAPTER 6
Alternatives

6.1 Introduction

An EIR must describe a range of reasonable alternatives to the proposed project that might feasibly accomplish most of the basic objectives of the proposed project and could avoid or substantially lessen one or more of the project's significant effects. This chapter describes the CEQA requirements for an alternatives analysis, presents UCSF's project objectives, summarizes the significant effects of the proposed NHPH that cannot be avoided or reduced to less than significant with mitigation, and describes the alternatives, including those that were considered but dismissed from further evaluation. The chapter then presents the comparative effects of each of the alternatives relative to those of the proposed NHPH, and evaluates the relationship of the alternatives to the project objectives. As required under Section 15126.6(e) of the State CEQA Guidelines, an environmentally superior alternative is identified and addressed at the end of this chapter.

6.1.1 CEQA Requirements for Alternatives Analysis

CEQA requires that an EIR describe and evaluate a range of reasonable alternatives to the proposed project, or to the location of the proposed project, and evaluate the comparative merits of the alternatives (CEQA Guidelines Section 15126.6(a), (d)). The "range of alternatives" is governed by the "rule of reason," which requires the EIR to describe and consider only those alternatives necessary to permit informed public participation, and an informed and reasoned choice by the decision-making body (CEQA Guidelines Section 15126.6(a), (f)).

The range of alternatives must include alternatives that could feasibly attain most of the basic objectives of the project and could avoid or substantially lessen any of the significant effects of the project (CEQA Guidelines Section 15126.6(a)-(c)). CEQA generally defines "feasible" to mean an alternative that is capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, technological, and legal factors. In addition, the following may be taken into consideration when assessing the feasibility of alternatives: site suitability; economic viability; availability of infrastructure; general plan consistency; other plans or regulatory limitations; jurisdictional boundaries; and the ability of the proponent to attain site control (CEQA Guidelines Section 15126.6(f)(1)). If the lead agency concludes that no feasible alternative locations exist, it must disclose the reasons for this conclusion, and should include the reasons in the EIR (CEQA Guidelines Section 15126.6(f)(2)(B)).

The description or evaluation of alternatives does not need to be exhaustive, and an EIR need not consider alternatives for which the effects cannot be reasonably determined and for which implementation is remote or speculative. An EIR need not describe or evaluate the environmental effects of alternatives in the same level of detail as the proposed project, but must include enough information to allow meaningful evaluation, analysis, and comparison with the proposed project (CEQA Guidelines Section 15126.6(d)).

The "no project" alternative must be evaluated. This analysis is required to include a discussion of the continuation of the existing conditions, as well as what could be reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services (CEQA Guidelines Section 15126.6(e)(2)). When the project is the revision of an existing land use plan, the no project alternative will be the continuation of the existing plan into the future.

CEQA also requires that an environmentally superior alternative be selected from among the alternatives. The environmentally superior alternative is the alternative with the fewest or least severe adverse environmental impacts. If the "no project" alternative is the environmentally superior alternative, the EIR must also identify an environmentally superior alternative from among the other alternatives (CEQA Guidelines Section 15126.6(e)(2)).

6.2 Alternatives Selection

As noted above, the selection of alternatives for consideration in an EIR depends on whether the possible alternative can feasibly meet most of the basic objectives of the project and avoid or substantially lessen any significant impacts of the project. The project objectives presented in Chapter 3, *Project Description,* and the significant unavoidable impacts of the NHPH identified in Chapter 4, *Environmental Setting, Impact, and Mitigation Measures* are listed below.

6.2.1 Project Objectives

The key objectives for the proposed NHPH are as follows:

- Meet seismic requirements of California Senate Bill 1953 by developing a new, seismically-sound, state-of-the-art inpatient facility.
- Site and develop a new inpatient facility in a way that optimizes operational activities with other clinical facilities at Parnassus Heights, such as Moffitt and Long Hospitals, and Medical Building 1.
- Optimize the reuse of Moffitt Hospital by seismically retrofitting the building and judiciously reusing limited portions for inpatient use, as physical requirements allow, balanced with reuse of Moffitt Hospital for other needed clinical and support functions.
- Increase inpatient beds at Parnassus Heights to address severe constraints on capacity and access to care, and to meet the needs of a growing and aging Bay Area population.
- Increase inpatient beds at Parnassus Heights to allow for the capacity to provide inpatient health care in times of severe strain such as the current pandemic, without resorting to reducing or canceling non-essential surgeries to create bed capacity.

- Develop a new inpatient facility that has sufficient space to accommodate modern regulatory requirements and industry standards of contemporary hospitals, such as construction codes, sizes of operating rooms, ratio of operating rooms to pre-and post-recovery areas, and space for privacy and infection control issues.
- Develop a new inpatient facility that has sufficient space to accommodate modern technology, including telemedicine, robotics, and new diagnostic, imaging, testing, treatment, surgery and laboratory equipment, all requiring substantial infrastructure and space.
- Develop a new inpatient facility that has sufficient space to accommodate patient satisfaction requirements of contemporary hospitals, such as private patient rooms of sufficient size.
- Develop a new inpatient facility that is optimized in its spatial layout to enhance functionality and efficiency.
- Develop spaces for clinical and translational research and learning in or adjacent to clinical areas where patients are located.

The following are objectives from the CPHP relating to future development the Parnassus Heights campus site that pertain to the proposed NHPH:

- Revitalize the aging Parnassus Heights campus to enhance its place as a premier educational, research, and clinical institution -- one that draws in research and clinical faculty, staff, students, and trainees.
- Fulfill the need for contemporary research, educational, clinical, and support spaces that have been lacking at Parnassus Heights for decades.

In addition, the 2014 LRDP FEIR also identified certain objectives specific to the Parnassus Heights campus site that are relevant to the NHPH:

- Ensure that adequate space is provided to foster collaboration and to facilitate the inter-dependence and connectivity for operational efficiency and effectiveness of instruction, clinical, research and support uses in close physical proximity to each other.
- Ensure that Long Hospital and the New Hospital Addition have adequate clinical and administrative support and are aligned with education, research and specialized care programs and support that remain at the campus site.

6.2.2 Summary of Significant and Unavoidable Environmental Effects of the Proposed NHPH

As described above, alternatives to the proposed NHPH must substantially lessen or avoid one or more of the significant project and/or cumulative environmental impacts. **Table 6-1**, below, summarizes the significant and unavoidable impacts identified in Chapter 4 of this EIR.

TABLE 6-1
SIGNIFICANT AND UNAVOIDABLE IMPACTS OF THE PROPOSED NHPH

Impacts
4.1 Aesthetics, Wind and Shadow
Impact AES-4: Implementation of the NHPH would potentially create wind hazards in publicly accessible areas of substantial pedestrian use.
Impact C-AES-3: Implementation of the NHPH, combined with cumulative projects, would potentially create wind hazards in publicly accessible areas of substantial pedestrian use.
4.11 Noise and Vibration
Impact NOI-1: Construction activities under the NHPH would generate a substantial temporary increase in ambient noise levels in the vicinity of the construction project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.
Impact C-NOI-1: Implementation of the NHPH, combined with cumulative construction noise in the project area, would generate a substantial temporary increase in ambient noise levels from construction activity in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.

6.3 Alternatives Selected for Further Evaluation

The alternatives identified for detailed evaluation and designed to inform public participation and reasoned choice by decision-makers are:

Alternative 1: No Project Alternative, consisting of:

1A: No Project - No Development; and

1B: No Project - Smaller Hospital per 2014 LRDP;

Alternative 2: Reduced Project; and

Alternative 3: New Hospital - Phased Option.

Table 6-2, below, provides a summary comparison of the principal differences in characteristics of the proposed NHPH and the alternatives, and the sections that follow describe each alternative, how its impacts would differ from those of the NHPH, and whether the alternative would or would not achieve most of the project's objectives.

6.3.1 Alternative 1: No Project - No Development Alternative

The No Project – No Development Alternative assumes that the proposed NHPH, including the proposed 900,000 gsf New Hospital and related improvements, would not be constructed and implemented. Because State law requires that Moffitt Hospital undergo seismic retrofit if its use as inpatient facilities is to be continued, absent seismic retrofit under this alternative, this facility would no longer be able to provide inpatient beds after 2030. As a result, under this alternative, 325 inpatient beds would continue to be provided at the Parnassus Heights campus site in Long Hospital, and there would be 357 fewer inpatient beds on the Parnassus Heights campus site compared to that proposed on the campus site under the NHPH, and 150 fewer inpatient beds at the campus site compared to existing conditions.

TABLE 6-2
COMPARISON SUMMARY OF PROPOSED NHPH AND ALTERNATIVES CHARACTERISTICS

	Proposed NHPH	Alternative 1: No Project Alternatives		Alternative 2: Reduced Project	Alternative 3: New Hospital - Phased Option
		Alternative 1A: No Project - No Development	Alternative 1B: No Project - Smaller Hospital per 2014 LRDP		
NHPH Development					
New Hospital Size	900,000 gsf 15 stories	0 gsf	308,000 gsf 7 stories	629,000 gsf 12 stories	925,000 gsf 10 and 13 story buildings
Net Change in Beds at Parnassus Heights Campus Site over Existing					
New Hospital	*2030 (except where noted)*	*2030*	*2030*	*2030 (except where noted)*	*2030:* / *2050:* / *Total:*
Moffitt Hospital (150 beds)	+336 beds	0 beds	+140 beds	+288 beds	+234 beds / +123 beds / +357 beds
Long Hospital (325 beds)	-101 beds (by 2034)	-150 beds	-150 beds	-101 beds (by 2034)	-150 beds / 0 beds / -150 beds
Net Change	-28 beds	0 beds	-34 beds	-28 beds	0 beds / 0 beds / 0 beds
	+207 beds	**-150 beds**	**-44 beds**	**+159 beds**	**+84 beds / +123 beds / +207 beds**
Average Daily Population Change Associated with Hospitals over Existing	+2,275 faculty, staff, inpatients, visitors and vendors/other	-1,586 faculty, staff, inpatients, visitors and vendors/other	-465 faculty, staff, inpatients, visitors and vendors/other	+1,747 faculty, staff, inpatients, visitors and vendors/other	Same net increase as under NHPH
Related Improvements Assumed to be Implemented	Yes	No	Yes	Yes	Yes
2014 LRDP as amended Assumed to be Developed	Yes	Yes	Yes	Yes	Yes, with exception of Moffitt Hospital to be demolished under this alternative
Assume Implementation of GHG Reduction Strategy Update?	Yes	Yes	Yes	Yes	Yes
LRDP Revisions					
Revision to Open Space Reserve Boundary	Yes (for Medical Gas Tanks Replacement)	No	Yes (Same as under NHPH)	Yes (Same as under NHPH)	Yes (Same as under NHPH)
Reallocation of Surplus Building Space to CPHP Future Phase?	Yes	N/A	N/A	Yes	Yes

Because there would be no change in the location of the medical gas tanks under this alternative, the minor revision to the 2014 LRDP as proposed under the NHPH to adjust the Reserve boundary and revise the campus site functional zones, would not be required. Since the existing underground diesel storage tanks must be replaced with new code-compliant tanks by 2025, it is assumed UCSF would develop a new code-compliant diesel storage facility under this alternative by that date.

It is assumed that UCSF would continue implementation of the 2014 LRDP, as amended, including previously approved demolition projects, such as the demolition of the LPPI; the construction of CPHP Initial Phase development by 2030, including Irving Street Arrival and RAB projects; and construction of CPHP Future Phase development by 2050. UCSF would also continue implementation of the *Mount Sutro Open Space Reserve Vegetation Management Plan*, and on-going campus site maintenance programs and activities.

Comparison of Effects of No Project - No Development Alternative to the Proposed NHPH

Aesthetics, Wind and Shadow

Aesthetics

No new development associated with the proposed NHPH would occur at the Parnassus Heights campus site under this alternative. As a result, this alternative would avoid the less than significant project or cumulative effects on scenic vistas, and conflicts with applicable zoning and other regulations governing scenic quality associated with the NHPH; and would avoid the significant but mitigable impact related to new sources of light and glare that would occur under NHPH.

Wind

No new development associated with the proposed NHPH would occur at the Parnassus Heights campus site under this alternative. Consequently, this alternative would avoid the potentially significant and unavoidable project and cumulative wind hazard impacts in publicly accessible areas of substantial pedestrian use that would occur under the NHPH.

Shadows

No new development associated with the proposed NHPH would occur at the Parnassus Heights campus site under this alternative. As a result, this alternative would avoid the impact, albeit less than significant, of creating new shadow, or contributing to cumulative shadowing, in publicly accessible open spaces, that would be associated with the NHPH.

Air Quality

No new construction or demolition activities associated with the proposed NHPH development would occur at the Parnassus Heights campus site under this alternative. Consequently, this alternative would avoid the significant but mitigable project and cumulative air quality effects associated with increases in construction–generated criteria pollutants, and with construction-

related exposure of sensitive receptors to substantial pollutant concentrations, that would occur under the proposed NHPH. Furthermore, since no increase in operational development and associated population and traffic increases associated with the proposed NHPH would occur at the Parnassus Heights campus site under this alternative, it would avoid the less than significant project and cumulative impacts of the NHPH related to net increases of operational criteria pollutant emissions; and the impact on sensitive receptors from exposure to project and cumulative operational pollutant concentrations due to increased campus site operations associated with the NHPH. Lastly, the less than significant impact associated with the NHPH's conflict with or obstruction of implementation of the *2017 Clean Air Plan* would not occur under this alternative.

Biological Resources

No new construction or demolition activities associated with the proposed NHPH development would occur at the Parnassus Heights campus site under this alternative. As a result, this alternative would avoid the significant but mitigable project and cumulative construction-related effects on special-status plant and wildlife species associated with the NHPH. In addition, this alternative would avoid the significant but mitigable project and cumulative impacts associated with potential resident and migrating bird strikes during construction and operation identified with the NHPH. Lastly potential effects, albeit less than significant, associated with damage to or removal of landmark trees under the NHPH would also not occur under this alternative.

Cultural Resources

No building alteration or demolition activities associated with the proposed NHPH would occur at the Parnassus Heights campus site under this alternative. Consequently, this alternative would avoid the less than significant impact on the Reserve (a cultural landscape) from the minor encroachment of the NHPH-proposed medical gas tanks replacement project into the Reserve. In addition, since no ground disturbing construction activities associated with the proposed NHPH would occur at the Parnassus Heights campus site under this alternative, it would avoid the significant but mitigable project and cumulative impacts to previously unknown archaeological resources, human remains, and tribal cultural resources that would occur under the NHPH.

Energy

No construction or demolition activities associated with the proposed NHPH would occur at the Parnassus Heights campus site under this alternative. As a result, this alternative would avoid the construction energy use impact associated with the NHPH. In addition, no increase in operational development and associated population increases associated with the proposed NHPH would occur at the Parnassus Heights campus site under this alternative. Consequently, this alternative would not result in an increase in operational energy use. As such, the alternative would avoid the less than significant project and cumulative NHPH impacts associated with consumption of energy resources, and the conflict with a state or local plan for renewable energy or energy efficiency.

Geology and Soils

No ground disturbing construction activities, or new building construction associated with the proposed NHPH would occur at the Parnassus Heights campus site under this alternative. As a result, this alternative would avoid the significant but mitigable project impact associated with the NHPH for new development in vicinity of landslides. In addition, this alternative would avoid the potential project and cumulative less than significant impacts associated with the NHPH related to effects of seismic ground shaking, liquefaction or unstable soils, and erosion from ground disturbance during construction.

Greenhouse Gas Emissions

No new construction or demolition activities associated with the proposed NHPH would occur at the Parnassus Heights campus site under this alternative. In addition, no increase in operational development and associated population and traffic increases associated with the proposed NHPH would occur at the Parnassus Heights campus site under this alternative. Consequently, this alternative would avoid the significant but mitigable impact of increases in construction and operational greenhouse gas (GHG) emissions associated with the NHPH. Furthermore, this alternative would not conflict with applicable plans, policies or regulations adopted for the purpose of reducing GHG emissions.

Hazards and Hazardous Materials

No new construction or demolition activities associated with the proposed NHPH would occur at the Parnassus Heights campus site under this alternative. In addition, this alternative would not increase operational development and therefore would not involve the associated increases in hazardous materials use that would occur under the proposed NHPH. Accordingly, this alternative would avoid the significant but mitigable project and cumulative NHPH impacts associated with routine transport, use, or disposal of hazardous materials during construction; and with encountering potential legacy contaminates in soil during construction. In addition, this alternative would avoid the project and cumulative NHPH impacts, albeit less than significant, associated with routine transport, use, or disposal of hazardous materials during operation; potential accidental release of hazardous materials; and emitting and handling of hazardous materials within one-quarter mile of an existing or proposed school.

Hydrology and Water Quality

No new construction or ground disturbing activities associated with the proposed NHPH would occur at the Parnassus Heights campus site under this alternative. In addition, this alternative would not result in an increase in impervious surfaces, or operational changes in the amount or quality of stormwater runoff at the campus site. Accordingly, this alternative would avoid the project and cumulative NHPH impacts related to the potential to violate water quality discharges requirements; affect flooding; exceed the capacity of stormwater drainage systems; provide additional sources of polluted runoff; or impede or redirect storm flows; and would avoid the less than significant project and cumulative NHPH impacts related to the potential to degrade surface or groundwater quality; and result in erosion and siltation.

Land Use and Planning

No new development associated with the proposed NHPH would occur at the Parnassus Heights campus site under this alternative, and furthermore, this alternative does not propose amendments to the 2014 LRDP that would affect land use. As a result, potential project and cumulative NHPH impacts, albeit less than significant, associated with conflict with land use plans, policies and regulations adopted for the purpose of avoiding or mitigating an environmental effect, or incompatibility with adjacent land uses, would not occur under this alternative.

Noise and Vibration

No new construction or demolition activities associated with the proposed NHPH would occur at the Parnassus Heights campus site under this alternative. Consequently, this alternative would avoid the significant and unavoidable project and cumulative construction- and demolition-generated noise effects, and significant but mitigable construction vibration effects associated with the NHPH. Furthermore, no increase in operational permanent noise sources, and increase in traffic, would occur at the Parnassus Heights campus site under this alternative. As a result, this alternative would avoid the significant but mitigable project and cumulative impacts related to permanent increases in ambient noise levels from stationary noise sources in excess of applicable noise standards, and avoid the less than significant project and cumulative impacts associated with increases in traffic noise levels, that would be associated with the NHPH.

Population and Housing

This alternative would not result in an increase in the existing population at the Parnassus Heights campus site. As a result, this alternative would avoid potential project and cumulative impacts, albeit less than significant, associated with inducement of population growth, and related new demand for housing, that are associated with the NHPH.

Public Services

This alternative would not result in an increase in development or population at the Parnassus Heights campus site. Consequently, this alternative would avoid the less than significant project and cumulative impacts associated with need for new or altered fire protection and public school facilities, under the NHPH.

Recreation

This alternative would not result in new development or an increase in population at the Parnassus Heights campus site. Consequently, this alternative would avoid the less than significant project and cumulative NHPH impacts from increasing the use of existing neighborhood and regional parks or other existing on- and off-campus recreational facilities, and from the construction of new recreational facilities.

Transportation

This alternative would not result in new development or an increase in population and associated traffic at the Parnassus Heights campus site. Consequently, this alternative would avoid the

significant but mitigable NHPH construction-related impact to travel conditions along sidewalks and roadways serving the campus site. This alternative would also avoid the less than significant project and/or cumulative NHPH impacts of conflicts with programs, plans, ordinances or policies addressing the circulation system; increases in vehicle miles traveled (VMT); increases in hazard due to design features; and emergency access.

However, this alternative would not provide those transportation improvements, including for vehicle, bicycles and pedestrians, proposed under the NHPH to improve circulation and safety at the campus site, including implementation of the overcrossing and tunnel for Parnassus Avenue, and widening of Medical Center Way.

Utilities and Service Systems

This alternative would not result in new development or an increase in population and associated increases in utility demands at the Parnassus Heights campus site. Consequently, this alternative would avoid the less than significant project and/or cumulative impacts that would occur under the NHPH associated with: construction of new or expanded water, wastewater conveyance or storm water drainage, electric power, natural gas, or telecommunications facilities; effects on water supply availability during normal, dry and multiple dry years; effects on wastewater treatment capacity; and effects on the capacity of local solid waste infrastructure and compliance with federal, state and local statutes and regulations related to solid waste.

However, this alternative would not provide those improvements proposed under the NHPH to upgrade the campus's aging infrastructure, and consequently, on-going maintenance issues associated with on-campus utilities would be greater under this alternative.

Relationship of No Project - No Development Alternative to Project Objectives

The No Project - No Development Alternative would provide for continued implementation of the 2014 LRDP as amended, but excludes the 955,000 gsf New Hospital included in the CPHP and the 900,000 gsf New Hospital and related improvements proposed under the NHPH. In addition, Moffitt Hospital would not be seismically upgraded, and as such, would not contain any inpatient beds beyond 2030; and it is assumed Long Hospital would continue to provide the 325 inpatient beds it currently does. As a result, under this alternative 325 total inpatient beds would be provided at the Parnassus Heights campus site, which would be 357 fewer inpatient beds on the campus site compared to that proposed on the campus site under the NHPH, and 150 fewer inpatient beds at the campus site compared to existing conditions.

As such, this potential alternative would not achieve 2014 LRDP clinical objectives for the Parnassus Heights campus site, including to ensure operational efficiency, effectiveness and proximity of clinical uses with other campus site uses. This alternative would also not meet any of the key objectives for the New Hospital at Parnassus Heights, including to develop a new inpatient facility to optimize operational activities with other clinical facilities at Parnassus Heights; increase inpatient beds at Parnassus Heights to address severe constraints on capacity and access to care, including during the current pandemic; and develop an inpatient facility with

sufficient space that meets modern regulatory requirements and industry standards of contemporary hospitals, modern technology, patient satisfaction requirements, and enhance functionality and efficiency. Furthermore, this alternative would also not meet certain space objectives for the clinical uses at Parnassus Heights, including revitalizing the campus site to enhance its place as a premier clinical institution, and fulfilling clinical space that has been lacking at the campus site for decades. As such, this alternative is considered unrealistic, impractical and infeasible.

6.3.2 Alternative 1B: No Project - Smaller Hospital per 2014 LRDP

As discussed above, according to the State CEQA Guidelines, as part of the No Project alternative, the alternatives analysis is required to include a discussion of the continuation of the existing conditions (i.e., no development at all), as well as what could be reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services (CEQA Guidelines Section 15126.6(e)(2)). If the proposed project were not approved, UCSF could potentially construct a smaller project at the project site that would be consistent with the previously adopted 2014 LRDP. That alternative, which was analyzed in the 2014 LRDP Final EIR, is set forth below and analyzed for its ability to reduce the significant impacts of the proposed NHPH while achieving most of the project's objectives.

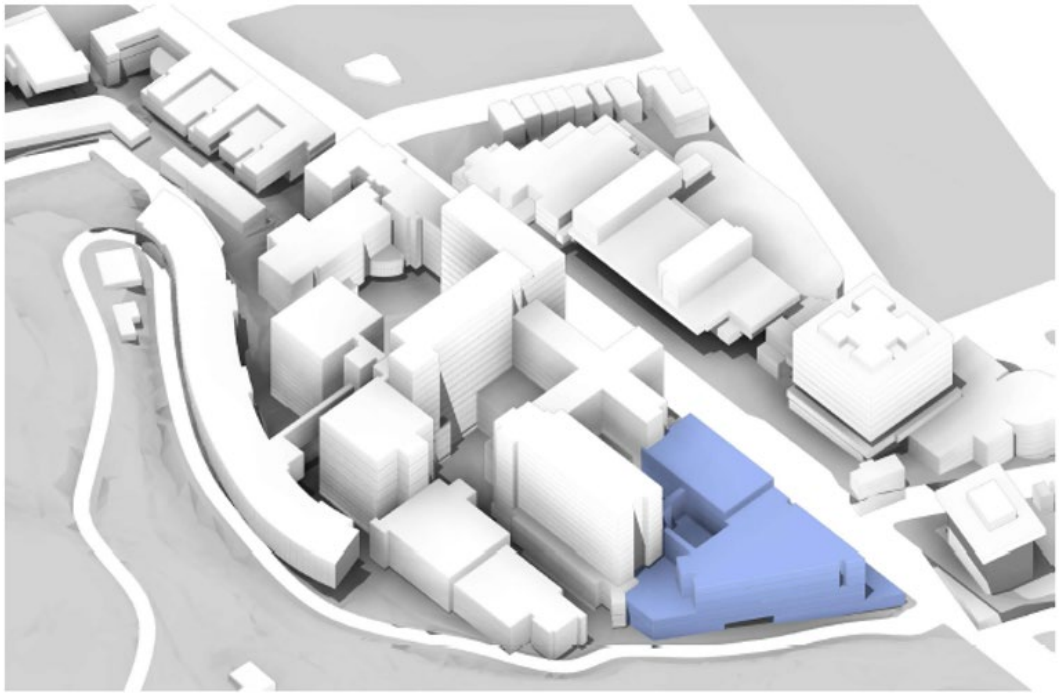

Figure 6-1
Alternative 1B: No Project - Smaller Hospital per 2014 LRDP

This alternative involves a smaller new hospital than under the proposed NHPH, in terms of total square footage, building footprint, building height, and bed capacity. The 2014 LRDP envisioned a New Hospital of about 308,000 gsf and 140 beds on the site of the LPPI to replace the inpatient facilities that are at Moffitt Hospital; renovation and reuse of Moffitt Hospital for outpatient, support and other campus uses; and reduction in the inpatient beds at Long Hospital to 291 beds. As a result, this alternative would provide a total of 431 inpatient beds at the Parnassus Heights campus site, which would be 251 fewer inpatient beds on the campus site compared to that proposed under the NHPH, and 44 fewer inpatient beds on the campus site compared to existing conditions.

Under this alternative, the New Hospital would be seven stories and about 110 feet in height, plus an additional 17 feet for rooftop mechanical equipment. All of the related improvements proposed as part of the NHPH would be implemented under this alternative. This would include replacement of the medical gas tanks that would be located on a portion of the Reserve under this alternative. While the smaller hospital size under this alternative would require a smaller medical gas tank capacity (approximately one-third smaller) than that proposed under the NHPH, the area of the tank site and encroachment into the Reserve under this alternative would be similar to that proposed under the NHPH. Similar to that proposed under the NHPH, a minor revision to the 2014 LRDP, to adjust the Reserve boundary and revise the campus site functional zones would be required.

Further, it is assumed that UCSF would continue implementation of the 2014 LRDP as amended, including previously approved demolition projects, such as the demolition of the LPPI; the construction of CPHP Initial Phase development by 2030 (excluding the 900,000 gsf New Hospital), including the Irving Street Arrival and RAB projects; and construction of CPHP Future Phase development by 2050. UCSF would also continue implementation of the *Mount Sutro Open Space Reserve Vegetation Management Plan*, and on-going campus site maintenance programs and activities.

Comparison of Effects of No Project - Smaller Hospital per 2014 LRDP Alternative to the Proposed NHPH

Aesthetics, Wind and Shadow

Aesthetics

The New Hospital under this alternative would result in overall less and smaller scale new development at the campus site compared to the New Hospital proposed under the NHPH. Under this alternative, this New Hospital would contain eight less floors and would be 167 feet shorter than the New Hospital proposed under the NHPH.

Scenic Vistas

From the scenic viewpoints, the New Hospital under this alternative would rise substantially lower on the skyline compared to the New Hospital proposed under the NHPH, and moreover, lower than the existing proximate campus buildings (including Moffitt and Long Hospitals). As such, this alternative would further reduce the proposed project's less than significant impacts on scenic vistas.

Scenic Quality

As under the NHPH, this alternative would have an adverse effect related to scenic quality if it were to conflict with UCSF 2014 LRDP policies governing scenic quality – namely, 2014 LRDP sub-objective 1D. Similar to the New Hospital proposed under the NHPH, the New Hospital under this alternative would be constructed concurrent with the proposed Parnassus Avenue Streetscape Plan. The Streetscape Plan improvements would serve to enhance the public realm as called for in UCSF's Physical Design Framework, and would be consistent with 2014 LRDP sub-objective 1D.

As discussed in Section 4.1, *Aesthetics, Wind, and Shadow*, the 2014 LRDP as amended excludes Objectives 1B and 1C from being applicable to the New Hospital. Nevertheless, it is acknowledged that while the New Hospital under this alternative would be considerably shorter than the New Hospital proposed under the NHPH, it would still exceed the City's 65-D Height and Bulk Districts. However, given the largely reduced size of the New Hospital under this alternative, its overall scale and density would contrast less with off-campus residential development to the east than the New Hospital proposed under the NHPH. Similar to the New Hospital proposed under the NHPH, the design of the New Hospital under this alternative would be required to be consistent with UCSF's Physical Design Framework and Parnassus Heights Design Guidelines. Given these factors, the New Hospital under this alternative, similar to the New Hospital proposed under the NHPH, would not conflict with the 2014 LRDP objectives related to scenic quality.

Lighting and Glare

This alternative would also have less impact related to new sources of light and glare compared to the New Hospital proposed under the NHPH, given the overall less development proposed, and the overall impact would be less than significant with mitigation, as with the proposed NHPH.

Wind

Given the overall smaller size and scale of the New Hospital under this alternative in comparison to that proposed under the NHPH, it is expected that this alternative would have fewer and less severe project and cumulative wind hazard impacts compared to the NHPH. The 2014 LRDP Final EIR assessed the environmental impacts from the development of the smaller New Hospital as envisioned in the 2014 LRDP and determined that potential wind impacts from this development should be less than significant, while acknowledging that the New Hospital would be subject to further project-level review as necessary under CEQA. The 2014 LRDP Final EIR also indicated that should the design shape of the New Hospital proposed under the 2014 LRDP change, it would be subject to mitigation requiring wind tunnel testing to verify compliance with the City's wind hazard criterion as defined in Planning Code Section 148, and as needed, would include feasible design measures to eliminate or reduce wind hazards. Thus, while a smaller New Hospital under this alternative would be expected to reduce the significant impact of the NHPH related to wind hazards, any conclusions would be subject to verification in a wind tunnel test of the smaller hospital design, as well as tested in conjunction with planned CPHP development assumed under this alternative, to determine the significance of project and cumulative wind impacts.

Shadows

Given the overall smaller size and scale, and lower height of the New Hospital under this alternative in comparison to the NHPH, and based on the shadow impact analysis conducted in the 2014 LRDP Final EIR, this alternative would create correspondingly less new shadow than the proposed NHPH, and would contribute less to cumulative shadowing of publicly accessible open spaces when compared to the NHPH. Similar to the proposed NHPH, shadow impacts of this alternative would be less than significant.

Air Quality

This alternative would result in less new construction activities associated with the smaller New Hospital compared to that proposed under the NHPH. Consequently, this alternative would involve less significant but mitigable project and cumulative impacts associated with construction emissions of criteria pollutants compared to the NHPH; would similarly mitigate fugitive dust impacts to a less-than-significant level with implementation of BAAQMD dust control measures; and would have lesser significant but mitigable project and cumulative impacts from the construction emissions of toxic air contaminants (TACs) and associated health risks for nearby sensitive receptors compared to the NHPH.

Furthermore, this alternative would result in a smaller increase in development and associated population and traffic increases at the Parnassus Heights campus site when compared to the NHPH. As a result, based on the air quality impact analysis conducted in the 2014 LRDP Final EIR, this alternative would have less project and cumulative impacts related to net increases of operational criteria pollutants that would occur under the NHPH; and less impact associated with exposure of sensitive receptors to substantial project and cumulative operational pollutant concentrations. Lastly, this alternative would also reduce the impact (albeit less than significant) associated with the NHPH's conflict with or obstruction of implementation of the applicable *Clean Air Plan.*

Biological Resources

This alternative would result in less new construction activities, and a smaller increase in development associated with a smaller New Hospital compared to the proposed NHPH, although similar to the NHPH, this alternative would locate the replacement medical gas tanks within the Reserve. As a result, overall extent of construction and development-related impacts to biological resources under this alternative would be less than that associated with the NHPH. Accordingly, this alternative would have less significant but mitigable project and/or cumulative construction-related effects on special-status plant and wildlife species than the proposed NHPH. In addition, given the smaller size and mass of the New Hospital under this alternative, it would have less significant project and/or cumulative impacts associated with potential resident and migrating bird strikes from new development, and would be similarly mitigated to less than significant with implementation of bird safe building treatment measures. This alternative would have a similar less than significant effect related to damage to or removal of landmark trees as the proposed NHPH.

Cultural Resources

This alternative would result in similar physical alteration of historical resources eligible for listing in the National Register and/or California Register as under the NHPH. Under both this alternative and the NHPH, the LPPI would be demolished to accommodate a New Hospital. This alternative would also modify the boundary of the Reserve (a cultural landscape), as under the NHPH.

Given the New Hospital under this alternative would occupy a somewhat smaller building footprint than that proposed under the NHPH, this alternative would result in incrementally less ground disturbing construction activities, including less excavation, compared to that which would occur for the NHPH. Similar to impacts of the proposed NHPH, potentially significant project and cumulative impacts to previously unknown archaeological resources, and human remains under this alternative would be mitigated to a less than significant level with the same mitigation measures. Potential effects to previously undiscovered or buried tribal cultural resources under this alternative would similarly be expected to be mitigated to a less than significant level, as under the NHPH.

Energy

This alternative would result in less new construction activities compared to the NHPH, and as a result, would have a lesser construction energy use impact compared to the NHPH. This alternative would also have a smaller increase in development and population compared to that associated with the NHPH, and consequently, would have lesser operational energy use than the NHPH. As such, the alternative would have similar less than significant project and/or cumulative impacts associated with consumption of energy resources as the NHPH; and would have a similar less than significant conflict with a state or local plan for renewable energy or energy efficiency.

Geology and Soils

Given the New Hospital under this alternative would occupy a somewhat smaller building footprint than that proposed under the NHPH, this alternative would result in incrementally less ground disturbing construction activities; and would result in and less new building construction compared to the NHPH. As a result, this alternative would have lesser potential project and/or cumulative impacts than the NHPH as it relates to effects of seismic ground shaking, liquefaction or unstable soils, landslides, and erosion from ground disturbance during construction.

Greenhouse Gas Emissions

This alternative would result in less new construction activities compared to the NHPH, resulting in reduced greenhouse gas (GHG) emissions. This alternative would also result in a smaller increase in building space and associated population and traffic increases at the Parnassus Heights campus site than under the NHPH, and consequently, operational-related GHG emissions would also be lower than with the NHPH. As with the proposed NHPH, the impact of the alternative's construction and operational GHG emissions would be less than significant with implementation of required mitigation. Also, similar to the NHPH, this alternative would not conflict with applicable plans, policies or regulations adopted for the purpose of reducing GHG emissions.

Hazards and Hazardous Materials

This alternative would result in less new construction activities compared to the NHPH. In addition, this alternative would result in a smaller increase in overall development, resulting in a smaller increase in hazardous materials use on the campus site than with the NHPH. With mitigation, resulting construction-phase impacts from exposure to naturally occurring asbestos and legacy contamination in soil would be less than significant for both the alternative and the NHPH. As with the NHPH and for the same reasons, the operational project and/or cumulative impacts of this alternative associated with routine transport, use, or disposal of hazardous materials; potential accidental release of hazardous materials; and emitting and handling of hazardous materials within one-quarter mile of an existing or proposed school, would be similarly less than significant.

Hydrology and Water Quality

Given the New Hospital under this alternative would occupy a somewhat smaller building footprint than that proposed under the NHPH, this alternative would result in less new construction and incrementally less ground disturbing activities, and a smaller increase in new impervious surfaces at the campus site, compared to the NHPH. Accordingly, this alternative would further reduce the NHPH's project and/or cumulative impacts, albeit less than significant, related to the potential to violate water quality discharges requirements; cause flooding; affect the capacity of stormwater drainage systems; increase sources of polluted runoff; impede or redirect storm flows; degrade surface or groundwater quality; and result in erosion and siltation, with compliance with the construction BMPs required by the NPDES Construction General Permit and operational design measures and LID stormwater requirements controls of the Phase II MS4 permit.

Land Use and Planning

This alternative would result in a smaller increase in development on the campus site compared to the NHPH. As a result, this alternative would have less overall project and/or cumulative impacts at the Parnassus Heights campus site associated with conflict with land use plans, policies and regulations adopted for the purpose of avoiding or mitigating an environmental effect, and incompatibility with adjacent land uses.

Noise and Vibration

This alternative would result in substantially less construction activities and a reduced duration of construction compared to the NHPH. Thus, this alternative would have lesser construction noise impacts and over a shorter duration than the proposed NHPH. However, there would still be a substantial increase in noise during construction compared to the baseline conditions, and the impact would continue to be significant and unavoidable, as under the NHPH.

Due to a smaller New Hospital, this alternative would result in fewer and/or less intense new stationary permanent noise sources, and less of an increase in traffic, thereby resulting in lesser operational noise than would occur under the NHPH, although mitigation to control stationary noise emissions would still be required. As a result, this alternative would reduce the significant but mitigable project and/or cumulative impacts related to permanent increases in ambient noise

levels from stationary noise sources in excess of applicable noise standards, and the less than significant project and/or cumulative impact associated with increases in traffic noise levels.

Population and Housing

This alternative would result in a smaller increase in the population at the Parnassus Heights campus site compared to the NHPH. As a result, this alternative would have less than significant project and/or cumulative impacts associated with inducement of population growth, and related new demand for housing, that would be reduced compared to the NHPH.

Public Services

This alternative would result in a smaller increase in development and population at the Parnassus Heights campus site compared to the NHPH. Consequently, this alternative would further reduce the NHPH's less than significant project and/or cumulative impacts on fire protection and public school facilities.

Recreation

This alternative would result in a smaller increase in development and population at the Parnassus Heights campus site compared to the NHPH. Consequently, this alternative would further reduce NHPH's less than significant project and/or cumulative impacts on existing neighborhood and regional parks or other existing on- and off-campus recreational facilities from increased use, and from the construction of new recreational facilities.

Transportation

This alternative would result in less construction than that which would occur under the NHPH, resulting in less construction traffic and fewer temporary disruptions. As under the NHPH, significant construction-related transportation impacts under this alternative would be mitigated to a less than significant level.

This alternative would result in a smaller increase in development and population and associated traffic at the Parnassus Heights campus site compared to the NHPH. Consequently, this alternative would further reduce the less than significant project and/or cumulative NHPH impacts due to conflicts with programs, plans, ordinances or policies addressing the circulation system; increases in VMT; increases in hazard due to design features; and emergency access.

This alternative would provide for the same transportation improvements for vehicles, bicycles and pedestrians as proposed under the NHPH to improve circulation and safety at the campus site, including the pedestrian overcrossing and tunnel for Parnassus Avenue and widening of Medical Center Way.

Utilities and Service Systems

This alternative would result in less new development and increase in population and associated increases in public utility demands at the Parnassus Heights campus site compared to the NHPH. Consequently, this alternative would further reduce the less than significant project and/or

cumulative impacts of the NHPH, including those associated with: construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities; effects on water supply availability during normal, dry and multiple dry years; effects on wastewater treatment capacity; effects on the capacity of local solid waste infrastructure, and compliance with federal, and state and local statutes and regulations related to solid waste.

However, while this alternative provides for some upgrades of aging infrastructure, it would not likely provide all the improvements proposed under the NHPH to upgrade infrastructure, and consequently, on-going maintenance issues associated with on-campus utilities may be greater than under this alternative.

Relationship of No Project - Smaller Hospital per 2014 LRDP Alternative to Project Objectives

The No Project - Smaller Hospital per 2014 LRDP Alternative would provide for continued implementation of the 2014 LRDP as amended, but excludes the 955,000 gsf New Hospital included in the CPHP and the 900,000 gsf New Hospital proposed under the NHPH. Rather, the hospital program assumed under this alternative is the version originally envisioned under the 2014 LRDP. The smaller New Hospital contemplated under the 2014 LRDP would provide for 140 beds, compared to the 336 beds proposed for the New Hospital under the NHPH. In addition, Moffitt Hospital would not be seismically upgraded, and as such, would not provide any inpatient beds after 2030; and Long Hospital inpatient bed capacity would be reduced to 291 beds. As a result, this alternative would provide a total of 431 inpatient beds at the Parnassus Heights campus site, which would be 251 fewer inpatient beds on the campus site compared to the beds proposed under the NHPH, and 44 fewer inpatient beds on the campus site compared to existing conditions.

As discussed in Chapter 3, *Project Description*, following the preparation of the 2014 LRDP, continued planning for the New Hospital resulted in the realization that the New Hospital and associated facilities would require more beds to meet the demand for inpatient care for a growing and aging Bay Area population, and to allow for the capacity to provide inpatient health care in times of severe strain without resorting to reducing or canceling non-essential surgeries to create bed capacity. The New Hospital proposed under this alternative would also not have sufficient space to meet modern regulatory requirements and industry standards of contemporary hospitals, such as construction codes, sizes of operating rooms, ratio of operating rooms to pre-and post-recovery areas, and space for privacy and infection control issues. As such, similar to the reasons discussed above under *Relationship of No Project – No Development Alternative to Project Objectives*, this alternative would also not fully achieve the 2014 LRDP clinical objectives for at the Parnassus Heights campus site, or fully meet the key objectives for the NHPH, and related space objectives for clinical uses at the Parnassus Heights campus site.

6.3.3 Alternative 2: Reduced Project

Description

The Reduced Project alternative is similar to the No Project - Smaller Hospital alternative described above, in that it includes a New Hospital that is smaller than the New Hospital included in the CPHP and under the NHPH (including in total square footage, building footprint, building height, and bed capacity); however, this alternative would be larger than the No Project - Smaller Hospital alternative. However, under this alternative, the New Hospital would be approximately 629,000 gsf (a reduction in size of 271,000 gsf compared to the New Hospital under the NHPH, or approximately 30 percent), and 12 stories and 212 feet in height (a reduction of 3 stories and about 82 feet). This alternative assumes the New Hospital would contain approximately 288 inpatient beds, instead of the 336 inpatient beds as proposed at the New Hospital under the NHPH. In this alternative, Moffitt Hospital would be renovated to meet SB 1953 seismic standards and to meet current code standards for inpatient use, and would include 49 inpatient beds (same as under the NHPH); and Long Hospital would house 297 beds (the same number of beds as under the NHPH). In total, this alternative would provide for 634 inpatient beds at the Parnassus Heights campus site, 48 less inpatient beds as under the NHPH, and an increase of 157 inpatient beds over existing conditions. Similar to the NHPH, it is assumed that the renovation of Moffitt Hospital, including for inpatient beds, would not take place until after 2030, once the New Hospital was complete.

All of the related improvements proposed as part of the NHPH would be implemented under this alternative. As such, the area of the medical gas tank site and encroachment into the Reserve under this alternative would be similar to that proposed under the NHPH. Similar to that under the NHPH, a minor revision to the 2014 LRDP to adjust the Reserve boundary and revise the campus site functional zones would be required.

Further, it is assumed that UCSF would continue implementation of the 2014 LRDP as amended, including previously approved demolition projects, such as the demolition of the LPPI; the construction of CPHP Initial Phase development by 2030, including the Irving Street Arrival and RAB projects; and construction of CPHP Future Phase development by 2050. UCSF would also continue implementation of the *Mount Sutro Open Space Reserve Vegetation Management Plan*, and on-going campus site maintenance programs and activities.

Comparison of Effects of Reduced Project Alternative to the Proposed NHPH

Aesthetics, Wind and Shadow

Aesthetics

The New Hospital under this alternative would result in overall less and smaller scale new development at the campus site compared to the New Hospital proposed under the NHPH. As discussed above, under this alternative, this New Hospital would occupy a smaller footprint, and would contain three less floors and would be 82 feet shorter than the New Hospital proposed under the NHPH.

Scenic Vistas

From the viewpoint at Grandview Park, the New Hospital under this alternative would rise lower on the skyline compared to the New Hospital proposed under the NHPH, and would similarly only slightly obstruct the existing view of downtown San Francisco from this perspective, and would not obstruct scenic views from this park in all other directions. Similarly, scenic views from other vantage points, including from the Tank Hill natural area, Buena Vista Park and Corona Heights Park would be less affected by the smaller New Hospital under this alternative as compared to New Hospital under the NHPH. As under the NHPH, this alternative would not result in a substantial adverse impact on scenic vistas from these viewpoints. When considering available vantage points from within the Reserve, such as from the Historic Trail, given its lower height, the New Hospital under this alternative would incrementally obstruct less of the northward scenic views across the campus core. Given the overall lack of long-range scenic views from within the Reserve, implementation of the alternative would also not adversely affect scenic vistas from within the Reserve, similar to the proposed NHPH. When considering the above, this alternative would further reduce the proposed project's less than significant impacts on scenic vistas.

Scenic Quality

As under the NHPH, this alternative would have an adverse effect related to scenic quality if it were to conflict with UCSF 2014 LRDP policies governing scenic quality – namely, 2014 LRDP sub-objective 1D. Similar to the New Hospital proposed under the NHPH, the New Hospital under this alternative would be constructed concurrent with the proposed Parnassus Avenue Streetscape Plan. The Streetscape Plan improvements would serve to enhance the public realm as called for in UCSF's Physical Design Framework, and would be consistent with 2014 LRDP sub-objective 1D.

As discussed in Section 4.1, *Aesthetics, Wind, and Shadow*, the 2014 LRDP as amended excludes Objectives 1B and 1C from being applicable to the New Hospital. Nevertheless, it is acknowledged that while the New Hospital under this alternative would be shorter than the New Hospital proposed under the NHPH, it would still exceed the City's 65-D Height and Bulk Districts. However, given the reduced size of the New Hospital under this alternative, its overall scale and density would contrast less with off-campus residential development to the east than the New Hospital proposed under the NHPH. While no specific design is assumed for the New Hospital under this alternative, to the extent it included architectural and design features similar to those proposed under the NHPH, including providing distinct horizontal layers, stepped terracing and landscaping elements, such features would serve to similarly break up the building mass and reduce the building's perceived scale and volume, and complement adjacent natural open space. Similar to the New Hospital proposed under the NHPH, the design of the New Hospital under this alternative would be required to be consistent with UCSF's Physical Design Framework and Parnassus Heights Design Guidelines. Given these factors, the New Hospital under this alternative, similar to the New Hospital proposed under the NHPH, would not conflict with the 2014 LRDP objectives related to scenic quality.

Lighting and Glare

This alternative would also have incrementally less impact related to new sources of light and glare compared to the New Hospital proposed under the NHPH, given the overall less development proposed, and the overall impact would be less than significant with mitigation, as with the proposed NHPH.

Wind

Because the New Hospital under this alternative would be 82 feet shorter than the New Hospital proposed under the NHPH, and if it were to include wind-reducing features, such as corner chamfering, similar to that New Hospital proposed under the NHPH, the New Hospital under this alternative could result in incrementally lower wind speeds in the vicinity of the New Hospital compared to those tested under the NHPH. Nevertheless, the New Hospital under this alternative would still represent a substantial increase in building height and bulk at the east end of the campus' Parnassus Avenue frontage, and thus could result in exceedances of the City's pedestrian wind hazard criterion, as with the NHPH. This would be a potentially significant effect.

Implementation of NHPH Mitigation Measure AES-4 (Design new buildings to minimize wind impacts at pedestrian level) and NHPH Mitigation Measure C-AES-3 (Design new cumulative buildings to minimize wind impacts at pedestrian level) would be required and would reduce the severity of the potentially significant project and cumulative wind impacts of this alternative. However, as under the NHPH, it cannot be stated with certainty that no wind hazard exceedances would result from this alternative, and therefore these impacts could be significant even with mitigation under the Reduced Project Alternative.

Shadows

This alternative would result in a New Hospital 82 feet shorter than under the NHPH. While no specific design is assumed for the New Hospital under this alternative, because this alternative would result in a reduction in New Hospital building height and mass compared to the NHPH, shadow effects from this alternative would be expected to have less impact than under the NHPH in terms of the amount and/or duration of new shadow. As under the NHPH, shadow under this alternative would affect publicly accessible open spaces, but not to an extent that would adversely or substantially impact the use and enjoyment of open spaces. Therefore, as under the NHPH, the overall shadow impacts under this alternative would also be less than significant on a project-level and cumulative basis.

Air Quality

This alternative would have less new construction activities associated with the reduced size of the New Hospital than that which would occur under the NHPH. Consequently, this alternative would involve less significant but mitigable project and cumulative impacts associated with construction emissions of criteria pollutants, and toxic air contaminants (TACs) and associated health risks at sensitive receptors, and would similarly require mitigation to reduce those effects to less-than-significant with the use of clean construction equipment and implementation of BAAQMD dust control measures.

This alternative would involve less new building development than the NHPH. In addition, this alternative involves fewer inpatient beds at the Parnassus Heights campus site than under the NHPH, and consequently, it would have correlating less associated population and traffic increases as under the NHPH. As such, project and cumulative impacts related to net increases of operational criteria pollutant emissions, and exposure of sensitive receptors to substantial project and cumulative operational pollutant concentrations, under this alternative would be less than those under the NHPH, and would be similarly less than significant.

Lastly, this alternative would have less impact associated with the CPHP's conflict with or obstruction of implementation of the applicable *Clean Air Plan*, and with mitigation the impact would similarly be reduced to less than significant.

Biological Resources

This alternative would have less new construction activities compared with the NHPH. However, similar to the NHPH, this alternative would locate the replacement medical gas tanks within the Reserve. As a result, overall extent of construction and development-related impacts to biological resources under this alternative would be less than those associated with the NHPH. Significant project and/or cumulative construction-related effects on special-status plant and wildlife species of this alternative would be similarly mitigated to a less-than-significant level with applicable survey and other biological resource mitigation measures similar to the proposed NHPH. In addition, given the reduced size of the New Hospital under this alternative, it would have reduced but still significant project and/or cumulative impacts associated with potential resident and migrating bird strikes from new development, and would similarly require bird safe building treatment mitigation measures to reduce the impact to less than significant. This alternative would have a similar less than significant effect related to damage to or removal of landmark trees as the proposed NHPH.

Cultural Resources

This alternative would result in similar physical alteration of historical resources eligible for listing in the National Register and/or California Register as the NHPH. Under both this alternative and the NHPH, the LPPI would be demolished to accommodate a New Hospital. This alternative would also modify the boundary of the Reserve (a cultural landscape) to accommodate the medical gas tanks site, as under the NHPH.

With an incrementally smaller building footprint assumed under this alternative, it would result in incrementally less ground disturbing construction activities, including less excavation, compared to that which would occur for the NHPH. Similar to impacts of the proposed NHPH, potentially significant project and cumulative impacts to previously unknown archaeological resources, and human remains could occur under this alternative and would require the same mitigation measures to mitigate the impacts to a less than significant level. Potential effects to previously undiscovered or buried tribal cultural resources would also occur under this alternative and would similarly be mitigated to a less than significant level, as under the NHPH.

Energy

This alternative would result in less construction activities compared to the NHPH and as a result, would have a reduced construction energy use impact compared to the NHPH. This alternative would involve less net new building square footage than the NHPH. In addition, this alternative proposes fewer inpatient beds at the Parnassus Heights campus site than under the NHPH. Consequently, this alternative would be expected to have less operational energy use than the NHPH. As such, the alternative would have lesser project and/or cumulative impacts associated with consumption of energy resources as the NHPH and similarly less than significant; and would also have a less than significant conflict with a state or local plan for renewable energy or energy efficiency.

Geology and Soils

With an incrementally smaller building footprint assumed under this alternative, it would result in incrementally less ground disturbing construction activities and new building construction compared to the NHPH, and therefore have overall less potential to result in effects on geology, soils and seismicity. Accordingly, this alternative would have reduced project and/or cumulative impacts than the NHPH related to effects of seismic ground shaking, liquefaction or unstable soils, landslides, and erosion from ground disturbance during construction, and those effects would be similarly less than significant with compliance with applicable regulatory requirements and the implementation of geotechnical design recommendations and/or mitigation.

Greenhouse Gas Emissions

This alternative would result in less construction activities compared to the NHPH. As a result, this alternative would result in lower construction-phase GHG emissions. This alternative would involve less new building space than the NHPH. In addition, this alternative proposes the fewer inpatient beds at the Parnassus Heights campus site compared to under the NHPH. Consequently, this alternative would have correlating less population and traffic increases at the Parnassus Heights campus site as the NHPH, and as a result, operational GHG emissions would be less than the emissions under the NHPH. Consequently, this alternative would have lesser significant but mitigable impacts as the NHPH related to construction and operational GHG emissions. Similar to the NHPH, this alternative would not conflict with applicable plans, policies or regulations adopted for the purpose of reducing GHG emissions.

Hazards and Hazardous Materials

This alternative would result in less construction activities compared to the NHPH. However, there would still be potential for significant construction-phase impacts resulting from exposure to naturally occurring asbestos and legacy contamination in soil, and the same mitigation measures would be required to mitigate both impacts to a less than significant level. This alternative would also result in a smaller increase in campus development, and fewer inpatient beds at the Parnassus Heights than under the NHPH. As a result, the associated increases in hazardous materials use that would occur with operations under this alternative would be less than the increases under the NHPH. As with the NHPH and for the same reasons, the operational project and/or cumulative impacts of this alternative associated with routine transport, use or

disposal of hazardous materials: potential accidental release of hazardous materials; and emitting and handling of hazardous materials within one-quarter mile of an existing or proposed school, would be less than the proposed NHPH, and similarly, less than significant.

Hydrology and Water Quality

This alternative would result in less new construction and incrementally less ground disturbing activities and a smaller increase in new impervious surfaces at the campus site, compared to the NHPH, and thus, would generate a smaller increase in runoff. With fewer beds assumed under this alternative compared to the NHPH, this alternative would also generate less operational wastewater than the proposed NHPH. Project and/or cumulative impacts related to the potential to violate water quality discharges requirements; result in flooding; affect the capacity of stormwater drainage systems; result in increased polluted runoff; impede or redirect storm flows; degrade surface or groundwater quality; and result in erosion and siltation, would be reduced compared to the proposed project and would be similarly less than significant, with compliance with the construction BMPs required by the NPDES Construction General Permit and operational design measures and LID stormwater requirements controls of the Phase II MS4 permit.

Land Use and Planning

This alternative would result in less new development compared to the NHPH, but would still require the minor amendment to the 2014 LRDP to revise the Reserve boundary and functional zones to accommodate the medical gas tanks. Overall, this alternative would have reduced project and/or cumulative impacts at the Parnassus Heights campus site associated with conflict with land use plans, policies and regulations adopted for the purpose of avoiding or mitigating an environmental effect, and incompatibility with adjacent land uses. With the proposed amendment to the 2014 LRDP, effects on land use would be less than significant, similar to the effect of the proposed NHPH.

Noise and Vibration

This alternative would have less new construction activities and a reduced duration of construction compared to the NHPH. Thus, this alternative would have reduced construction noise impacts than the proposed NHPH, however, the increase in noise during construction would be substantial and the alternative's impact would continue to be significant and unavoidable, as under the NHPH. Proposed mitigation involving implementation of construction noise control measures, limits on construction hours, and pile installation noise-reducing techniques would be required and would reduce this impact, but not to a level that is less than significant. Construction vibration impacts under this alternative would be significant but mitigable with implementation of vibration control measures, as under the NHPH.

Due to a smaller New Hospital, this alternative would result in fewer and/or less intense new permanent noise sources. With less development, the significant project and/or cumulative impact related to permanent increases in ambient noise levels from stationary noise sources in excess of applicable noise standards under this alternative would be less than with the proposed

NHPH and could be mitigated to a less than significant level with implementation of operational noise control measures, similar to the NHPH.

This alternative would have less traffic increases at the Parnassus Heights campus site than under the NHPH, and as a result, project and cumulative transportation noise impacts generated by this alternative would be less than the NHPH, and similarly, would be less than significant.

Population and Housing

This alternative would result in a smaller increase in the population at the Parnassus Heights campus site compared to the NHPH. As a result, this alternative would also have a less than significant project and/or cumulative impacts associated with inducement of population growth, and related new demand for housing as the NHPH.

Public Services

This alternative would result in less new development, and a smaller increase in population at the Parnassus Heights campus site compared to the NHPH, resulting in less demand for public services. For this reason, project and/or cumulative impacts associated with the need for new or altered fire protection or public school facilities would be less than significant, similar to the impacts of the proposed NHPH.

Recreation

This alternative would result in less new development and a smaller increase in population at the Parnassus Heights campus site compared to the NHPH. Consequently, project and/or cumulative impacts from the increase in the use of existing neighborhood and regional parks or other existing on- and off-campus recreational facilities, and from the construction of new recreational facilities under this alternative would be less than significant, as under the proposed NHPH.

Transportation

This alternative would result in less new construction at the Parnassus Heights campus site compared to the NHPH. Consequently, the significant construction-phase impact to travel conditions along sidewalks and roadways serving the campus site under this alternative would be reduced but not eliminated and would require the implementation of the same construction coordination and monitoring measures to mitigate the impact to a less than significant level.

This alternative would result in a smaller increase in population and associated operational traffic as the NHPH. This alternative would also provide many of same transportation improvements for vehicles, bicycles and pedestrians proposed under the NHPH to improve circulation and safety at the campus site, including the pedestrian overcrossing and tunnel for Parnassus Avenue, and widening of Medical Center Way. With less operational traffic, this alternative would also result in the less than significant project and/or cumulative impacts related to conflicts with programs, plans, ordinances or policies addressing the circulation system; increases in VMT; increases in hazard due to design features; and emergency access, as under the proposed NHPH.

Utilities and Service Systems

This alternative would result in less new development and a smaller increase in population, and associated smaller increases in public utility demands at the Parnassus Heights campus site, as the NHPH. As a result, project and/or cumulative impacts related to utilities and service systems under this alternative would be less than significant, as with the NHPH. This would include impacts associated with: construction of new or expanded water, wastewater conveyance and storm water drainage, electric power, natural gas, or telecommunications facilities; effects on water supply availability during normal, dry and multiple dry years; effects on wastewater treatment capacity; effects on capacity of local solid waste infrastructure, and compliance with federal, and state and local statutes and regulations related to solid waste.

Relationship of Reduced Project Alternative to Project Objectives

This alternative would include a smaller New Hospital that would be approximately 30 percent smaller than the New Hospital under the NHPH. The New Hospital under this alternative would contain approximately 288 beds, instead of the 336 inpatient beds in the New Hospital under the NHPH. It is further assumed that Moffitt Hospital would include about 49 beds following its renovation to meet SB 1953 seismic standards; and Long Hospital would provide 297 beds; for a total 634 beds at the Parnassus Heights campus site - 48 less inpatient beds than under the NHPH. However, even with a renovation of Moffitt Hospital under this alternative, it would continue to be outdated, undersized, and inflexible, including for emergency room, surgery rooms, procedure rooms, patient rooms, the clinical lab, pharmacy, and sterile processing spaces. In addition, floor to ceiling heights in Moffitt Hospital are not tall enough to accommodate contemporary equipment, and as such, are considered inadequate for modern hospital operations. For these reasons, this alternative would not fully achieve the 2014 LRDP clinical objectives for the Parnassus Heights campus site, or fully meet the key objectives of the NHPH project, and related space objectives for clinical uses at the Parnassus Heights campus site.

6.3.4 Alternative 3: New Hospital - Phased Option

This alternative is similar to the proposed NHPH, with the exception of the design and phasing of the New Hospital, removal of Moffitt Hospital, and inclusion of the NHPH related improvements. This alternative would develop the New Hospital in two phases, on the sites of both LPPI and Moffitt Hospital. Following the demolition of LPPI and supporting buildings, Phase 1 would construct a hospital with about 234 inpatient beds in a 566,000 gsf, 13-story building (four-story podium plus nine-story tower). Phase 2 would involve demolition of Moffitt Hospital and the new construction of an adjoining hospital with about 123 inpatient beds in a 359,000 gsf, 10-story building (four-story podium plus six-story tower). The New Hospital under this alternative would contain one basement floor, similar to the NHPH. In total under this alternative, the New Hospital would be slightly larger (925,000 gsf) and larger bed capacity (357 beds) than proposed at the New Hospital proposed under the NHPH. It is assumed Long Hospital would maintain the same number of inpatient beds (325) as under existing conditions. In total, this alternative would provide 682 inpatient beds at the Parnassus Heights campus site, the same as under the NHPH, although the total bed count under this alternative would not be provided until Phase 2 of the New Hospital is completed in the late 2030s or early 2040s.

All of the related improvements proposed as part of the NHPH would also be implemented under this alternative. As such, the medical gas tank site and encroachment into the Reserve under this alternative would be similar to that under the NHPH. Similar to that proposed under the NHPH, a minor revision to the 2014 LRDP to adjust the Reserve boundary and revise the campus site functional zones would be required.

Further, it is assumed that UCSF would continue implementation of the 2014 LRDP as amended, including previously approved demolition projects, such as the demolition of the LPPI; the construction of CPHP Initial Phase development by 2030, including the Irving Street Arrival and RAB projects; and construction of CPHP Future Phase development by 2050. UCSF would also continue implementation of its existing plans and programs at Parnassus Heights not associated with the 2014 LRDP and/or CPHP, including, but not limited to, the *Mount Sutro Open Space Reserve Vegetation Management Plan*, and on-going campus site maintenance programs and activities.

Comparison of Effects of the New Hospital - Phased Option to the Proposed NHPH

Aesthetics, Wind and Shadow

Aesthetics

The New Hospital under this alternative would occupy a broader footprint and require demolition of both LPPI and Moffitt Hospital. It would be two to five floors shorter than the New Hospital proposed under the NHPH. In addition, because of phasing, the full buildout of this New Hospital would not be complete and visible until the late 2030s or early 2040s.

Scenic Vistas

From the viewpoint at Grandview Park, the New Hospital under this alternative would rise lower on the skyline although it would be incrementally more broad, when compared to the New Hospital under the NHPH, and would similarly only slightly obstruct the existing view of downtown San Francisco from this perspective, and would not obstruct scenic views from this park in all other directions. Similarly, scenic views from other vantage points, including from the Tank Hill natural area, Buena Vista Park and Corona Heights Park would be less affected by the shorter New Hospital under this alternative as compared to New Hospital under the NHPH. Consequently, as with the NHPH, this alternative would not result in a substantial adverse impact on scenic vistas from these viewpoints. When considering available vantage points from within the Reserve, such as from the Historic Trail, given its lower height, the New Hospital under this alternative would incrementally obstruct less of the northward scenic views across the campus core. However, as with the conclusion reached for the NHPH, given the overall lack of long-range scenic views from within the Reserve, implementation of this alternative would similarly not adversely affect scenic vistas from within the Reserve. When considering the above, the impact of this alternative on scenic vistas would be reduced compared to those of the proposed project and would also be less than significant.

Scenic Quality

As under the NHPH, this alternative would have an adverse effect related to scenic quality if it were to conflict with UCSF 2014 LRDP policies governing scenic quality– namely, 2014 LRDP sub-objective 1D.

Similar to the New Hospital under the NHPH, the New Hospital under this alternative would be constructed concurrent with the proposed Parnassus Avenue Streetscape Plan. The Streetscape Plan improvements would serve to enhance the public realm as called for in UCSF's Physical Design Framework, and would be consistent with 2014 LRDP sub-objective 1D.

As discussed in Section 4.1, *Aesthetics, Wind, and Shadow*, the 2014 LRDP as amended excludes Objectives 1B and 1C from being applicable to the New Hospital. However, while the New Hospital under this alternative would be shorter than the New Hospital under the NHPH, the New Hospital under this alternative may slightly exceed the height limits of the City's 220-F height districts, and would exceed the City's 65-D height limit. However, given the reduced height of the New Hospital under this alternative, it would contrast incrementally less with off-campus residential development to the east than the New Hospital under the NHPH. While no specific design is assumed for the New Hospital under this alternative, to the extent it included architectural and design features similar to those proposed under the NHPH, including providing distinct horizontal layers, stepped terracing and landscaping elements, such features would similarly serve to break up the building mass and reduce the building's perceived scale and volume, and complement adjacent natural open space. Similar to the New Hospital under the NHPH, the design of the New Hospital under this alternative would be required to be consistent with UCSF's Physical Design Framework and Parnassus Heights Design Guidelines. Given these factors, the New Hospital under this alternative, similar to the New Hospital under the NHPH, would not conflict with the 2014 LRDP objectives related to scenic quality.

Lighting and Glare

This New Hospital under this alternative would also have incrementally less impact related to new sources of light and glare compared to the NHPH given the shorter hospital height, but mitigation would still be required, and the overall impact would similarly be reduced to less than significant with mitigation.

Wind

Under this alternative, the New Hospital would be wider and shorter than the New Hospital under the NHPH. The phased New Hospital would also create a longer street wall fronting Parnassus Avenue than the combination of the NHPH's New Hospital and the existing Moffitt Hospital, given that large portions of Moffitt Hospital's northern walls are set back from the street. On the other hand, the eastern portion of the phased New Hospital would be two to five stories shorter than the New Hospital under the NHPH and the western portion would be five stories shorter than the existing Moffitt Hospital. Nevertheless, the New Hospital under the phased alternative would still result in a substantial increase in building height and bulk at the east end of Parnassus Avenue on the campus site, compared to existing conditions, which could result in wind speeds that exceed the City's pedestrian wind hazard criterion along Parnassus Avenue—a significant effect, similar to what would be anticipated under the NHPH.

Implementation of NHPH Mitigation Measure AES-4 (Design new buildings to minimize wind impacts at pedestrian level) and NHPH Mitigation Measure C-AES-3 (Design new cumulative buildings to minimize wind impacts at pedestrian level) would reduce the severity of the potentially significant project and cumulative wind impacts of this alternative. However, as with the NHPH, it cannot be stated with certainty that no wind hazard exceedances would result from the New Hospital, and therefore these impacts could be significant even with mitigation under the New Hospital Phased Option Alternative.

Shadows

Under this alternative, the New Hospital would occupy a broader footprint along Parnassus Avenue than the New Hospital under the NHPH because Phase 2 would occupy the footprint of Moffitt Hospital. The New Hospital under this alternative would also be two to five floors shorter than the New Hospital under the NHPH. All other development at the campus site under this alternative would have building heights the same as that proposed under the NHPH. While no specific design is assumed for the New Hospital under this alternative, because this alternative would result in a reduction in the overall height of the New Hospital, shadow effects from this alternative would be reduced compared to the NHPH. Overall, shadow under this alternative would affect publicly accessible open spaces, but not to an extent that would adversely or substantially impact the use and enjoyment of open spaces. Therefore, as under the NHPH, the overall shadow impact under this alternative would also be less than significant on a project-level and cumulative basis.

Air Quality

This alternative would involve slightly more new construction (925,000 gsf compared to 900,000 gsf under the NHPH) as well as more demolition because Moffitt Hospital would be demolished to construct Phase 2. In addition, construction would occur over a longer time period, with Phase 2 of the New Hospital completed in the late 2030s or early 2040s. Consequently, this alternative could result in somewhat greater construction-related air pollutant emissions, over a longer time period. This would likely result in a similar significant but mitigable impact associated with construction and demolition emissions of criteria pollutants, and TACs and associated health risks at sensitive receptors. The same mitigation measures, including use of clean construction equipment and implementation of BAAQMD dust control measures, would be required and would mitigate those effects to less than significant, as with the NHPH.

This alternative would result in a similar increase in operational space on the campus site and the same population and traffic increases compared to the NHPH. As a result, this alternative would have similar less than significant project and cumulative impacts related to net increases of operational criteria pollutant emissions as would occur under the NHPH. For the same reason, this alternative would also have similar significant but mitigable NHPH impact associated with exposure of sensitive receptors to substantial project operational pollutant concentrations and require similar mitigation to reduce DPM to mitigate those significant effects to less than significant. The impact associated with the exposure of sensitive receptors to substantial cumulative operational pollutant concentrations under this alternative would be less than significant, as under the NHPH. Lastly, this alternative would have a similar less than significant impact associated with the conflict with or obstruction of implementation of the applicable *Clean Air Plan*.

Biological Resources

This alternative would involve slightly more construction activities compared to the NHPH, and there would be additional demolition of Moffitt Hospital. Similar to the NHPH, this alternative would locate the replacement medical gas tanks within the Reserve. Also, buildout of the New Hospital would occur over a longer time period, with Phase 2 of the New Hospital completed in the late 2030s or early 2040s. As a result, the overall extent of construction and development-related impacts to biological resources under this alternative would be similar to those associated with the NHPH. Significant project and/or cumulative construction-related effects on special-status plant and wildlife species of this alternative would be mitigated to less-than-significant with applicable survey and other biological resource mitigation measures similar to the proposed NHPH; significant project and/or cumulative impacts associated with potential resident and migrating bird strikes from new development would be similarly mitigated to less than significant with implementation of bird safe building treatment measures; and this alternative would have a similar less than significant effect related to damage to or removal of landmark trees.

Cultural Resources

This alternative would result in similar impacts on historical resources eligible for listing in the National Register and/or California Register as under the NHPH. Under both this alternative and the NHPH, the LPPI would be demolished to accommodate a New Hospital. Moffitt Hospital would also be demolished under this alternative but it is not considered eligible for the National Register or California Register. This alternative would also modify the boundary of the Reserve (a cultural landscape) to accommodate the medical gas tanks site, as under the NHPH.

This alternative would result in more ground disturbing construction activities compared to the NHPH because of the larger footprint of the New Hospital under this alternative. Potentially significant project and cumulative impacts to previously unknown archaeological resources, human remains, and/or tribal cultural resources would occur under this alternative and would require the same mitigation measures to be mitigated to a less than significant level.

Energy

This alternative would result in slightly more construction activities compared to the NHPH, and the additional demolition of Moffitt Hospital, given its different building footprint. Also, construction of the new hospital would occur over a longer time period, with Phase 2 of the New Hospital occurring in the CPHP Future Phase. As a result of the slightly more building space, this alternative would use a comparable or slightly greater amount of energy during construction compared to the NHPH. For the same reason, this alternative would result in generally comparable operational energy use as under the NHPH. As such, the alternative would have a similar less than significant project and/or cumulative impact associated with consumption of energy resources as the NHPH; and would have a similar less than significant conflict with a state or local plan for renewable energy or energy efficiency.

Geology and Soils

This alternative would result in greater ground disturbing construction activities and building construction compared to the NHPH, as it would require the demolition of Moffitt Hospital and new construction on its cleared site. Accordingly, this alternative would have similar or incrementally greater project and/or cumulative impacts than the NHPH related to effects of seismic ground shaking, liquefaction or unstable soils, landslides, and erosion from ground disturbance during construction.

Greenhouse Gas Emissions

This alternative would result in slightly greater construction activities compared to the CPHP, and the additional demolition of Moffitt Hospital, given its different building footprint. Also, construction of the New Hospital would occur over a longer time period, with construction of Phase 2 of the New Hospital occurring in the CPHP Future Phase. Based on the generally similar amount of new building space as the NHPH, this alternative would result in similar construction-related GHG emissions at the Parnassus Heights campus site. For the same reason, this alternative would result in similar or slightly greater operational GHG emissions as the NHPH. Consequently, this alternative would have a similar significant but mitigable impact related to GHG emissions. Similar to the NHPH, this alternative would not conflict with applicable plans, policies or regulations adopted for the purpose of reducing GHG emissions.

Hazards and Hazardous Materials

This alternative would result in slightly more construction activities compared to the NHPH, and would require the demolition of Moffitt Hospital, given its different building footprint. As with the NHPH, there would be potential for significant construction-phase impacts resulting from exposure to naturally occurring asbestos and legacy contamination in soil, and the same mitigation measures would be required to mitigate both impacts to a less than significant level. With generally similar overall new building space, this alternative would result in a similar increase in operations, and the associated increases in hazardous materials use as under the NHPH. As with the NHPH, the operational project and/or cumulative impacts of this alternative associated with the routine transport, use, or disposal of hazardous materials; potential accidental release of hazardous materials; and emitting and handling of hazardous materials within one-quarter mile of an existing or proposed school, would be similarly less than significant.

Hydrology and Water Quality

This alternative would result in generally similar new construction and ground disturbing activities as the NHPH, although would additionally require the demolition of Moffitt Hospital. Similar to the proposed NHPH, compliance with the construction BMPs required by the NPDES Construction General Permit and operational design measures and LID stormwater requirements controls of the Phase II MS4 permit would ensure that project and/or cumulative impacts related to the potential to violate water quality discharges requirements; cause degradation of surface or groundwater quality; cause erosion and siltation; cause flooding; affect the capacity of stormwater drainage systems; introduce additional sources of polluted runoff; or impede or redirect storm flows, would be less than significant.

Land Use and Planning

This alternative would result in substantially same amount of new development as the NHPH, although it would additionally require the demolition of Moffitt Hospital. Overall, this alternative would have similar project and/or cumulative impacts at the Parnassus Heights campus site associated with conflict with land use plans, policies and regulations adopted for the purpose of avoiding or mitigating an environmental effect, and incompatibility with adjacent land uses. With the proposed amendment to the 2014 LRDP to revise the Reserve boundary and functional zones to accommodate the medical gas tank site, effects on land use would be less than significant, similar to with the proposed NHPH.

Noise and Vibration

This alternative would involve a comparable amount of new construction activities as that proposed under the NHPH, but would require the additional demolition of Moffitt Hospital, given its different building footprint. Also, construction of the New Hospital would occur over a longer time period, with construction of Phase 2 of the New Hospital occurring sometime in the CPHP Future Phase. Overall, project and cumulative construction-generated noise effects under this alternative would be comparable to those under the NHPH and would similarly be significant and unavoidable, even with implementation of construction noise control measures, limits on construction hours, and pile installation noise-reducing techniques. Construction vibration impacts under this alternative would be significant but mitigable with implementation of vibration control measures, as under the NHPH.

This alternative would result in a similar amount of traffic as the NHPH, and consequently, transportation noise generated by this alternative would be similar to that under the NHPH. The significant project and/or cumulative impact related to permanent increases in ambient noise levels from stationary noise sources in excess of applicable noise standards would also occur under this alternative and would be similarly mitigated to a less than significant level with implementation of operational noise control measures.

Population and Housing

This alternative would result in a similar increase in the existing population at the Parnassus Heights campus site as with the NHPH. As a result, as with the NHPH, this alternative would have similar less than significant project and/or cumulative impacts associated with inducement of population growth, and related new demand for housing.

Public Services

This alternative would result in a similar increase in development and population at the Parnassus Heights campus site as with the NHPH. Consequently, as with the NHPH, this alternative would have similar less than significant project and/or cumulative impacts associated with need for new or altered fire protection or public school facilities.

Recreation

This alternative would result in a similar amount of new development and increase in population at the Parnassus Heights campus site as with the NHPH. Consequently, as with the NHPH, this alternative would have similar less than significant project and/or cumulative impacts from the increase in the use of existing neighborhood and regional parks or other existing on- and off-campus recreational facilities, and from the construction of new recreational facilities.

Transportation

This alternative would result in a similar amount of new construction at the Parnassus Heights campus site as with the NHPH, with the exception being the additional demolition of Moffitt Hospital, given its different building footprint. Consequently, the significant construction impact to travel conditions along sidewalks and roadways serving the campus site would occur under this alternative and would be similarly mitigated to a less than significant level with implementation of construction coordination and monitoring measures.

This alternative would result in a similar amount of new building development and increase in population and associated traffic at the Parnassus Heights campus site as with the NHPH. This alternative would provide the same transportation improvements for vehicles, bicycles and pedestrians proposed as under the NHPH to improve circulation and safety at the campus site, including the Fourth Street extension, the overcrossing and tunnel for Parnassus Avenue and widening of Medical Center Way. This alternative would have similar less than significant project and/or cumulative impacts related to conflicts with programs, plans, ordinances or policies addressing the circulation system; increases in VMT; increases in hazard due to design features; and emergency access.

Utilities and Service Systems

This alternative would result in a similar amount of new development and increase in population, and associated increases in public utility demands at the Parnassus Heights campus site, as with the NHPH. Consequently, project and/or cumulative impacts under this alternative would be similarly less than significant as that identified for the NHPH, including those associated with: construction of new or expanded water, wastewater conveyance or storm water drainage, electric power, natural gas, or telecommunications facilities; effects on water supply availability during normal, dry and multiple dry years; effects on wastewater treatment capacity; effects on capacity of local solid waste infrastructure, and compliance with federal, and state and local statutes and regulations related to solid waste.

Relationship of New Hospital - Phased Option to Project Objectives

As discussed under the description of the New Hospital - Phased Option, the New Hospital would be built in two phases, on the site of LPPI and Moffitt Hospital. Phase 1 would include 234 inpatient beds, and in conjunction with 325 beds at Long Hospital, would provide a total of 559 inpatient beds at the campus site in 2030. Phase 2 developed later would include 123 additional inpatient beds, and together with Phase 1 would provide the same total number of new beds (357) and have the same building square footage as that proposed under the NHPH, and in conjunction

with the beds at Long Hospital have the same total bed capacity (682 beds) at the campus site as proposed under the NHPH.

UCSF indicates that a minimum of 682 beds at Parnassus Heights campus site are necessary to address inpatient demand. This alternative would not provide sufficient number of beds until Phase 2 of the New Hospital is completed in the late 2030s or early 2040s. This alternative would also not supply an adequate number of operating rooms in the near-term, to address patient demand. Accordingly, this alternative would not fully meet the key project objectives for the New Hospital.

6.4 Alternatives Considered but Dismissed from Detailed Evaluation

CEQA Guidelines Section 15126.6(c) requires an EIR to identify and briefly discuss any alternatives that were considered by the lead agency but were rejected as infeasible during the scoping process. In identifying alternatives for detailed evaluation, primary consideration was given to alternatives that could reduce significant impacts while still meeting most of the basic project objectives, and alternatives that did not reduce impacts or did not meet most of the basic project objectives were dismissed from detailed evaluation.

6.4.1 No New Hospital at Parnassus Heights Campus Site / Implement Phase 2 of Medical Center at Mission Bay Campus Site

This potential alternative would not develop the New Hospital proposed at the Parnassus Heights campus site under the NHPH. Rather, UCSF would continue to advance development of "Phase 2" of the Medical Center at the Mission Bay campus site. As previously analyzed in the 2008 *UCSF Medical Center at Mission Bay Final EIR*, Phase 2 of the Medical Center is a future phase of the Medical Center at Mission Bay, and would be developed within remaining acreage of Blocks 38-39 at that campus site. Phase 2 would consist of 793,500 gsf of new development, comprised of a 261-bed hospital, medical office space, hospital support, and parking. With no New Hospital developed at the Parnassus Heights campus site, this potential alternative assumes 291 beds would be provided at Long Hospital, and up to 100 beds would be available at Moffitt Hospital (following retrofitting and renovation of this building for inpatient beds), for a total of 391 beds.

As such, this potential alternative would result in an estimated 291 fewer overall beds at Parnassus Heights campus site, and hence at UCSF campus-wide, than under the proposed NHPH. As discussed in Chapter 3 *Project Description*, under Project Need, there are bed shortages for critical and acute care in San Francisco, the greater Bay Area, and beyond, particularly for the tertiary and quaternary level of care provided by UCSF. In addition, this potential alternative would not meet this growing demand, or allow for an expansion of emergency, surgical, interventional radiology, and imaging services, at the Parnassus Heights campus site. Also, given that the Parnassus Heights campus site is the hub for the five professional programs and the majority of adult clinical care, the absence of a New Hospital at

the Parnassus Heights campus site would not allow UCSF to achieve the benefits that can be realized through interdisciplinary collaboration and convergence between clinical care, research, and education.

As such, this potential alternative would conflict with several 2014 LRDP objectives for the Parnassus Heights campus site, including to ensure operational efficiency, effectiveness and proximity of clinical uses with other campus site uses; and ensure that Long Hospital and the New Hospital have adequate clinical and administrative support and are aligned with education, research and specialized care programs and support that remain at the campus site. This alternative would also conflict with a number of CPHP objectives, including to revitalize the aging Parnassus Heights campus to enhance its place as a premier educational, research, and clinical institution, and fulfill the need for contemporary research, educational, clinical, and support spaces; and key objectives for the New Hospital, including to develop a new inpatient facility to optimize operational activities with other clinical facilities at Parnassus Heights; increase inpatient beds at Parnassus Heights to address severe constraints on capacity and access to care; meet the needs of a growing and aging Bay Area population; and develop spaces for clinical and translational research and learning in or adjacent to clinical areas where patients are located; and those objectives for meeting regulatory (including seismic) and modern industry standards, and patient satisfaction.

This potential alternative would eliminate the significant wind impact identified in the vicinity of the New Hospital site at Parnassus Heights, and avoid a number of temporary construction and operational impacts associated with the New Hospital at the Parnassus Heights campus site that would occur under the proposed NHPH. However, by not developing a New Hospital at the Parnassus Heights campus site, and focusing future new clinical uses at the Mission Bay campus site, this potential alternative would also result in decreased efficiency for UCSF staff and students, and therefore have the potential to increase cross-town traffic between Parnassus Heights and Mission Bay campus sites, and related transportation effects and air emissions.

For these reasons, this potential alternative was not carried forward for detailed evaluation.

6.4.2 New Hospital on UC Hall Site

This potential alternative considers development of a New Hospital of similar size and capability as that proposed under the NHPH on the west side of the campus core, at the site of UC Hall and a portion of the adjacent Dentistry Clinics Plaza. A similar-sized option was analyzed in the 2005 *UCSF 2005 LRDP Amendment #2 -Hospital Replacement Final EIR*, which assumed a new hospital of up to 400 beds, 800,000 gsf, and about 180 feet in height (11 stories)[1]. The New Hospital program proposed under the NHPH of 336 beds and about 900,000 gsf, if located on the UC Hall site on approximately the same footprint, would be approximately 13 to 14 stories, depending on massing.

Under the CPHP, the UC Hall site is planned for the RAB. As such, the development of a New Hospital at the site of UC Hall under this alternative would displace research and academic uses

[1] Excluding about 20 feet in height of rooftop mechanical equipment on the site of UC Hall.

envisioned to be developed at that site under the CPHP, and therefore, would necessitate relocation of those uses elsewhere on the campus site or possibly to a different campus site. However, UCSF research activities are an integral part of both the clinical and teaching missions of the University. Furthermore, existing research activities at Parnassus Heights currently operate in inadequate and outdated facilities which threaten researcher recruitment and retention. In addition, by dispersing the proposed groupings of land uses envisioned under the CPHP, this relocation scheme would diverge with a fundamental goal of the CPHP to consolidate clinical uses in the Clinical East End district, and research and academic uses within the Research and Academic Commons district. The development of New Hospital at a site physically distant from Moffitt and Long Hospitals under this alternative would not facilitate operational efficiency with these hospitals, including inpatient facilities, ambulatory care clinics, support, and parking.

The development of a New Hospital at the site of UC Hall would also be constrained by the site size and access, making it difficult or impossible to meet the functional needs of a new hospital. Specifically, the insufficient site area would result in floor plate sizes that would be inadequate for the amount of space and functionality of space necessary for a contemporary hospital. In addition, the UC Hall site would be inadequate to accommodate proper vehicular circulation along Parnassus Avenue for ambulances, patient drop-off, and deliveries. Also, while vehicular traffic associated with a New Hospital at the site of UC Hall could be routed to the back of this site via Koret Way, such scheme could impact residents on 5th Avenue and Kirkham Street.

As such, this potential alternative would conflict with the 2014 LRDP clinical objective for the Parnassus Heights campus site, including to ensure operational efficiency, effectiveness and proximity of clinical uses with other campus site uses; and ensure that Long Hospital and the New Hospital have adequate clinical and administrative support and are aligned with education, research and specialized care programs and support that remain at the campus site. This alternative would also conflict with a number of CPHP objectives, including to improve the campus's functional organization; improve campus circulation options to reduce impacts on the surrounding neighborhood; site and develop a new inpatient facility in a way that optimizes operational activities with other clinical facilities at Parnassus Heights; develop a new inpatient facility that is optimized in its spatial layout to enhance functionality and efficiency; and develop spaces for clinical and translational research and learning in or adjacent to clinical areas where patients are located.

While this potential alternative would reduce the significant wind impacts in the vicinity of the proposed New Hospital location under the NHPH, it would also have the potential to introduce significant new wind impacts at the UC Hall site.

For these reasons, this potential alternative was not carried forward for detailed evaluation.

6.4.3 New Hospital at Mount Zion Campus Site

This potential alternative would construct a New Hospital at the UCSF Mount Zion campus site, as previously studied in the 2002 *UCSF Mount Zion Master Planning Study*, either on the main block site (bounded by Divisadero, Post, Scott, and Sutter Streets) or on the south block (bounded by Divisadero, Geary, Scott, and Post Streets).

This potential alternative would result in UCSF hospitals operating at three different campus sites (Parnassus Heights, Mission Bay, and Mount Zion) which would be less than ideal and inefficient. Also, given that the Parnassus Heights campus site is the hub for the five professional programs and the majority of adult clinical care, the absence of a New Hospital at the Parnassus Heights campus site would not allow UCSF achieve the benefits that can be realized through interdisciplinary collaboration and convergence between clinical care, research and education. Lastly, UCSF does not own the Mount Zion south block sites, which are owned by many entities, making land acquisition difficult. This potential alternative would conflict with many of the same 2014 LRDP and CPHP objectives described under Section 6.4.1, above.

This potential alternative would reduce the significant wind impact identified in the vicinity of the New Hospital site at Parnassus Heights, and avoid a number temporary construction and operational impacts associated with the New Hospital at the Parnassus Heights campus site, although most of these impacts would simply be shifted to the UCSF Mount Zion campus site. This potential alternative would also result in decreased efficiency for UCSF staff and students, and therefore have the potential to increase traffic between Parnassus Heights, and other hospital campus sites, and related transportation effects and air emissions.

For these reasons, this potential alternative is not carried forward for detailed evaluation.

6.4.4 Shorter New Hospital with Additional Basement Levels

This potential alternative assumes development of a shorter New Hospital at the NHPH site with fewer above-ground levels, but with additional below-ground (basement) levels.

The New Hospital as proposed under the NHPH incorporates one full basement level. Because the New Hospital site is sloped upward to the south, portions of Level 1 on the south side of the proposed New Hospital would be below grade as well. While it would be technically feasible to excavate, construct, and occupy additional level(s) below grade, such an alternative would not achieve basic goals of the proposed project, and would introduce substantial construction, operational, and schedule constraints, and increase construction-related environmental impacts.

First, there is little programmatic rationale or clinical need for additional basement levels in the New Hospital. Only certain hospital programs can occupy windowless floors. The proposed design already has a notable amount of programmed space below grade, including mechanical, storage, and Sterile Processing. While some limited other programs (e.g., imaging, kitchen, pharmacy) could occupy windowless space, it is generally desired to have work space for most of the New Hospital programs with access to natural light.

Second, the creation of additional subgrade floor(s) for the New Hospital would require additional excavation and off-hauling of materials, create additional related environmental impacts (including construction air emissions, dust and noise generation), increase the complexity of construction, and extend the construction schedule. It is estimated that each additional basement level would require excavation of an additional 44,500 cubic yards. Increased excavation of construction would increase the potential for encountering solid rock located at depth, which would require additional noise generating activities such as

jackhammering, and bucket loading of rock into truck beds. Aside from excavation, there are also additional complexities of conducting below grade work, including concrete shoring, tiebacks and utility connections) compared to relatively simpler steel framing & concrete decks constructed above grade. Deeper foundations for this potential alternative would result in additional required underpinning at depths below the foundations of the adjacent Moffitt and Long Hospitals, and consequently, would introduce new surcharges requiring tiebacks under these hospitals. It is estimated that creation of each additional basement level would introduce a net 2 to 3-month addition (e.g., when accounting for reduced above-grade construction) in the overall construction schedule.

Because of these constraints, materials and labor required for below-grade work, subgrade construction is more expensive than above grade. Delays due to redesign would also introduce additional design costs. A delayed construction start and an overall increase (per above, approximately 2 to 3 months per additional below grade floor) in construction duration would introduce additional cost escalation of $8 to $9 million per month.

Lastly, a New Hospital design involving additional basement levels would also have implications for the project schedule and would affect UCSF's ability to meet the SB-1953 deadline of December 31, 2030 to create seismically safe beds to replace unsafe beds that must be removed from service by that time. The potential change in design would require a complete reassessment of the building for its programming, in addition to the structural and architectural design time required to document this change. It is estimated this redesign effort would delay the required approvals to meet the SB-1953 deadline of December 31, 2030 by at least 6 months.

For these reasons, this potential alternative was not carried forward for detailed evaluation.

6.4.5 Develop Proposed Medical Gas Tanks Replacement Site at Location Outside of Reserve

This potential alternative assumes that the medical gas tanks replacement site would be developed at a campus site outside of the Reserve, instead of its presently proposed location within the Reserve.

In 2021, UCSF conducted an extensive siting study to identify a preferred location for bulk oxygen storage at the campus site. Thirteen potential locations within the campus core were considered in the siting study. Of these, nine locations were eliminated from consideration due to being either technically infeasible, having insufficient space, and/or being unavailable. The four remaining locations were studied as preferred sites:

- Along Parnassus Avenue (the Ammonia House site)
- In the west campus (within the Koret parking lot)
- Within the Reserve (east of Medical Center Way)
- Within the New Hospital building

The Ammonia House site was not selected because it posed issues of disruption on Parnassus Avenue, had high public visibility, was in close proximity to off-site neighbors, and would result

in certain localized effects to the Reserve (including tree removal and regrading). The Koret parking lot site was not selected as it was determined to conflict with planned development under the CPHP, and was too distant from the campus site hospitals and Central Utility Plant (CUP). Locating the medical gas tanks within the New Hospital presented substantial constraints, including, but not limited to, technical and code compliance issues, safety concerns, and the potential to disrupt hospital operations, and consequently, was not selected.

The site within the Reserve was identified – similar to the Ammonia Site - to result in certain localized effects to the Reserve, however, also provided the overall best combination of benefits, including proximity to the hospitals and CUP, low visibility and visual impact from off-site, and technical feasibility.

Based on the siting study, on-balance, there are no other locations for locating the medical gas tanks within the campus site when considering environmental effects and feasibility, and this potential alternative was not carried forward for further evaluation.

6.5 Summary Comparison of Alternatives

Table 6-3 provides a summary of comparison of impacts of the proposed NHPH and the NHPH alternatives, and indicates whether the impacts of the alternatives are more or less severe than those of the proposed NHPH. For more information about the methodology used to evaluate potential impacts of the NHPH and an explanation of the resulting impact conclusions, please see Chapter 4, *Environmental Setting, Impacts, and Mitigation Measures*.

6.6 Environmentally Superior Alternative

Section 15126.6(e)(2) of the CEQA Guidelines requires the identification of an environmentally superior alternative to the proposed project. If the environmentally superior alternative is the "no project" alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives.

6.6.1 Alternative 1A: No Project - No Development Alternative

From the alternatives evaluated in this EIR, the environmentally superior alternative would be the No Project - No Development Alternative. The No Project - No Development Alternative would not involve new demolition and construction at the campus site related to the New Hospital and related improvements. As a result, there would be no increase in hospital inpatient beds at the campus site under this alternative, and in fact, after 2030, there would be a net decrease in inpatient beds associated with Moffitt Hospital absent a seismic retrofit of this building. Since none of the proposed New Hospital's related improvements would be developed under this alternative, it would also avoid potential encroachment into the Reserve that could be associated with the NHPH.

TABLE 6-3
COMPARISON OF IMPACTS OF THE PROPOSED NHPH AND ALTERNATIVES

Impact	Proposed NHPH	No Project Alternative		Alternative 2: Reduced Project	Alternative 3: New Hospital - Phased Option
		Alternative 1A: No Project - No Development	Alternative 1B: No Project – Smaller Hospital per 2014 LRDP		
4.1 Aesthetics, Wind, and Shadow					
Impact AES-1: The NHPH would not have a substantial adverse effect on a scenic vista.	LTS	- NI	- LTS	- LTS	- LTS
Impact AES-2: The NHPH would be located in an urbanized area and would not conflict with applicable zoning and other regulations governing scenic quality.	LTS	- NI	- LTS	- LTS	- LTS
Impact AES-3: The NHPH would create a new source of substantial light or glare which would adversely affect daytime or nighttime views in the area.	LTSM	- NI	- LTSM	- LTSM	- LTSM
Impact AES-4: Implementation of the NHPH would potentially create wind hazards in publicly accessible areas of substantial pedestrian use.	SUM	- NI	- SUM	- SUM	- SUM
Impact AES-5: The NHPH would not create new shadow in a manner that would substantially and adversely affect the use and enjoyment of publicly accessible open spaces.	LTS	- NI	- LTS	- LTS	- LTS
Impact C-AES-1: The NHPH, combined with cumulative projects, would not have a substantial adverse effect on a scenic vista or conflict with applicable zoning and other regulations governing scenic quality.	LTS	- NI	- LTS	- LTS	- LTS
Impact C-AES-2: The NHPH, combined with cumulative projects, would not create a new source of substantial light or glare which would adversely affect daytime or nighttime views in the area.	LTS	- NI	- LTS	- LTS	- LTS
Impact C-AES-3: : Implementation of the NHPH, combined with cumulative projects, would potentially create wind hazards in publicly accessible areas of substantial pedestrian use.	SUM	- NI	- SUM	- SUM	- SUM
Impact C-AES-4: Implementation of the NHPH, combined with cumulative projects, would not create new shadow that would substantially and adversely affect the use and enjoyment of publicly accessible open spaces.	LTS	- NI	- LTS	- LTS	- LTS
4.2 Air Quality					
Impact AIR-1: Construction activities associated with the NHPH would result in a cumulatively considerable net increase in emissions of a criteria pollutant for which the project region is non-attainment under an applicable federal or State ambient air quality standard.	LTSM	- NI	- LTSM	- LTSM	=/+ LTSM
Impact AIR-2: Operation of the NHPH would not result in a cumulatively considerable net increase in emissions of a criteria pollutant for which the project region is non-attainment under an applicable federal or State ambient air quality standard.	LTS	- NI	- LTS	- /= LTS	= LTS

SUM Significant and Unavoidable with Mitigation
LTSM Less than Significant with Mitigation
LTS Less than Significant impact
NI No Impact

\- Lesser impact than that of the proposed NHPH
= Same (or similar) impact as that of the proposed NHPH
-/= Less or similar impact to that of the proposed NHPH
-/+ Less or greater impact as the proposed NHPH
=/+ Similar or greater impact to that of the proposed NHPH

TABLE 6-3 (CONTINUED)
COMPARISON OF IMPACTS OF THE PROPOSED NHPH AND ALTERNATIVES

Impact	Proposed NHPH	No Project Alternative		Alternative 2: Reduced Project	Alternative 3: New Hospital - Phased Option
		Alternative 1A: No Project - No Development	Alternative 1B: No Project – Smaller Hospital per 2014 LRDP		
4.2 Air Quality (cont.)					
Impact AIR-3: Construction activities for the NHPH could expose sensitive receptors to substantial pollutant concentrations and exceed the LRDP EIR standard of significance by exposing receptors to toxic air contaminant emissions that (1) result in a cancer risk greater than 10 cancer cases per 1 million people; or (2) for acute or chronic effects, result in concentrations of toxic air contaminant emissions with a Hazard Index of 1.0 or greater.	LTSM	- NI	- LTSM	- LTSM	=/+ LTSM
Impact AIR-4: Operations under the NHPH would not expose sensitive receptors to substantial pollutant concentrations or exceed the LRDP EIR standard of significance by exposing receptors to toxic air contaminant emissions that (1) result in a cancer risk greater than 10 cancer cases per 1 million people; or (2) for acute or chronic effects, result in concentrations of toxic air contaminant emissions with a Hazard Index of 1.0 or greater.	LTS	- NI	- LTS	-/= LTSM	= LTSM
Impact AIR-5: The NHPH could conflict with or obstruct implementation of the *2017 Clean Air Plan*.	LTS	- NI	- LTS	- LTSM	= LTSM
Impact C-AIR-1: Construction and operation of the NHPH, combined with cumulative development in the project area, would result in a cumulatively considerable net increase of a criteria pollutant for which the project region is non-attainment under an applicable federal or State ambient air quality standard.	LTSM	- NI	- LTSM	-/= LTSM	=/+ LTSM
Impact C-AIR-2: Implementation of the NHPH could contribute considerably to cumulative emissions of TACs and $PM_{2.5}$ that could expose sensitive receptors to substantial pollutant concentrations or health risks.	LTSM	- NI	- LTSM	- LTSM	=/+ LTSM
4.3 Biological Resources					
Impact BIO-1: Implementation of the NHPH would not have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service.	LTSM	- NI	- LTSM	- LTSM	= LTSM
Impact BIO-2: Implementation of the NHPH would not interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.	LTSM	- NI	- LTSM	- LTSM	= LTSM
Impact C-BIO-1: Implementation of the NHPH would not result in cumulatively considerable impacts on biological resources, in combination with past, present and reasonably foreseeable future projects in the vicinity of the NHPH site.	LTSM	- NI	- LTSM	- LTSM	= LTSM

SUM Significant and Unavoidable with Mitigation
LTSM Less than Significant with Mitigation
LTS Less than Significant impact
NI No Impact

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TABLE 6-3 (CONTINUED)
COMPARISON OF IMPACTS OF THE PROPOSED NHPH AND ALTERNATIVES

Impact	Proposed NHPH	No Project Alternative		Alternative 2: Reduced Project	Alternative 3: New Hospital - Phased Option
		Alternative 1A: No Project - No Development	Alternative 1B: No Project – Smaller Hospital per 2014 LRDP		
4.4 and Initial Study Sections V and XVII: Cultural Resources and Tribal Cultural Resources					
Impact CUL-1: Implementation of the NHPH would not result in a substantial adverse change in the significance of known historical resources.	LTS	- NI	- LTS	- LTS	= LTS
Initial Study Impact V.b: Implementation of the NHPH could cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5.	LTSM	- NI	- LTSM	- LTSM	=/+ LTSM
Initial Study Impact V.c: Implementation of the NHPH could disturb human remains, including those interred outside of dedicated cemeteries.	LTSM	- NI	- LTSM	- LTSM	=/+ LTSM
Initial Study Impact XVII.a and XVII.b: Implementation of the NHPH could cause a substantial adverse change in the significance of a tribal cultural resource, defined in PRC Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe.	LTSM	- NI	- LTSM	- LTSM	=/+ LTSM
Impact C-CUL-1: Implementation of the NHPH would not result in a cumulatively considerable impact to known historical resources, in combination with past, present and reasonably foreseeable future projects in the vicinity of the Parnassus Heights campus site.	LTS	- NI	- LTS	- LTS	= LTS
4.5 Energy					
Impact ENE-1: Implementation of the NHPH would not result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation.	LTS	- NI	- LTS	- LTS	=/+ LTS
Impact ENE-2: Implementation of the NHPH would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency.	LTS	- NI	- LTS	- LTS	= LTS
Impact C-ENE-1: The NHPH, combined with cumulative development in the Parnassus Heights campus site vicinity and citywide, would not result in significant cumulative energy impacts.	LTS	- NI	-LTS	- LTS	=/+ LTS
4.6 and Initial Study Section VII: Geology and Soils					
Impact GEO-1: Construction and operation of the NHPH would not directly or indirectly cause substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking.	LTS	- NI	- LTS	- LTS	=/+ LTS
Impact GEO-2: Construction and operation of the NHPH would not directly or indirectly cause substantial adverse effects, including the risk of loss, injury, or death involving strong seismic related ground failure, including liquefaction.	LTS	- NI	- LTS	- LTS	=/+ LTS

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LTS Less than Significant impact
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TABLE 6-3 (CONTINUED)
COMPARISON OF IMPACTS OF THE PROPOSED NHPH AND ALTERNATIVES

Impact	Proposed NHPH	No Project Alternative		Alternative 2: Reduced Project	Alternative 3: New Hospital - Phased Option
		Alternative 1A: No Project - No Development	Alternative 1B: No Project – Smaller Hospital per 2014 LRDP		
4.6 and Initial Study Section VII: Geology and Soils (cont.)					
Impact GEO-3: Construction and operation of the NHPH would not directly or indirectly cause substantial adverse effects, including the risk of loss, injury, or death involving landslides.	LTSM	- NI	- LTSM	- LTSM	=/+ LTSM
Impact GEO-4: Construction and operation of the NHPH would not have the potential to result in substantial erosion or the loss of topsoil.	LTS	- NI	- LTS	- LTS	=/+ LTS
Impact GEO-5: The NHPH would not be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse.	LTS	- NI	- LTS	- LTS	=/+ LTS
Initial Study Impact VII.f-6: Construction associated with the NHPH could have the potential to directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.	LTSM	- NI	- LTSM	- LTSM	=/+ LTSM
Impact C-GEO-1: Implementation of the NHPH, in combination with past, present and reasonably foreseeable future projects, would not result in significant cumulative impacts related to geology and soils.	LTS	- NI	- LTS	- LTS	=/+ LTS
4.7 Greenhouse Gas Emissions					
Impact GHG-1: : Construction and operation of the NHPH would generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment.	LTSM	- NI	- LTSM	- LTSM	=/+ LTSM
Impact GHG-2: Construction and operation of the NHPH would not conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.	LTS	- NI	- LTS	- LTS	= LTS
4.8 Hazards and Hazardous Materials					
Impact HAZ-1: Construction and operation of the NHPH could create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.	LTSM	- NI	- LTSM	- LTSM	=/+ LTSM
Impact HAZ-2: Construction and operation of NHPH would not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.	LTS	- NI	- LTS	- LTS	=/+ LTS
Impact HAZ-3: Construction and operation of the proposed NHPH would not emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.	LTS	- NI	- LTS	- LTS	=/+ LTS

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TABLE 6-3 (CONTINUED)
COMPARISON OF IMPACTS OF THE PROPOSED NHPH AND ALTERNATIVES

Impact	Proposed NHPH	No Project Alternative		Alternative 2: Reduced Project	Alternative 3: New Hospital - Phased Option
		Alternative 1A: No Project - No Development	Alternative 1B: No Project – Smaller Hospital per 2014 LRDP		
4.8 Hazards and Hazardous Materials (cont.)					
Impact HAZ-4: The NHPH would not be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5. However, previously unknown contamination could be encountered during construction and could have the potential to create a significant hazard to the public or the environment.	LTSM	- NI	- LTSM	- LTSM	=/+ LTSM
Impact C-HAZ-1: Construction and operation of the proposed NHPH, in conjunction with other cumulative development within the City of San Francisco, would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials or from risk of upset and accident conditions involving hazardous materials.	LTS	- NI	- LTS	- LTS	=/+ LTS
4.9 Hydrology and Water Quality					
Impact HYD-1: Implementation of the NHPH would not have the potential to violate water quality standards or waste discharge requirements, or otherwise substantially degrade surface or groundwater quality	LTS	- NI	- LTS	- LTS	=/+ LTS
Impact HYD-2: Construction and operation of the NHPH would not substantially alter the existing drainage patterns of the site or area, in a manner that has the potential to result in substantial erosion or siltation on- or off- site; would not substantially increase the rate or amount of surface runoff in a manner that would result in flooding on or off site; and would not create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or impede or redirect flow.	LTS	- NI	- LTS	- LTS	=/+ LTS
Impact C-HYD-1: Construction and operation of the NHPH, in conjunction with other cumulative development within the City of San Francisco, would not cumulatively violate water quality standards or waste discharge requirements, or otherwise substantially degrade water quality.	LTS	- NI	- LTS	- LTS	=/+ LTS
Impact C-HYD-2: Construction and operation of the NHPH, in conjunction with other cumulative development in the City of San Francisco, would not to cumulatively alter the drainage pattern of the site or area, through the addition of impervious surfaces, in a manner which would result in substantial erosion or siltation on or off site; would not substantially increase the rate or amount of surface runoff in a manner which would result in flooding on or off site; would not create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or impede or redirect flow.	LTS	- NI	- LTS	- LTS	=/+ LTS

SUM Significant and Unavoidable with Mitigation
LTSM Less than Significant with Mitigation
LTS Less than Significant impact
NI No Impact

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= Same (or similar) impact as that of the proposed NHPH
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TABLE 6-3 (CONTINUED)
COMPARISON OF IMPACTS OF THE PROPOSED NHPH AND ALTERNATIVES

Impact	Proposed NHPH	No Project Alternative		Alternative 2: Reduced Project	Alternative 3: New Hospital - Phased Option
		Alternative 1A: No Project - No Development	Alternative 1B: No Project – Smaller Hospital per 2014 LRDP		
4.10 Land Use and Planning					
Impact LU-1: Implementation of the NHPH would not cause a significant environmental impact due to a conflict with land use plans, policies and regulations adopted for the purpose of avoiding or mitigating an environmental effect.	LTS	- NI	- LTS	- LTS	-/= LTS
Impact LU-2: Development under the proposed NHPH would not conflict with local land use regulations such that a significant incompatibility with adjacent land uses is created.	LTS	- NI	- LTS	- LTS	-/= LTS
Impact C-LU-1: The proposed NHPH, in combination with past, present, and reasonably foreseeable future projects, would not result in a conflict with land use plans, policies, and regulations adopted for the purpose of avoiding or mitigating an environmental effect or a conflict with local land use regulations such that a significant incompatibility with adjacent land uses is created.	LTS	- NI	- LTS	- LTS	-/= LTS
4.11 Noise and Vibration					
Impact NOI-1: Construction activities under the NHPH would generate a substantial temporary increase in ambient noise levels in the vicinity of the construction project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.	SUM	- NI	- SUM	- SUM	=/+ SUM
Impact NOI-2: Implementation of the NHPH would generate substantial permanent increases in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.	LTSM	- NI	- LTSM	- LTSM	= LTSM
Impact NOI-3: Construction activities for the NHPH and related improvements could result in generation of excessive groundborne vibration or groundborne noise levels.	LTSM	- NI	- LTSM	- LTSM	=/+ LTSM
Impact NOI-4: Operation of the NHPH would not exceed an LRDP EIR operational standard of significance by contributing to an increase in average daily noise levels (L_{dn}) of 3 dB(A) or more at property lines, where ambient noise levels already exceed local noise levels set forth in local general plans or ordinances for such areas based on their use.	LTS	- NI	- LTS	= LTS	= LTS
Impact C-NOI-1: Implementation of the NHPH, combined with cumulative construction noise in the project area, would generate a substantial temporary increase in ambient noise levels from construction activity in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.	SUM	- NI	- SUM	- SUM	=/+ SUM
Impact C-NOI-2: Implementation of the NHPH, combined with cumulative development in the project area, would generate substantial permanent increases in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.	LTSM	- NI	- LTSM	- LTSM	= LTSM

SUM Significant and Unavoidable with Mitigation
LTSM Less than Significant with Mitigation
LTS Less than Significant impact
NI No Impact

\- Lesser impact than that of the proposed NHPH
= Same (or similar) impact as that of the proposed NHPH
-/= Less or similar impact to that of the proposed NHPH
-/+ Less or greater impact as the proposed NHPH
=/+ Similar or greater impact to that of the proposed NHPH

TABLE 6-3 (CONTINUED)
COMPARISON OF IMPACTS OF THE PROPOSED NHPH AND ALTERNATIVES

Impact	Proposed NHPH	No Project Alternative		Alternative 2: Reduced Project	Alternative 3: New Hospital - Phased Option
		Alternative 1A: No Project - No Development	Alternative 1B: No Project – Smaller Hospital per 2014 LRDP		
4.11 Noise and Vibration (cont.)					
Impact C-NOI-3: Implementation of the NHPH, combined with cumulative construction in the project area, would result in generation of excessive groundborne vibration or groundborne noise levels.	LTSM	- NI	- LTSM	- LTSM	=/+ LTSM
Impact C-NOI-4: Implementation of the NHPH combined with cumulative development in the project area could exceed an LRDP EIR operational standard of significance by contributing to an increase in average daily noise levels (L_{dn}) of 3 dB(A)[2] or more at property lines, if ambient noise levels in areas adjacent to proposed development already exceed local noise levels set forth in local general plans or ordinances for such areas based on their use.	LTS	- NI	- LTS	= LTS	= LTS
4.12 Population and Housing					
Impact POP-1: Implementation of the NHPH would induce population growth in the San Francisco Bay area, but not to an extent to which it would create demand for housing outside the market area.	LTS	- NI	- LTS	= LTS	= LTS
Impact C-POP-1: The NHPH, in combination with past, present, and reasonably foreseeable future projects, would not result in a cumulatively considerable contribution to significant cumulative population and housing impacts.	LTS	- NI	- LTS	= LTS	= LTS
4.13 Transportation and Traffic					
Impact TRANS-1: Implementation of the NHPH would not conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities.	LTS	- NI	- LTS	= LTS	= LTS
Impact TRANS-2: Implementation of the NHPH would not conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b).	LTS	- NI	- LTS	= LTS	= LTS
Impact TRANS-3: Implementation of the NHPH would not substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).	LTS	- NI	- LTS	= LTS	= LTS
Impact TRANS-4: Implementation of the NHPH would not result in inadequate emergency access.	LTS	- NI	- LTS	= LTS	= LTS

[2] Caltrans acknowledges that the Ldn is approximately equal to the peak hour Leq (Caltrans, 2009)

SUM	Significant and Unavoidable with Mitigation	-	Lesser impact than that of the proposed NHPH
		=	Same (or similar) impact as that of the proposed NHPH
LTSM	Less than Significant with Mitigation	-/=	Less or similar impact to that of the proposed NHPH
		-/+	Less or greater impact as the proposed NHPH
LTS	Less than Significant impact	=/+	Similar or greater impact to that of the proposed NHPH
NI	No Impact		

TABLE 6-3 (CONTINUED)
COMPARISON OF IMPACTS OF THE PROPOSED NHPH AND ALTERNATIVES

Impact	Proposed NHPH	No Project Alternative		Alternative 2: Reduced Project	Alternative 3: New Hospital - Phased Option
		Alternative 1A: No Project - No Development	Alternative 1B: No Project – Smaller Hospital per 2014 LRDP		
4.13 Transportation and Traffic (cont.)					
Impact TRANS-5: Construction of the New Hospital and related improvements could temporarily impact travel conditions along sidewalks and roadways serving the campus site.	LTSM	- NI	- LTSM	- LTSM	=/+ LTSM
Impact C-TRANS-1: The NHPH, in combination with past, present, and reasonably foreseeable future projects, including the full CPHP (Future Phase), would not result in a cumulatively considerable contribution to significant transportation impacts.	LTS	- NI	- LTS	= LTS	= LTS
4.14 Utilities and Service Systems					
Impact UTIL-1: Implementation of the proposed NHPH would require or result in the construction of new or expanded water, wastewater treatment or storm water drainage, electric power, or telecommunications facilities, the construction or relocation of which would not cause significant environmental effects.	LTS	- NI	- LTS	- LTS	=/+ LTS
Impact UTIL-2: Sufficient water supply would be available from the SFPUC to serve the NHPH and reasonably foreseeable future development under normal, dry and multi-dry years even if the Bay Delta Plan Amendment is implemented. If the Bay Delta Plan Amendment is implemented, the SFPUC would address the anticipated shortfalls through rationing and/or develop new or expanded water supply facilities to address shortfalls in single and multiple dry years. The NHPH would not make a considerable contribution to environmental impacts from increased rationing or from the development of new supply sources.	LTS	- NI	- LTS	-/= LTS	= LTS
Impact UTIL-3: The wastewater treatment provider would have adequate wastewater treatment capacity to serve the NHPH.	LTS	- NI	- LTS	-/= LTS	= LTS
Impact C-UTIL-1: Development under the proposed NHPH, in combination with past, present, and reasonably foreseeable future projects in the vicinity of the Parnassus Heights campus site, would not substantially contribute to cumulative impacts related to utilities and services systems.	LTS	- NI	- LTS	-/= LTS	= LTS

SOURCE: Environmental Science Associates

SUM Significant and Unavoidable with Mitigation
LTSM Less than Significant with Mitigation
LTS Less than Significant impact
NI No Impact

\- Lesser impact than that of the proposed NHPH
= Same (or similar) impact as that of the proposed NHPH
-/= Less or similar impact to that of the proposed NHPH
-/+ Less or greater impact as the proposed NHPH
=/+ Similar or greater impact to that of the proposed NHPH

As such, the No Project - No Development Alternative would have substantially less overall environmental impacts that either the proposed NHPH or the other alternatives. The No Project - No Development Alternative would eliminate the four significant and unavoidable Project and/or cumulative NHPH impacts: Impacts AES-and C-AES-3 (project and cumulative wind hazards); and Impacts NOI-1 and C-NOI-1 (project and cumulative construction noise effects).

The No Project - No Development Alternative would also avoid 21 other significant but mitigable project and/or cumulative impacts that would occur under the NHPH, including impacts related to operational lighting/glare, generation of construction emissions; exposure to construction -related toxic air contaminant emissions, potential impacts to special-status species during construction, and potential for increased bird strikes from new building development; potential to disturb unknown archaeological and tribal resources, human remains and/or paleontological resources during construction excavation; potential for effects associated with landslides; generation of GHG emissions; potentially encountering naturally occurring asbestos or contaminated soils during construction excavation; construction vibration effects and permanent increases in noise from stationary noise sources; and construction traffic effects.

However, as discussed above under Section 6.3.1, this alternative is impractical because it would not provide for either a New Hospital or seismic retrofit of Moffitt Hospital. As discussed above, this alternative would not achieve 2014 LRDP clinical objectives for the Parnassus Heights campus site, or any of the key objectives for the NHPH. This alternative would also not achieve any of the CPHP objectives. As such, this alternative is considered unrealistic, impractical and infeasible.

6.6.2 Reduced Project Alternative

Of the remaining alternatives that are not the No Project – No Development alternative: (i.e., the No Project – Smaller Hospital per 2014 LRDP Alternative, Reduced Project Alternative, and New Hospital - Phased Option Alternative), on balance, the Alternative 2: Reduced Project Alternative is considered the environmentally superior alternative.

None of these three alternatives would fully avoid the four significant and unavoidable impacts of the proposed NHPH, although all three alternatives could or would serve to incrementally reduce the severity of the 21 significant but mitigable project and/or cumulative impacts of the NHPH. Of these three alternatives, the No Project – Smaller Hospital per 2014 LRDP Alternative would involve the least amount of demolition and construction; and would also represent the smallest and shortest New Hospital. As such, this alternative would have incrementally less construction-related impacts and aesthetic impacts, and incrementally less potential for bird strikes, than the other two alternatives. Moreover, since the No Project – Smaller Hospital per 2014 LRDP Alternative would involve a smaller number of inpatient beds, it would also have incrementally less operational related impacts than the other two alternatives at the campus site, including those related to transportation; air quality and GHG emissions; and utility and service demands.

Conversely, however, since the No Project – Smaller Hospital per 2014 LRDP Alternative would provide the least number of inpatient beds in the New Hospital, and on the campus site as a whole (251 fewer inpatient beds compared to that proposed Phased Option Alternative), it would not

fundamentally meet UCSF's estimated growing demand for inpatient care, including for essential surgeries. The New Hospital proposed under the No Project – Smaller Hospital per 2014 LRDP Alternative would also provide the least sufficient space to meet modern regulatory requirements and industry standards of contemporary hospitals, such as construction codes, sizes of operating rooms, ratio of operating rooms to pre-and post-recovery areas, and space for privacy and infection control issues. While the Reduced Project Alternative would have incrementally more construction and/or operational environmental impacts than the No Project – Smaller Hospital per 2014 LRDP Alternative, when considering its comparatively larger hospital size and larger on-campus inpatient bed capacity, it would better serve to achieve overall basic objectives of the NHPH.

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CHAPTER 7
Report Preparation

7.1 Report Authors

7.1.1 Lead Agency

The Regents of the University of California

7.1.2 Authors

University of California, San Francisco

Sam Hawgood, MBBS, Chancellor
Brian Newman, Senior Associate Vice Chancellor, UCSF Real Estate
Alicia Murasaki, Assistant Vice Chancellor and Campus Architect, Campus Planning
Kevin Beauchamp, Executive Director, Physical Planning
Diane Wong, Principal Planner/Environmental Coordinator, Physical Planning
Paul Franke, Principal Planner, Physical Planning
Tammy Chan, Senior Planner, Physical Planning

University of California, Office of the President

Brian Harrington, Director, Physical and Environmental Planning
Ha Ly, Planning Specialist, Physical and Environmental Planning

University of California, UC Legal - Office of the General Counsel

Anagha Clifford, Senior Counsel

Legal Counsel

Charles Olson, Esq., Lubin, Olson & Niewiadomski

7.1.3 Lead Agency Consultants

Wind

Cermak Peterka Peterson (CPP)

John Carter, Vice President
Zachary Fordt, Project Manager

Farid Samara, Project Consultant
Anke Beyer-Lout, Associate Principal

Visual Simulations

Herzog & de Meuron

Bloom Images

7.1.4 Environmental Consultants

Environmental Science Associates

Hillary Gitelman, Project Director
Paul Mitchell, Project Manager
Susan Yogi, Deputy Project Manager
Lisa Bautista
Brandon Carroll
Jeff Caton
Matt Fagundes
Amber Grady
Heidi Koenig
Karl Heisler
Johanna Kahn
Jessica O'Dell
Sarah Patterson
Brian Pittman
Chris Sanchez
Brian Schuster
Elliott Schwimmer
Susumu Shirayama
Alexandra Sung-Jereczek
Ron Teitel

Transportation

Adavant Consulting

José Farrán, PE

Fehr & Peers Transportation Consultants

Eric Womeldorff, PE
Eleanor Leshner

Strategic Consulting

Barati Consulting LLC

Shabnam Barati, Ph.D.

Visual Simulations Peer Review and Shadow Analysis

Prevision Design

Adam Phillips

Water Supply Evaluation

West Yost Associates

Elizabeth Drayer, PE
Jim Connell, PE

Hydrology/Hydraulics Assistance

Hydroconsult Engineers, Inc.

Beth Goldstein, PE, LEED AP, QSP/QSD

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Appendix A
Initial Study and Notice of Preparation

University of California
San Francisco

UCSF Real Estate

UCSF Box 0286
654 Minnesota Street, 2nd Floor
San Francisco, CA 94143

www.ucsf.edu

July 28, 2021

Notice of Preparation of Environmental Impact Report and Initial Study
Notice of a Public Scoping Meeting

Project:	UCSF New Hospital at Parnassus Heights
Location:	401 and 505 Parnassus Avenue, San Francisco, California 94143 (Parnassus Avenue at Medical Center Way)
Block/Lot:	2634A/011 & 005
Sponsor:	University of California, San Francisco (UCSF)
Lead Agency:	The Regents of the University of California
Staff Contact:	Diane Wong, UCSF (415) 502-5952

This is the Notice of Preparation (NOP) of an Environmental Impact Report (EIR) and Initial Study for the above-named project. This document is available at https://www.ucsf.edu/cphp/hospital for a 30-day public review and comment period beginning **July 28, 2021 through August 27, 2021**.

Project Description

UCSF is proposing to construct a new hospital and related improvements at the east end of UCSF's Parnassus Heights campus core, collectively known as the New Hospital at Parnassus Heights project (NHPH). The NHPH would increase inpatient beds at Parnassus Heights; accommodate modern technologies; address seismic safety requirements and meet other regulatory requirements and industry standards for contemporary hospitals; and enhance functionality and efficiency at the campus site. Construction of the NHPH would begin in 2023 and be completed by the end of 2030.

As proposed, the New Hospital would be approximately 870,000 gross square feet, and consist of 15 stories plus rooftop mechanical equipment and a full basement. The New Hospital would require certain supporting circulation, loading, utility and landscaping improvements. The NHPH would also include renovation of Moffitt and Long Hospitals, widening Medical Center Way adjacent to the New Hospital for fire safety purposes; replacement of diesel fuel tanks and medical gas tanks; vegetation management and slope stabilization improvements; and a pedestrian bridge and tunnel across Parnassus Avenue. Under the proposed NHPH, the New Hospital would provide 336 inpatient beds, Long Hospital would provide 297 inpatient beds, and Moffitt Hospital would provide 49 inpatient beds. The total inpatient bed count at the campus site under the NHPH would be up to 682 beds.

A minor amendment to the 2014 LRDP would be required to adjust the Reserve boundary and maintain the Reserve at a minimum of 61 acres.

For purposes of the California Environmental Quality Act (CEQA), the University of California is lead agency.

This project may have a significant effect on the environment and an Environmental Impact Report is required. This determination is based upon the criteria of the State CEQA Guidelines, Sections 15063 (Initial Study), 15064 (Determining Significant Effect),

and 15065 (Mandatory Findings of Significance), and for the reasons documented in the Initial Study for the project.

Public Review and Comment

As indicated above, the NOP/Initial Study is available at https://www.ucsf.edu/cphp/hospital for a 30-day public review and comment period beginning **July 28, 2021 through August 27, 2021.**

To give written feedback on the NOP/Initial Study, comments should be sent to the attention of Ms. Diane Wong at the address noted below, or submitted via email to the following address: **EIR@ucsf.edu**. All comments must be received no later than **August 27, 2021**.

If you would like a paper copy of the NOP/Initial Study, please email EIR@ucsf.edu or call 415-502-5952.

UCSF will hold a public EIR scoping meeting on **August 17, 2021**, beginning at 6:30 PM. Due to the COVID-19 pandemic, the EIR scoping meeting will be conducted via Zoom. If you are interested in attending this meeting, please register at: http://tiny.ucsf.edu/NHPHScoping.

The EIR scoping meeting provides an opportunity for the community to provide verbal feedback on the Initial Study. This allows UCSF to learn about potential concerns early, as well as further define the issues, feasible alternatives, and potential mitigation measures that may warrant in-depth analysis in the environmental review process.

Submit comments on the Initial Study and EIR scoping to:
Diane Wong, Environmental Coordinator
UCSF Campus Planning
654 Minnesota Street
San Francisco, CA 94143-0286
EIR@ucsf.edu

University of California
San Francisco

INITIAL STUDY

University of California, San Francisco
New Hospital at Parnassus Heights

Lead Agency: University of California

July 2021

UCSF NEW HOSPITAL AT PARNASSUS HEIGHTS

Initial Study

Prepared for
UCSF Campus Planning

July 2021

D190291.01

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UCSF New Hospital at Parnassus Heights Initial Study

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UCSF NEW HOSPITAL AT PARNASSUS HEIGHTS

Initial Study

1. Project Information

1. **Project Title:** UCSF New Hospital at Parnassus Heights

2. **Lead Agency Name and Address:** The Regents of the University of California
1111 Franklin Street, 12th Floor
Oakland, California 94607

3. **Contact Person and Phone Number:** Diane Wong
Principal Planner/Environmental Coordinator
UCSF Real Estate - Campus Planning
(415) 502-5952
diane.wong@ucsf.edu

4. **Project Location:** 401 and 505 Parnassus Avenue, San Francisco, California 94143 (Parnassus Avenue at Medical Center Way)

5. **Project Sponsor's Name and Address:** See contact person listed above.

6. **Custodian of the Administrative Record for this Project:** Same as above.

7. **Description of Project:**

   See Section 2, Project Description, below.

8. **Surrounding Land Uses and Setting:**

   See Section 2, Project Description, below.

9. **Other public agencies whose approval is required** (e.g., permits, financing approval, or participation agreement.):

   See Section 2, Project Description, below.

10. **Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code section 21080.3.1? If so, is there a plan for consultation that includes, for example, the determination of significance of impacts to tribal cultural resources, procedures regarding confidentiality, etc.?**

    On June 21, 2021, UCSF sent notification letters of UCSF's proposal to undertake the New Hospital at Parnassus Heights project to the applicable representatives for the Amah Mutsun

Tribal Band of Mission San Juan Bautista; Coastanoan Rumsen Carmel Tribe; Ohlone Indian Tribe; Indian Canyon Mutsun Band of Costanoan; Wuksache Indian Tribe/Eshom Valley Band; and Muwekma Ohlone Indian Tribe of the San Francisco Bay Area. No responses to the notification letters were received from the tribes within the 30-day response period, consistent with the requirements of Public Resources Code section 21080.3.1(d).

2. Project Description

The proposed project would construct a new hospital and related improvements at the east end of UCSF's Parnassus Heights campus core, collectively known as the New Hospital at Parnassus Heights project (NHPH). As described further below, the NHPH would increase inpatient beds at Parnassus Heights; accommodate modern technologies; address seismic safety requirements and meet other regulatory requirements and industry standards for contemporary hospitals; and enhance functionality and efficiency at the campus site. Construction of the NHPH would begin in 2023 and be completed by the end of 2030.

2.1 Background

In November 2014, the Regents of the University of California (Regents) adopted the 2014 Long Range Development Plan (LRDP) for the San Francisco campus, following certification of the 2014 LRDP Final EIR. The 2014 LRDP set forth concepts, principles and plans to guide future growth at its campus, and projected development levels and patterns at its main campus sites through the year 2035, including the Parnassus Heights campus site.

The Parnassus Heights campus site (Parnassus Heights, or campus site) is the oldest and largest of the UCSF campus sites. UCSF's investment in Parnassus Heights has not kept pace with its aging facilities or changes in programmatic need, resulting in infrastructure, buildings, and interior spaces that require substantial renewal and investment. As a result, in 2018, UCSF undertook a planning process to re-envision and revitalize the Parnassus Heights campus site as a whole engaging both internal and external stakeholders. The planning process resulted in the development of the Comprehensive Parnassus Heights Plan (CPHP) which was aimed at updating the projected space needs for critical programs in research, patient care, and education at the campus site, improving the functional and aesthetic design of the campus environment, and planning for needed on-campus housing. In 2019, in compliance with CEQA, UCSF commenced a review of the environmental impacts of the CPHP and in January 2021, the Regents approved Amendment #7 to the 2014 LRDP to incorporate the CPHP planning concepts and proposals into the 2014 LRDP and other necessary conforming changes, following certification of the CPHP Final Environmental Impact Report (Final EIR).

The CPHP included an "Initial Phase" to be completed by approximately year 2030 that primarily comprised: 1) Irving Street Arrival improvements, 2) a Research and Academic Building (RAB), 3) a New Hospital, and 4) initial Aldea Housing Densification; as well as certain other Initial Phase improvements. Beyond the Initial Phase, a "Future Phase" encompassed the remaining development described in the CPHP, envisioned for completion by the horizon year of 2050.

In total, the CPHP provided for development of approximately 2.90 million gross square feet (gsf) of new building space at Parnassus Heights. When accounting for existing campus site development (approximately 3.92 million gsf); demolition that was approved under the 2014 LRDP but not yet implemented (approximately 187,000 gsf); and potential additional building demolition that would occur under the CPHP (approximately 688,000 gsf), the total amount of campus building space upon full implementation of the CPHP would be approximately 5.97 million gsf, including instruction, research, clinical, and support space; housing; and structured parking.

The CPHP Final EIR programmatically analyzed the environmental impacts of the CPHP, including the impacts of the proposed New Hospital for which only broad parameters (location, projected size and population) were known at the time. The proposed New Hospital was the largest of the projects planned at the Parnassus Heights campus site under the CPHP. The proposed 15-story New Hospital would consist of approximately 870,000 gsf, and in combination with the existing Moffitt and Long Hospitals would provide approximately 682 beds at the campus site. Related improvements that would be implemented under the NHPH include a renovation of Moffitt and Long Hospitals; widening of Medical Center Way in the vicinity of the New Hospital; replacement of diesel fuel tanks and medical gas tanks; vegetation management and slope stabilization improvements; and construction of a proposed pedestrian bridge and tunnel across Parnassus Avenue. Since certification of the CPHP Final EIR, the physical design, construction and operational details of the New Hospital and related improvements have progressed to a sufficient degree to allow for a project-specific environmental review in this NHPH EIR.

UCSF is the Lead Agency under CEQA for the proposed NHPH. This Initial Study has been and forthcoming EIR will be prepared in accordance with CEQA to analyze potential environmental impacts that could result from construction and operation of the NHPH.

2.2 Campus Site Location and Characteristics

Figure 1 presents an aerial view of the Parnassus Heights campus site location and vicinity. The Parnassus Heights campus site is located in the Inner Sunset mixed-use neighborhood in San Francisco, bounded by Carl and Irving Streets to the north; Third Avenue and Fifth Avenue to the west; and Clarendon Avenue, Christopher Drive, and Crestmont Drive to the south. The campus site's east boundary abuts the Cole Valley neighborhood and the City's Interior Greenbelt Natural Area.

The irregularly-shaped campus site comprises approximately 107 acres. UCSF's facilities are concentrated at the north end of the campus site, where its hospitals, five professional programs, clinics, research, housing, parking, and other support uses are located. The 61-acre Mount Sutro Open Space Reserve (Reserve) occupies the central and southern portion of the campus site, with a portion that extends north to Parnassus Avenue along the east side. The Aldea Housing complex is located in the southeast portion of the campus site adjacent to the Reserve.

SOURCE: Google Earth, 2019; ESA, 2021

UCSF New Hospital Parnassus Heights EIR

Figure 1
Parnassus Heights Campus Site Location and Vicinity

The average daily population at the Parnassus Heights campus site in January 2020 was estimated at approximately 17,700persons, including faculty and staff, students, patients, and visitors. There were currently nearly 7,700 UCSF faculty and staff employed at the campus site in January 2020. About 580 residents currently reside in UCSF housing at the Parnassus Heights campus site.

2.3 NHPH Site Vicinity and Characteristics

Figure 2 presents an aerial view of the general site of the proposed NHPH and related improvements, in the northeast corner of the campus site. The site is located within the east end of the campus core, within the designated Clinical functional zone of the campus site.

Like the rest of the core campus, the sites of the NHPH and related improvements are located on the north-facing slope of Mount Sutro. The topography of the New Hospital site is varied, with slopes generally rising from north to south through the site; elevations range from approximately 400 feet above sea level (asl) on Parnassus Avenue along the north side of the site, ascending to approximately 430 feet asl along the south side of the site in the vicinity of Long Hospital.

Existing buildings occupying the footprint of the proposed New Hospital are the Langley Porter Psychiatric Institute (LPPI) at 401 Parnassus Avenue, and three small support structures (Butler Building, paint shed, and outpatient clinic). LPPI, built in 1941, is five stories in height, and comprises approximately 105,000 gsf; the support structures account for an additional approximate 4,000 gsf. LPPI services include an adult inpatient unit, an adult partial hospitalization program, and an adult intensive outpatient program.

The demolition and removal of the LPPI and supporting structures, and several other buildings on the campus site[1] were previously planned under the 2014 LRDP. In 2020, the LPPI was determined to be eligible for listing in the National Register of Historic Places and the California Register of Historical Resources (the support structures are not eligible for these registers). The CPHP Final EIR addressed the potential effect of demolition of the LPPI on historic resources as part of the CPHP. Accordingly, the demolition and removal of these buildings are not included in the NHPH project and will be completed separately from the NHPH project.

Existing buildings immediately west of LPPI include Long and Moffitt Hospitals. Long Hospital (505 Parnassus Avenue) adjoins the south end of the LPPI and extends west and connects to Moffitt Hospital. Long Hospital was constructed in 1983, is 15 stories tall and approximately 369,000 gsf in size. Long Hospital's tower is set back approximately 230 feet from Parnassus Avenue. Moffitt Hospital fronts on Parnassus Avenue and connects to UCSF's Medical Sciences Building to the west. This building is cross-shaped from a plan perspective, 15 stories tall, and approximately 386,000 gsf in size. Moffitt Hospital was originally built in 1955 and modernized in 1980. Together, the Long and Moffitt buildings comprise the UCSF Helen Diller Medical Center (Medical Center), which provides emergency inpatient and outpatient services, as well as research and educational facilities. Long and Moffitt Hospitals currently provide 475 inpatients beds (325 and 150 beds, respectively).

[1] Including Koret Vision Center, Environmental Health and Safety, Surge, Woods, and Proctor buildings.

2019/D1902291.01 - UCSF NHPH EIR/05 Graphics-GIS-Modeling/Illustrator

SOURCE: Google Earth, 2019; ESA, 2021

UCSF New Hospital Parnassus Heights EIR

Figure 2
NHPH Site Vicinity

ESA

The principal vehicular access points to the NHPH site are along Parnassus Avenue and Medical Center Way. Parnassus Avenue extends along the north side of the NHPH site, and in the site vicinity consists of two travel lanes plus a two-way center turn lane, with on-street parking. Parnassus Avenue serves multiple Muni bus lines, and is signed as a Class III bike route in the site vicinity. Medical Center Way is a narrow two-lane campus roadway that roughly follows along the east side of the NHPH site, and winds south through the campus site to the Aldea Housing complex. Medical Center Way serves as the access route for delivery vehicles to/from UCSF's hospital loading areas on the rear (south side) of the hospitals. Medical Center Way also serves as the route for UCSF's Bronze shuttle buses. Moffitt Hospital is served by a vehicle turnaround accessed from Parnassus Avenue that provides passenger pickup/drop off. To the east of that, a driveway on Parnassus Avenue provides ambulance access to Moffitt Hospital's garage. In addition, a driveway on Parnassus Avenue currently provides access to LPPI's surface parking lot.

A portion of UCSF's Reserve is located in the vicinity of the project site, on the hillside east of Medical Center Way. This hillside is dominated by non-native blue gum eucalyptus and Monterey cypress trees, and understory vegetation. There are two trailheads in the NHPH site vicinity: the Campus Trailhead, which provides trail access into the Reserve from Medical Center Way [near the UCSF Central Utility Plant (CUP)]; and the Farnsworth Trailhead, which connects to the Reserve via Farnworth Lane. Two public trails and a stairway extend through the Reserve in the NHPH site vicinity connecting the trailheads and the Surge parking lot.

Ornamental vegetation is present within the developed portions of the NHPH site vicinity, including street trees and landscaped vegetation along Parnassus Avenue, within surface parking and passenger drop-off areas, and at entrances to the buildings.

The nearest off-site residential uses are located along Edgewood Avenue to the east, on Parnassus Avenue and Hillpoint Avenue to the northeast, and on Hillway Avenue to the north.

2.4 Relationship of the NHPH to the CPHP and 2014 LRDP

On November 20, 2014, the Regents adopted the 2014 LRDP. The 2014 LRDP serves as a comprehensive physical land use plan and policy document to guide the physical development of the San Francisco campus, including all of its campus sites, accommodating future increases in enrollment and academic and research activities at UCSF and meeting its projected educational and research demand. The 2014 LRDP provides planning guidance for development anticipated to occur by horizon year 2035[2] and contains objectives to guide decisions for future facilities.

In January 20, 2021, the Regents approved Amendment #7 to the 2014 LRDP, which incorporated the CPHP planning concepts and proposals into the 2014 LRDP. The 2014 LRDP, as amended, is the primary planning document for the Parnassus Heights campus site and will be used by UCSF to guide the development of the campus site through the next 30 years, or to an approximate horizon year of 2050. The CPHP updated the projected space needs for critical programs in research, patient care, and education at the campus site, improved the functional and aesthetic design of the

[2] With exception, as described below, for the Parnassus Heights campus site, which has an approximate horizon year of 2050.

campus environment, and planned for needed on-campus housing. The CPHP included a larger development program at the Parnassus Heights campus site, including a larger New Hospital, and a larger net increase of in-patient beds at the campus site, compared to that included in the 2014 LRDP. In addition to the change in the space program, the CPHP made other necessary conforming changes, which included revisions to functional zones; revisions to the space program; update to the projected campus site population; revisions to existing planning agreements, including revisions to the Regents' Resolution; modification of the Reserve boundary; and an update to the UCSF Greenhouse Gas Reduction Strategy. Amendment #7 to the 2014 LRDP to incorporate the CPHP resulted in replacement of the Parnassus Heights chapter in the 2014 LRDP.

As explained further under subsection 2.7, below, subsequent to approval of 2014 LRDP Amendment #7, the University reexamined the hospital program, including the proposed size of the New Hospital, and proposed use of Moffitt and Long Hospitals. Under the NHPH, the size of the proposed New Hospital would be reduced from that envisioned under the CPHP (i.e., from 955,000 gsf to a proposed approximate 870,000 gsf), and Moffitt and Long Hospitals would increase slightly in size (by about 4,500 gsf and 5,000 gsf, respectively). The building space (about 75,500 gsf) rendered surplus due to the reduction of the hospital program would be assigned to other buildings on the campus site during the CPHP Future Phase. This would result in one to two additional building floors to be added to the planned Millberry Union New Towers project, and to research buildings planned immediately south and west of the planned Research and Academic Building (RAB). This modification would not change the overall space profile at the Parnassus Heights campus site or require a change in Parnassus Heights campus site functional zone map from that established in the CPHP. This CPHP modification will be considered in the cumulative context in the NHPH EIR.

The proposed New Hospital and related improvements are the subject of this project-specific EIR. With minor exceptions as described below, the proposed New Hospital would be within the conceptual design (including height, bulk and size) and operational parameters assumed for the New Hospital in the CPHP and analyzed at a program level in the CPHP EIR. In contrast to the New Hospital analyzed in the CPHP EIR, the New Hospital building as now proposed would not extend into the Reserve. However, the related improvement for the proposed medical gas storage tanks replacement project would result in a minor encroachment into the Reserve as described below (though to a lesser extent than the New Hospital encroachment into the Reserve that was approved under 2014 LRDP Amendment #7). As the proposed New Hospital building now would not extend into the Reserve, the boundary of the Reserve is proposed to be modified as follows:

- The area previously removed from the Reserve under 2014 LRDP Amendment #7 to accommodate the New Hospital footprint is now proposed to be returned to the Reserve.
- The Reserve boundary would be adjusted to accommodate the medical gas tanks replacement project described below.

The area between the Surge and Woods parking lots that was added to the Reserve under 2014 LRDP Amendment #7 would remain as Reserve land. These changes would result in a net increase to Reserve land and would maintain the Reserve at a minimum of 61 acres.

2.5 NHPH Project Need

As the second largest employer in the City, UCSF is a substantial contributor to the San Francisco and Bay Area economies, as well as a major contributor to the culture of innovation, attracting world-class talent to live, work, and study in San Francisco and the Bay Area. Over the last 20 years, UCSF has invested substantial financial resources into acquiring, developing, and supporting its Mission Bay campus site, without commensurate investment in the Parnassus Heights campus site. UCSF's investment in Parnassus Heights has not kept pace with its aging facilities or changes in programmatic need, resulting in infrastructure, buildings, and interior spaces that require substantial renewal and investment.

UCSF Health provides both outpatient and inpatient clinical services at the Parnassus Heights campus site. The Medical Center at Parnassus Heights, which includes Moffitt and Long Hospitals, provides highly specialized tertiary and quaternary[3] adult health care. According to UCSF Health, the Medical Center's inpatient census is at a record high and continues to experience unprecedented growth. The Medical Center is already at capacity and has to turn away transfer patients who need complex care.

In order to ensure continued excellence of the University, stay competitive and remain a leading health science institution both nationally and internationally, and build on the outstanding instructional, research, and clinical programs that are present at Parnassus Heights, improvements must be made at the Parnassus Heights campus site to address its aging and inadequate facilities and provide a teaching hospital that can adequately support the education and research missions while providing expanded and improved clinical services to the community. Constructed in 1955, the existing Moffitt Hospital is outdated, its space undersized, inflexible, and obsolete relative to modern standards of care. In addition, pursuant to California Senate Bill 1953 enacted to establish seismic safety standards for hospitals, Moffitt Hospital must be structurally retrofitted or decommissioned as an inpatient facility by 2030. Long Hospital continues to adequately meet seismic standards beyond 2030.

It is anticipated that there will be a 14 percent increase in medically necessary transfers by 2030. Further, the complex tertiary and quaternary cases treated by UCSF specialists at Parnassus Heights are forecast to increase in number over the coming years and decades, due to the Bay Area's projected population growth, which includes an increase in the Medicare population due to an aging regional population (national trends indicated there will be a 31 percent increase in the Medicare population over the next 10 years). Complex cardiac surgery and neurosurgery cases are projected to increase by 30 percent in the next 10 years. These complex cases will require longer hospital stays and more hospital beds. In addition, there is an increase in medical complexity of patients coming to the hospital as less complex cases are transitioned to outpatient clinics, and higher complexity mean longer length of stay for each admission and greater need for beds. Learning from the current COVID-19 pandemic, it is extremely critical for clinical facilities

[3] Tertiary health care is the third tier of health care which involves highly specialized medical care provided by medical specialists in state-of-the-art facilities, such as teaching hospitals. It usually is provided over an extended period of time and involves advanced and complex procedures and treatments. Quaternary health care is considered an extension of tertiary care and is even more specialized. Examples would be experimental medicine and procedures, and very rare, specialized surgeries.

to be flexible and have the ability to increase inpatient capacity to accommodate additional clinical needs during these times, rather than reducing or canceling non-essential surgeries in order to reduce patient census. Based on observed shortages in the availability of beds, especially intensive care unit (ICU) and acute care beds; an analysis of demographic trends that indicate that the Medical Center will need to serve not only a larger population but also a population that includes more elderly patients; an analysis of the demand/need for private rooms (versus shared rooms/wards); and an analysis of trends in health care which show an increased need for tertiary and quaternary health care, UCSF Health determined that a larger hospital is needed that would provide inpatient beds, along with other necessary facilities that include additional operating rooms, additional emergency room bays and spaces, additional interventional labs, and ambulance bays. UCSF Health determined that the New Hospital would be implemented in combination with a proposed renovation of Moffitt and Long Hospitals. The renovation of Moffitt and Long Hospitals would provide inpatient beds to augment those proposed at the New Hospital, and facilitate the inpatient clinical and support program needs for the increased patient capacity at Parnassus Heights. UCSF Health estimates a need for a net increase of up to 207 inpatient beds at Parnassus Heights campus over existing conditions.

There is also a need to co-locate UCSF's clinical space with instructional and research spaces at Parnassus Heights. The three missions of clinical care, education, and research are inter-dependent and require balanced support to ensure continued excellence. With a health science focus, much of the research at UCSF benefits from adjacency to the clinical environment just as access to the most advanced research is important to support the clinicians. Similarly, the research and clinical environments provide critical training for students and learners at UCSF. The clinical, educational and research programs are inextricably linked.

2.6 Objectives for the NHPH

The CPHP objectives for the proposed NHPH are as follows:

- Meet seismic requirements of California Senate Bill 1953 by developing a new, seismically-sound, state-of-the-art inpatient facility.
- Site and develop a new inpatient facility in a way that optimizes operational activities with other clinical facilities at Parnassus Heights, such as Moffitt and Long Hospitals, and Medical Building 1.
- Optimize the reuse of Moffitt Hospital by seismically retrofitting the building and judiciously reusing limited portions for inpatient use, as physical requirements allow, balanced with reuse of Moffitt Hospital for other needed clinical and support functions.
- Increase inpatient beds at Parnassus Heights to address severe constraints on capacity and access to care, and to meet the needs of a growing and aging Bay Area population.
- Increase inpatient beds at Parnassus Heights to allow for the capacity to provide inpatient health care in times of severe strain such as the current pandemic, without resorting to reducing or canceling non-essential surgeries to create bed capacity.
- Develop a new inpatient facility that has sufficient space to accommodate modern regulatory requirements and industry standards of contemporary hospitals, such as construction codes,

sizes of operating rooms, ratio of operating rooms to pre-and post-recovery areas, and space for privacy and infection control issues.

- Develop a new inpatient facility that has sufficient space to accommodate modern technology, including telemedicine, robotics, and new diagnostic, imaging, testing, treatment, surgery and laboratory equipment, all requiring substantial infrastructure and space.
- Develop a new inpatient facility that has sufficient space to accommodate patient satisfaction requirements of contemporary hospitals, such as private patient rooms of sufficient size.
- Develop a new inpatient facility that is optimized in its spatial layout to enhance functionality and efficiency.
- Develop spaces for clinical and translational research and learning in or adjacent to clinical areas where patients are located.

2.7 NHPH Characteristics

The NHPH consists of the proposed New Hospital, and a number of related improvements, including a renovation of Moffitt and Long Hospitals; widening of Medical Center Way in the vicinity of the New Hospital; replacement of diesel fuel tanks and medical gas tanks; vegetation management and slope stabilization improvements; and a proposed pedestrian bridge and tunnel across Parnassus Avenue. **Figure 3** illustrates the location of the study area for the proposed New Hospital and related improvements. The following provides a description of each project component.

New Hospital

Background

Table 1 presents an overview of the Parnassus Heights hospital program, including the existing (2020) hospital program, the hospital program envisioned under the CPHP, and the hospital program as modified under the proposed NHPH project. As shown in Table 1, there are currently 325 inpatient beds at Long Hospital and 150 inpatient beds at Moffitt Hospital, for a total of 475 inpatient beds within a combined approximate 754,400 gsf of building space.

TABLE 1
PARNASSUS HEIGHTS HOSPITAL PROGRAM AND BEDS

	Existing (2020)		CPHP		NHPH Project	
	Beds	**Size (GSF)**	**Beds**	**Size (GSF)**	**Beds**	**Size (GSF)**
Moffitt Hospital	150	385,800	0	385,800[a]	49	390,300
Long Hospital	325	368,600	291	368,600	297	373,600
Proposed New Hospital	--	--	384	955,000	336	870,000
Total	**475**	**754,400**	**675**	**1,709,400**	**682**	**1,633,900**

[a] Under the CPHP, inpatient beds from Moffitt Hospital would be relocated to the New Hospital, and Moffitt Hospital would be renovated and repurposed.

SOURCE: UCSF, 2021

Under the CPHP, the New Hospital was envisioned to be 955,000 gsf in size and include 384 inpatient beds. The CPHP program assumed that the existing inpatient beds in Moffitt Hospital would be relocated to the New Hospital; and the surplus space at Moffitt Hospital would be renovated for other clinical uses that would support the New Hospital. Furthermore, under the CPHP program, 291 inpatient beds were assumed to be provided at Long Hospital. As such, the CPHP provided for total of 675 inpatient beds at the campus site.

Proposed New Hospital Use Program and Space Summary

Subsequent to the approval of Amendment #7 to the 2014 LRDP, as master planning for the Parnassus Heights campus site transitioned to the New Hospital, the University reexamined the hospital program at Parnassus Heights, including the proposed size of the New Hospital, and proposed use of Moffitt and Long Hospitals. Under the proposed NHPH, the size of the New Hospital would be reduced from 955,000 gsf (as included in the CPHP) to a proposed 870,000 gsf (an approximate 9 percent reduction), and the inpatient bed count in the New Hospital would be reduced from 384 beds to 336 beds. In addition, under the NHPH, Long Hospital would provide 297 inpatient beds, and Moffitt Hospital would provide 49 inpatient beds. As a result, the total inpatient bed count at the campus site under the NHPH would be up to 682 beds, an increase of up to seven beds over that included in the CPHP; these beds would be online by December 2030. When considering all three hospitals, the collective hospital building space at the campus site under the NHPH project would be 1,633,900 gsf, which is approximately four percent less than the 1,709,400 gsf assumed under the approved CPHP.

Other factors informing the size of the New Hospital include compliance with applicable codes and regulations for new hospitals that require, among other things, taller floor heights and additional space to accommodate mechanical equipment and hospital support functions. The New Hospital design also reflects considerations to further improve operational efficiency, including provision of operating rooms and critical supporting functions on the same level.

Figure 4 and **Figure 5** present birds-eye building massing illustrations of the New Hospital.

New Hospital Design

The proposed New Hospital is in the early stages of design. As proposed, the New Hospital would be approximately 870,000 gsf, and consist of 15 stories plus rooftop mechanical equipment and a full basement. The height of the building above ground level would be approximately 271 feet to the roof level, and approximately 294 feet to top of rooftop perimeter screening. Portions of mechanical equipment and antennas located on the roof would exceed the 294 feet in height. The New Hospital building consists of a 5-story podium, above which a 10-story tower would rise.

Figure 6 presents a plan view of the proposed New Hospital and its main access points. The New Hospital would be situated in the area bounded by Parnassus Avenue on the north, the proposed renovated Moffitt and Long Hospitals on the west, and proposed widened Medical Center Way on the east. On Levels 3 and above, the east face of the New Hospital would partially cantilever over the adjacent Medical Center Way in a saw-toothed pattern.

UCSF Parnassus Heights Campus Site Boundary

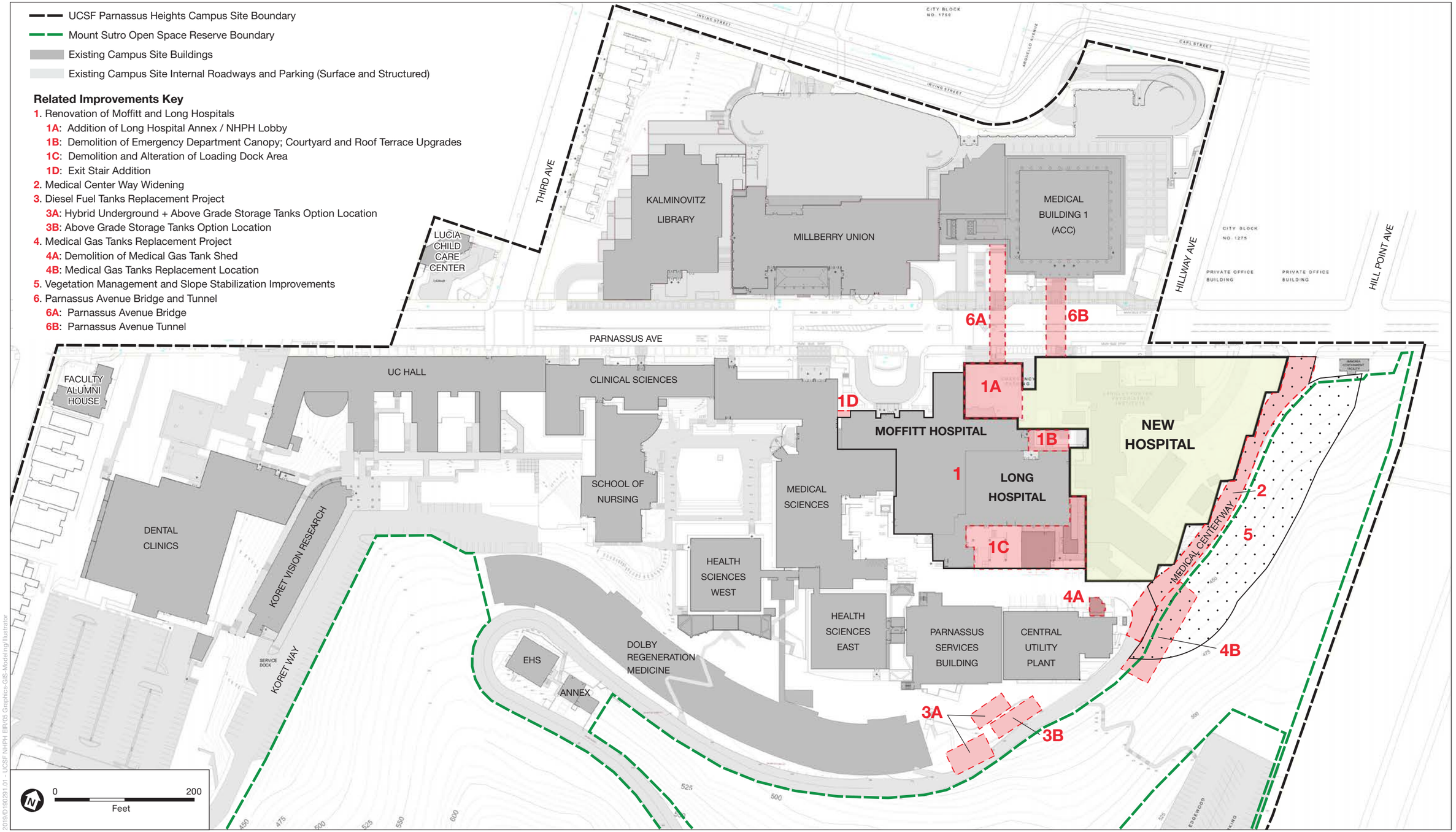
Mount Sutro Open Space Reserve Boundary

Existing Campus Site Buildings

Existing Campus Site Internal Roadways and Parking (Surface and Structured)

Related Improvements Key

1. Renovation of Moffitt and Long Hospitals
   - 1A: Addition of Long Hospital Annex / NHPH Lobby
   - 1B: Demolition of Emergency Department Canopy; Courtyard and Roof Terrace Upgrades
   - 1C: Demolition and Alteration of Loading Dock Area
   - 1D: Exit Stair Addition
2. Medical Center Way Widening
3. Diesel Fuel Tanks Replacement Project
   - 3A: Hybrid Underground + Above Grade Storage Tanks Option Location
   - 3B: Above Grade Storage Tanks Option Location
4. Medical Gas Tanks Replacement Project
   - 4A: Demolition of Medical Gas Tank Shed
   - 4B: Medical Gas Tanks Replacement Location
5. Vegetation Management and Slope Stabilization Improvements
6. Parnassus Avenue Bridge and Tunnel
   - 6A: Parnassus Avenue Bridge
   - 6B: Parnassus Avenue Tunnel



2019/D190291.01 - UCSF NHPH EIR/05 Graphics-GIS-Modeling/Illustrator

SOURCE: UCSF, 2021

UCSF New Hospital Parnassus Heights EIR

Figure 3
New Hospital and Related Improvements Site Map

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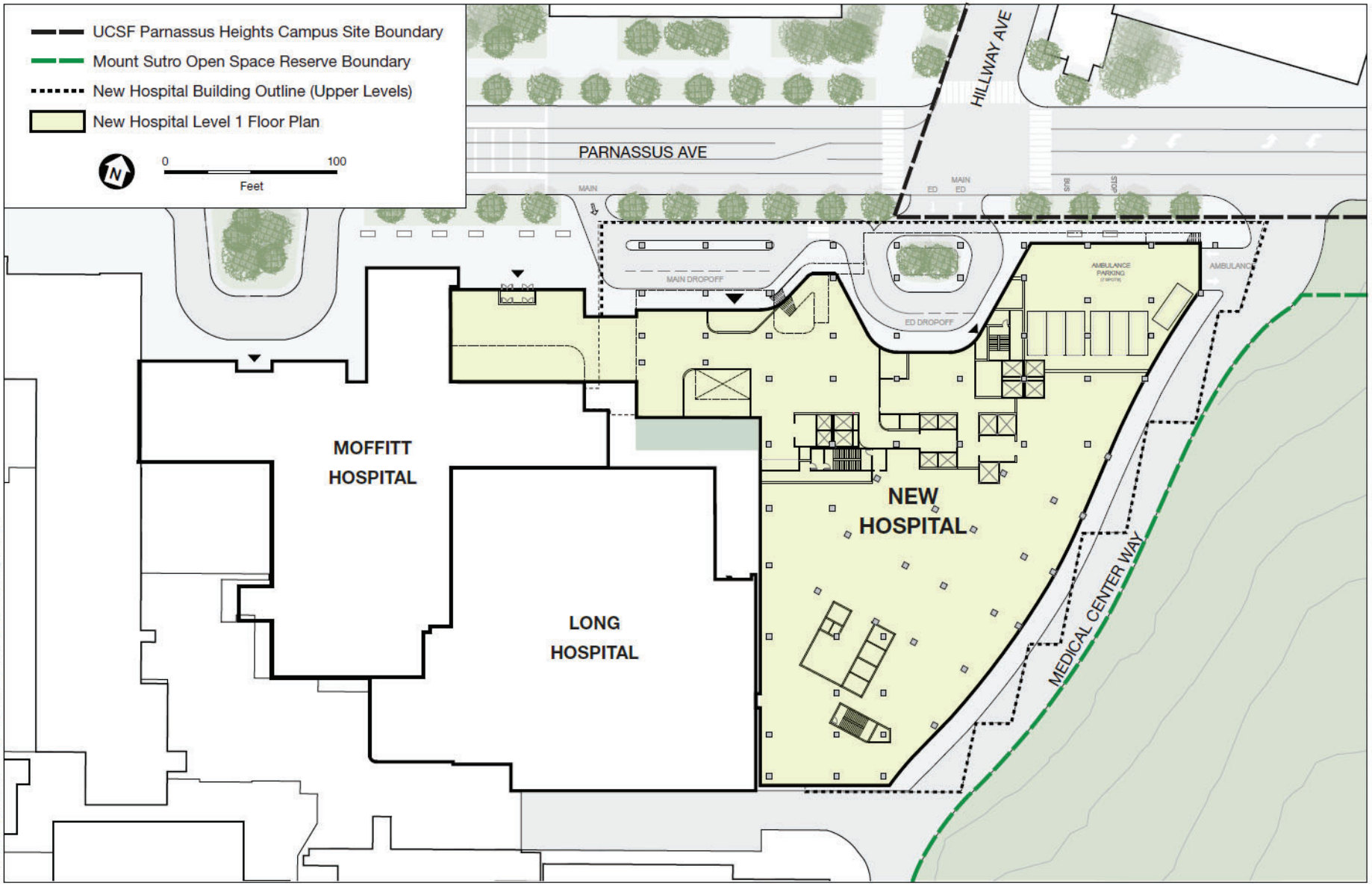
Figure 4
Birds-eye View of New Hospital Massing from Northwest

Figure 5
Birds-eye View of New Hospital Massing from East



SOURCE: Herzog & De Meuron

UCSF New Hospital Parnassus Heights EIR

Figure 6
New Hospital Site Plan

The New Hospital, and renovated Moffitt and Long Hospitals would effectively function as one hospital. The three buildings would be organized around a central ground-level landscaped courtyard that would provide the three buildings access to daylight and views, and facilitate way finding. **Figure 7** presents a stacking diagram of the New Hospital, and adjacent Moffitt and Long Hospitals. Due to the greater floor-to-floor heights of the New Hospital, tentatively, only certain levels of the New Hospital would horizontally connect to the adjacent Moffitt and Long Hospitals. Final connection locations and floors would be confirmed during the design process.

Vertically, the New Hospital would be divided into three distinct stacked horizontal layers, with each layer corresponding to different hospital programs. The New Hospital diagnostic and treatment programs, along with the main kitchen, would be located in the building podium (Levels 1 through 5). The New Hospital's intensive care units (ICUs), along with eatery and pharmacy, would be primarily located in the center layer (Levels 6 through 10). The New Hospital's acute care units (ACUs) would be primarily located in the upper layer (Levels 11 through 15).

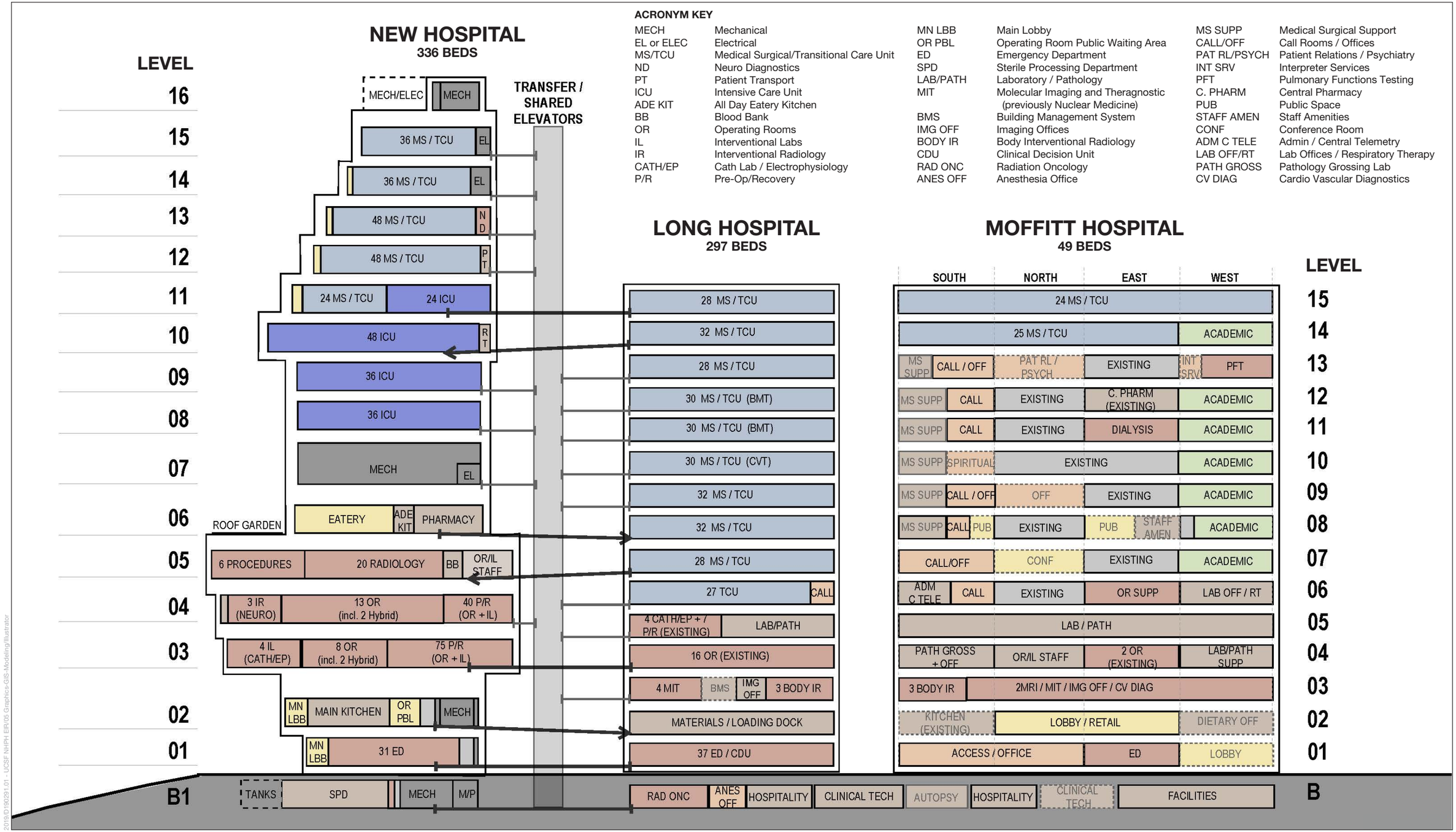
Along the east face of the New Hospital's podium, each ascending floor of the podium would progressively step out (eastward) to follow the contours of the adjacent hillside in the Reserve. Along the south frontage of the New Hospital facing Parnassus Avenue, the podium face would subtly articulate in and out on ascending floors to break up the overall podium mass, provide a more pedestrian scale on the ground floor, and increase visibility of building entrance/exits. Levels 3 and above of building podium would extend over the proposed street-level vehicular turnarounds that would provide for passenger drop-off (see *New Hospital Pedestrian and Vehicular Circulation and Loading*, below, for additional detail).

The center layer of the New Hospital would be recessed to create an elevated outdoor publicly accessible terrace that would extend along the perimeter of Level 6. Supporting columns would line the terrace, and extend to Level 10. The terrace would include a garden containing trees and other vegetation, and public seating, including to serve patrons of the all-day eatery.

On the New Hospital's upper layer, the east and west faces of each ascending floor would progressively step back (inward) to reduce the perceived scale of the New Hospital. The articulation of the terraces created on the upper layer would also create an opportunity for exterior balcony spaces with landscaping.

The New Hospital's main mechanical equipment would be on Level 7. Other major mechanical equipment would be located at the basement level, and on Levels 2, 10 and the roof. The basement in the proposed New Hospital would also include the Sterile Processing Department (SPD), and waste and water storage as required under California Building Code (CBC) Nonstructural Performance Category 5 (NPC-5) regulations and the Joint Commission.[4]

[4] The Joint Commission is an independent non-profit organization that accredits and certifies health care organizations and programs, including hospitals.



SOURCE: UCSF, 2021

NOTE: Diagrams of buildings are meant to illustrate uses within the buildings, and are not representative of actual building shapes and scale.

Figure 7
Stacking Diagram for New Hospital, and Moffitt and Long Hospitals

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New Hospital Pedestrian and Vehicular Circulation, and Loading

The New Hospital building's base would be the central point of access into the New Hospital, and serve to sort the key public flows through and in-between adjacent campus facilities. Patients, visitors, and staff would utilize multiple entrances at street level to gain access to the building.

Proposed vehicular access from Parnassus Avenue would be located beneath the New Hospital building podium on the street level to provide a drop-off for patients for the main entrance and emergency department entrance, respectively. A dedicated ambulance parking area accessed from Medical Center Way would be located beneath the New Hospital podium on the east side of the New Hospital. The New Hospital main entrance would provide pedestrian access to a central public lobby to connect visitors to the hospital's circulation cores and wayfinding stations. The New Hospital emergency department would have a dedicated pedestrian entrance to the east of the main lobby.

Level 2 of the New Hospital would serve as a connecting floor to allow patients, visitors, and staff to orient themselves and continue through the building and to other areas on the campus site. From the Level 2 mezzanine, users would be able to also cross Parnassus Avenue via a proposed pedestrian bridge (see *Parnassus Avenue Pedestrian Bridge and Tunnel,* below, for additional detail).

Loading areas would be provided in two locations. The loading dock for the New Hospital's kitchen would be located on the east side of the New Hospital, and accessed directly from Medical Center Way. As part of the renovation of Moffitt and Long Hospitals, the existing loading dock at the south side (rear) of Long Hospital would be demolished and rebuilt, and would serve as the proposed loading dock for general hospital services and waste collection.

Proposed improvements within the public right-of-way include a new traffic signal at the intersection of Parnassus Avenue and Hillway Avenue, new curb cuts for access to and from the vehicular drop-off loops, and streetscape improvements such as new street trees. UCSF is in the early stages of discussing with the San Francisco Municipal Transportation Agency (SFMTA) the relocation of a Muni bus stop that is currently in front of the project site, which would require relocation on a temporary basis during construction, with the possibility that the new bus stop location would become permanent.

New Hospital Utility Improvements

Utility upgrades for the New Hospital would include domestic water, fire water, wastewater, stormwater, electrical, natural gas, oxygen, nitrogen, emergency fuel, telecommunications, steam and condensate, chilled water, and heating hot water. The steam and condensate, chilled water, heating hot water, electrical, and telecommunications would be routed from the CUP across the existing loading dock to the New Hospital. A utilidor would run north-south within the New Hospital to accommodate future chilled water, heating hot water, and electrical campus loops connecting further north across Parnassus Avenue.

Medical gases and emergency fuel would be served by, and routed from, new medical gas tank and fuel tank locations on the campus site; please see *Diesel Fuel Tank Replacement Project* and

Medical Gas Replacement Project, below, for additional detail). Domestic water and fire water would be fed from new domestic water and fire water lines installed in Medical Center Way as a separate UCSF campus project in 2021-2022.

New Hospital Lighting

The proposed New Hospital would include exterior lighting at building entrances, drop-off areas, and pedestrian walkways for security and for wayfaring purposes. The New Hospital would comply with the allowed backlight, uplight, and glare (BUG) ratings for exterior lighting, for its specific Model Lighting Ordinance (MLO)[5] lighting zone, or the maximum vertical and horizontal lumen[6] allowances for its lighting zone. Either approach would serve to minimize lighting effects associated with the light sources.

New Hospital Landscaping

New landscaping is proposed on the ground level within the central courtyard, and at passenger drop off areas and entrances to the New Hospital, and Moffitt and Long Hospitals. Landscaping would include a variety of trees, shrubs and grasses. The Parnassus Avenue Streetscape Plan as planned in the 2014 LRDP and slightly modified in the CPHP, will include improvements within the Parnassus Avenue right-of-way between Fifth Avenue and Medical Center Way, including street furniture, lighting, and street trees, as well as sidewalk and crosswalk widening in certain locations and better defined campus gateways. This terrace would extend along the perimeter of the New Hospital Level 6 that would include a garden containing trees and other vegetation; and walkways and public seating area. Lastly, on the New Hospital's upper levels, the proposed articulated terraces would create opportunities for landscaping on the exterior balcony spaces.

New Hospital Bird Safe Design

In consideration of the proposed New Hospital's proximity to the Reserve, UCSF proposes to coordinate with a qualified ornithologist to incorporate design features into the New Hospital generally consistent with the City's *Standards for Bird-Safe Guidelines* that would minimize the potential for bird strikes.

New Hospital Sustainability

The New Hospital is being designed and developed to minimize its environmental impact and to support the health of its occupants and the well-being of the local community. Sustainability improvements under the New Hospital are focused on air quality, carbon emissions, water use, resources, biodiversity and open space, human health, and community well-being. The

5 The International Dark-Sky Association (IDA) and the Illuminating Engineering Society (IES) developed a Model Lighting Ordinance (MLO) to address the need for a consistent outdoor lighting regulation in North America. The MLO uses a classification of five lighting zones for different land uses, ranging from LZ0 (for pristine natural environments) to LZ4 (for limited application in areas of extensive development in cities). The MLO also limits the amount of light used for properties. In addition, the MLO uses the IES's backlight, uplight, and glare (BUG) classification of outdoor lighting fixtures to ensure that well-shielded fixtures are used, and that no uplighting is used.

6 The lumen is a measure of the total quantity of visible light emitted by a source per unit of time.

New Hospital would comply with the applicable University of California Policy on Sustainable Practices, and would pursue a minimum level of LEED Gold Certification.

To improve air quality and reduce carbon emissions, the New Hospital would have no new natural gas infrastructure and all new facilities would be electrification ready. The New Hospital is required to outperform the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASRHAE) 90.1-2010 baseline energy code by at least 30 percent and would target to outperform the code by at least 40 percent.

To reduce water use, efficient plumbing fixtures, medical equipment, and native and adaptive landscaping would be used to achieve a minimum 36 percent reduction from the project baseline. Additional heating ventilation and air conditioning (HVAC) water use savings are possible through the reduction of cooling towers, and additional whole project water use savings may be achieved if alternative non-potable water sources are determined to be feasible.

To minimize resource consumption, sustainable materials would be selected in accordance with LEED Materials and Resources credit standards. The project would be planned to help UCSF meet and exceed its 50 percent operational solid waste diversion goals. The construction of NHPH would divert at least 75 percent of construction waste from landfill and incineration, with a target to exceed 85 percent.

As discussed under *New Hospital Design*, above, to provide open space within an urban environment, the New Hospital would be designed with a publicly accessible terrace on Level 6. To support native species and the human connection to nature, landscaping would follow the San Francisco Citywide Biodiversity Goals.

To support occupant health and community well-being, New Hospital building materials would meet stringent LEED indoor air quality requirements and minimize the use of harmful chemicals. Occupants of the New Hospital would have access to daylight and views to nature, with indoor design conditions that support human comfort.

Related Improvements

Renovation of Moffitt and Long Hospitals

The 2014 LRDP approved the renovation and repurposing of Moffitt Hospital for outpatient, hospital support and other non-acute care uses. Moffitt Hospital currently has space and design limitations, and in order to accommodate more robust clinical space and meet new CBC requirements, would require extensive infrastructure upgrades.

Under the NHPH project, the upper two floors of Moffitt Hospital would be reused to provide 49 inpatient beds. In addition, once the New Hospital is complete, interior renovations would be implemented at Moffitt and Long Hospitals to facilitate the inpatient clinical and support program needs for the increased patient capacity at Parnassus Heights under the NHPH. The proposed interior renovations would be made to approximately 74,000 gsf of building space in Long Hospital and 29,000 gsf in Moffitt Hospital to expand the lobby and certain departments, including the

emergency department, surgery and surgery support, clinical labs, pathology, radiation oncology, interventional labs; and support spaces such as the loading dock, facilities management, clinical technologies, hospitality and security. The existing Long Hospital "annex" is a three-story structure fronting on Parnassus Avenue that includes a canopy over the emergency department pedestrian and ambulance entries and parking lot, a cafeteria and patio, and a cardiovascular clinic. During the renovation period, the annex ambulance entry would be enclosed in similar exterior materials as used for the New Hospital, resulting in a net increase to the Long Hospital square footage by approximately 5,000 gsf, and all three floors would be reskinned and renovated.

Both Moffitt and Long Hospitals would provide connections to the New Hospital building. New openings in the east exterior walls of Long Hospital and in the east exterior walls of the north wing of Moffitt Hospital would be created. As discussed above, final connection locations and floors would be confirmed during the design process. The work associated with creating these openings and connecting to the New Hospital would be performed from the interior of Moffitt and Long Hospitals. This work would be phased during the construction of the New Hospital building.

Moffitt Hospital has a Seismic Performance Category rating of 2 (SPC-2). Under California Senate Bill (SB) 1953, Moffitt Hospital is required to undergo a seismic retrofit to remain an acute care facility past 2030. Additionally, the west wing of Moffitt Hospital currently exits through the Medical Sciences Building (MSB), which is a non-acute care building. The current Alternate Means of Compliance to exit Moffitt Hospital through MSB expires in 2030, which necessitates that UCSF build a new exit stair tower for Moffitt Hospital in order to remain an acute care facility past 2030.

Under the NHPH, Moffitt Hospital would be brought up to SPC-4D code compliance.[7] Steel bracing would be added to Moffitt Hospital on the 15th floor and penthouse, structural upgrades would be implemented on the 2nd and 6th floors, and an exit stair tower would be added on the northwest side of the hospital that would extend from the hospital's basement to its 15th floor. To facilitate this improvement, on each floor, the western most window would be removed, the opening enlarged, and a steel stair and enclosure would be constructed. As determined during final design, the stair tower enclosure may include glass, tile, plaster and/or stone that would serve to complement both Moffitt Hospital and adjacent New Hospital. The exit stair tower would result in a net increase to the Moffitt Hospital square footage by approximately 4,500 gsf.

Widening of Medical Center Way

The existing Medical Center Way varies in width from 20 to 38 feet (curb to curb) in the New Hospital vicinity, and contains a public walkway on the west side and a retaining wall on the east side. To meet the San Francisco Fire Department's required fire truck access, Medical Center Way from Parnassus Avenue to the existing loading dock drive aisle would be standardized to 26 feet in width (curb to curb), plus five-foot-wide sidewalks on both sides. No on-street parking is proposed. The additional width required for the widening of Medical Center Way would be captured on the

[7] SPC-4D is a Structural Performance Category that is part of the California Buildings Standards Code. SPC-4D is a voluntary program that is primarily used to retrofit SPC-2 buildings. The retrofit work needs to be completed by 2030 to allow acute care services to remain in existing noncompliant buildings beyond 2030.

west side of this roadway. The existing retaining wall on the east side of Medical Center would be retained in place. Minor elevation changes in Medical Center Way would be implemented to accommodate the proposed widened sidewalk along the east side of road, and stormwater inlets/drains installed to ensure adequate collection of stormwater runoff along this road segment. Regrading at the drive aisle to the existing loading dock may also be required. Any work associated with this project that may occur adjacent to the retaining wall would be limited to the installation of backflow preventers for domestic water, fire water, and irrigation.

Diesel Fuel Tanks Replacement

UCSF currently has five single-walled fiberglass diesel underground storage tanks (USTs) located beneath Medical Center Way (south of the Parnassus Services Building) that serve the CUP generators and boilers, and provide fuel for backup power in the event of an emergency. Each diesel fuel tank has a capacity of 30,000 gallons, for a total storage capacity of 150,000 gallons. These tanks do not meet current code requirements and must be replaced with new code-compliant tanks by 2025. UCSF proposes to install new code-compliant diesel fuel tanks with a maximum allowable capacity of approximately 210,000 gallons. Applicable monitoring and safety systems and measures would be installed to ensure safe operation of the new diesel fuel tanks. Two design options are being considered (Option 1 and 2; please see Figure 3 for location), with Option 1 described below as the primary or preferred option:

- *Option 1: Above Grade Storage Tanks*: Under this option, six new code-compliant diesel fuel aboveground storage tanks (ASTs), 35,000 gallons each, would be installed south of the Parnassus Services Building. The existing USTs would be decontaminated and retained in place in accordance with State UST regulations.

- *Option 2: Hybrid Underground + Above Grade Storage Tanks*: Under this option, three code-compliant diesel fuel aboveground storage tanks (ASTs), 20,000 gallons each, would be installed south of, and adjacent to, the Parnassus Services Building. These tanks would be placed into service and the existing five USTs would be removed and replaced with five code-compliant diesel fuel USTs, 30,000 gallons each.

Medical Gas Tanks Replacement

Moffitt and Long Hospitals utilize two bulk medical gases, oxygen (O_2) and nitrogen (N_2) The oxygen is contained in a tank located on the north side of the CUP in the vicinity of the existing loading dock. The nitrogen is delivered in dewars[8] and stored in a medical gas room in Long Hospital. The proposed new O_2 and N_2 tanks would meet code requirements, provide redundancy, and service the expanded acute care needs of the hospital. The space requirements to accommodate the tanks would be 6,000 to 8,000 sf; tanks would include two 11,000-gallon main tanks and one 9,000-gallon reserve tank, and support equipment.

Due to the size and serviceability of these tanks, and to avoid potential conflicts with loading dock traffic, the existing medical gas tank shed located along the loading dock aisle on the north side of the CUP would be demolished, and the new site for the medical gas tanks would be

[8] Dewars are vacuum flasks used for storing cryogens such as liquid oxygen and nitrogen.

located in a section of the Reserve hillside adjacent to, and on the east side of, Medical Center Way and east of the CUP. Following the proposed widening of Medical Center Way, a platform and secured enclosure would be built on this site for the O_2 and N_2 tanks that would allow service from Medical Center Way. The medical gas lines would be installed under Medical Center Way and connect to the hospital buildings.

The medical gas tanks replacement project would not require any modifications to existing trails within the Reserve, or affect existing trailheads. However, it would require modification of the adjacent Reserve boundary. As discussed above, as the New Hospital building as now proposed would not extend into the Reserve, the area previously removed from the Reserve to accommodate the New Hospital footprint is now proposed to be returned to the Reserve. The area between the Surge and Woods parking lots that was previously added to the Reserve would remain as Reserve land. The Reserve boundary is proposed to be modified to accommodate the medical gas tanks replacement project. These changes would result in a net increase to Reserve land and would maintain the Reserve at a minimum of 61 acres.

Vegetation Management and Slope Stabilization Improvements

Improvements on the hillside east of Medical Center Way would include implementation of vegetation management activities to reduce the risk for fire hazards, and potential slope stabilization improvements.

The extent of potential slope stabilization improvements on the hillside east of Medical Center Way, would be dependent in part on the extent of the tree and vegetation clearance required to comply with State defensible space regulations (as described above). The specific stabilization technique(s) that may be implemented are being determined and could include soil nailing, surface mesh / erosion protection, catchment barrier, and/or benching.

Parnassus Avenue Pedestrian Bridge and Tunnel

To facilitate pedestrian safety, ease of crossing Parnassus Avenue, and patient transport, a weather-protected pedestrian bridge over Parnassus Avenue is proposed that would connect the New Hospital to the planned Irving Street Arrival. As currently envisioned, the proposed pedestrian bridge would span north approximately 90 feet across Parnassus Avenue from the second level of the proposed modified Long Hospital annex to the second level of the planned Irving Street Arrival. The enclosed bridge structure would be about 12 feet wide and 16 feet tall and situated up to 30 feet above grade, for a total height of up to 46 feet from grade to the top of the structure.

Additionally, a tunnel beneath Parnassus Avenue connecting the south side of the campus site to the north side is proposed to accommodate UCSF employees, utility lines, patient transport between Medical Building 1 and the New Hospital, and the movement of goods and materials. This tunnel is intended to reduce the amount of activity and congestion that occurs on Parnassus Avenue and to provide a safer crossing experience for employees, and students. It is also intended to provide a private setting for the transport of patients between the New Hospital and Medical Building 1, rather than the proposed bridge which would be open to the general public. The proposed tunnel would be about 20 feet wide and be located approximately 30 to 40 feet below

grade. **Figure 8** conceptually illustrates the general location of the proposed Parnassus Avenue pedestrian bridge and tunnel.

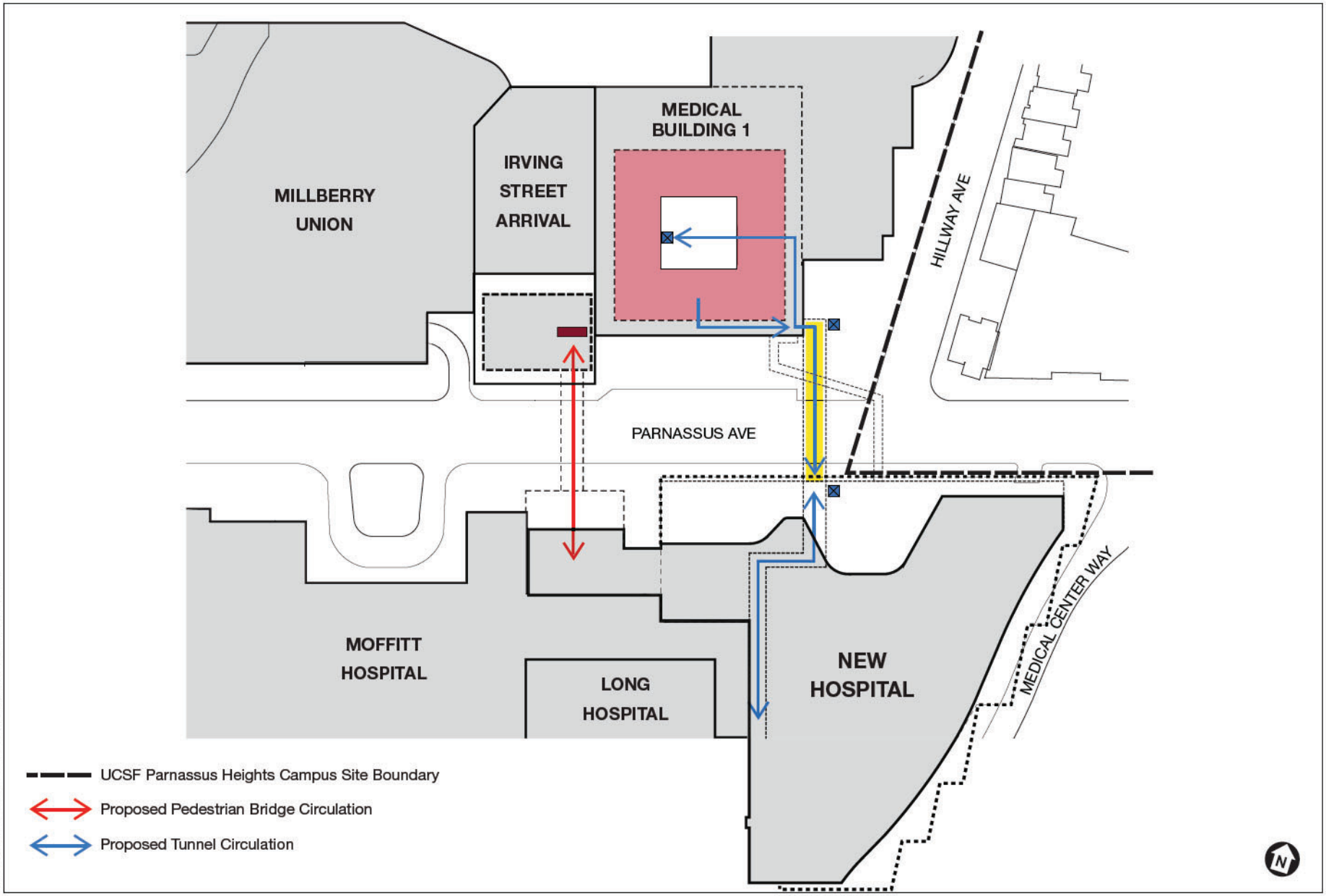
2.8 NHPH Construction

Construction Overview

As described in more detail below, the majority of NHPH construction, including for the New Hospital and related improvements, would occur between January 2023 and December 2030. Exceptions would be certain utility improvements which would begin in the third quarter of 2022; the renovation of Moffitt and Long Hospitals, which would extend to 2034; and the proposed Parnassus Avenue pedestrian bridge and tunnel, for which a specific date of construction is not known, but is expected to occur at some point after 2030. Construction activities would include, but not be limited to, renovation and/or seismic improvements for Moffitt and Long Hospitals; site clearing, excavation, and/or grading activities at the site of the New Hospital and related improvements; New Hospital building foundation and vertical construction; street and sidewalk construction; installation of utilities; building interior finishing; and exterior hardscaping and landscaping improvements.

NHPH project construction would generate temporary construction jobs on-site that would vary in number, depending on the specific construction activities being performed and overlap between construction of individual projects. Therefore, varying numbers of construction workers would be present on the project site, depending on the phase of construction. A variety of mobile and stationary construction equipment would be used on the project site and/or immediate vicinity during construction. This is expected to include use of cranes for pier drilling for foundations, steel and/or precast erection, and building façades. Other mobile equipment such as excavators, backhoes, front-end loaders, dump trucks, concrete boom trucks and forklifts would be used at the project site for a range of other construction tasks, including site clearing, excavation and grading, building construction, and/or hardscape and landscape materials installation. Project construction would generate off-site truck trips for deliveries of concrete and other building materials, transportation of construction equipment to and from the project site, hauling of soils and debris from the site, and street sweepers. A variety of other smaller mechanical equipment would also be used at the project site during the construction period, such as saw cutters, chopping saws, tile saws, stud impact guns, impact drills, torque wrenches, welding machines, and concrete boom pumps. The proposed tunnel under Parnassus Avenue would be constructed by means of either directional boring or open cut excavation. Depending on location within the campus site and depth of excavation, limited and temporary dewatering may be required for individual projects during construction; in which case, water would be discharged to the City's sewer system, after treatment, if necessary.

Potential on-site construction materials/construction worker staging areas would include: the 1) the existing parking lot area located south of UC Hall; 2) the Surge parking lot, and/or 3) the top level of the Medical Building 1 parking lot. Certain roads within the campus site, most notably Medical Center Way, are likely to be partially or fully closed for limited durations during construction.



SOURCE: UCSF, 2021

UCSF New Hospital Parnassus Heights EIR

Figure 8
Parnassus Avenue Pedestrian Bridge and Tunnel

No pile driving or blasting activities are proposed during construction of projects proposed for the NHPH project. Rather, foundations would be installed using drilled piers; and excavation of soft rock would be conducted using hydraulic heavy excavators.

Construction under the NHPH project is proposed to occur consistent with Section 2908 of the City Police Code, known as the San Francisco Noise Ordinance. Although UCSF is not subject to the noise ordinance, it strives to be consistent with it to the extent feasible.[9]

Estimated NHPH Project Construction Timeline

It is anticipated that the proposed New Hospital and related improvements would be constructed along the approximate timeline presented in **Table 2**. Actual timelines for individual construction projects may be influenced by factors outside of UCSF's control, including, but not limited to, economic conditions (e.g., as a consequence of the present COVID-19 pandemic), weather, and other considerations.

TABLE 2
PRELIMINARY NHPH CONSTRUCTION SCHEDULE

NHPH Construction Component	Estimated Construction Duration
New Hospital[a]	January 2023 to December 2030
Utilities	2022 – 2024
Shoring, mass excavation and grading	2023 – 2024
Drilled piers, underground utilities, foundation	2024 – 2025
Steel erection	2025 – 2026
Slab on metal deck and fire proofing	2025 – 2026
Exterior skin enclosure	2026 – 2028
Interior build out	2026 – 2030
Landscaping and site improvements	2028 – 2030
Related Improvements	January 2022 to 2034
Vegetation Management and Slope Stabilization Improvements	2022-2024
Connections at Moffitt and Long to New Hospital	2023 – 2029
Interior renovations to Moffitt and Long Hospitals to accommodate NHPH	2023 – 2025
Moffitt Seismic and Exit Stair, including Interior Renovations	2023 – 2025
Widening of Medical Center Way	2023 – 2024
Medical Gas Tanks Replacement	2023 – 2024
Diesel Fuel Tanks Replacement	2024 – 2026
Renovation of Moffitt and Long Hospitals, including Long Annex	2031 – 2034
Parnassus Avenue Pedestrian Bridge and Tunnel	To be determined (post-2030)

[a] Existing buildings occupying the footprint of the proposed New Hospital include the LPPI and three small support structures. The demolition and removal of these structures would occur in 2023. The demolition and removal of the LPPI and supporting structures were previously planned under the 2014 LRDP. The CPHP Final EIR addressed the potential effect of demolition of the LPPI on historic resources as part of the CPHP. Accordingly, the demolition and removal of LPPI and supporting buildings are not included in the NHPH and will be completed separately from the NHPH.

SOURCE: UCSF, 2021

[9] Section 2908 prohibits erecting, constructing, demolishing, excavating for, altering, or repairing any building or structures between the hours of 8:00 p.m. of any day and 7:00 a.m. of the following day if the noise level created is in excess of the ambient noise level by 5 dBA at the nearest property line.

NHPH Construction, Demolition and Excavation

In total, the NHPH would result in an estimated 870,000 gsf of new building construction related to the New Hospital, approximately 92,500 cubic yards (cy) of excavation of materials exported from the site, and 3,000 cy of materials imported to the site. Moffitt Hospital would undergo approximately 74,000 gsf of interior renovations, and a net increase in building square footage by approximately 4,500 gsf. Long Hospital would undergo approximately 29,000 gsf of interior renovations, and a net increase in building square footage by approximately 5,000 gsf. Together, the renovation of Moffitt and Long Hospitals would generate an estimated 85 tons of debris that would be removed from the construction site.

Off-site Construction

While the great majority of construction under the NHPH is proposed within the campus site boundary, certain NHPH elements would require construction off-site. This includes, as described above, construction along the Parnassus Avenue frontage adjacent to the New Hospital; new traffic signal at the intersection of Parnassus Avenue and Hillway Avenue; the proposed pedestrian bridge and tunnel across Parnassus Avenue; and off-site utility extensions and connections in Parnassus Avenue. Depending on activity, off-site construction may result in temporary partial public road closures, including on Parnassus Avenue.

Tree Removal

As indicated above, certain tree and vegetation removal would be required under the NHPH as a result of clearing, excavation, regrading, and/or other activities. This includes, but is not limited to, areas within the project site, areas within the public right-of-way adjacent to the project site, the Reserve (e.g., on the hillside adjacent to Medical Center Way for the medical gas tanks replacement, and the proposed vegetation management and slope stabilization improvements), and miscellaneous areas of ornamental landscaping.

2.9 Revisions to the 2014 LRDP

As described in Section 2.4 above, a minor amendment to the 2014 LRDP would be required to adjust the Reserve boundary and maintain the Reserve at a minimum of 61 acres.

3. Environmental Factors Potentially Affected

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

☒ Aesthetics	☐ Agriculture and Forestry Resources	☒ Air Quality
☒ Biological Resources	☒ Cultural Resources	☒ Energy
☒ Geology/Soils	☒ Greenhouse Gas Emissions	☒ Hazards & Hazardous Materials
☒ Hydrology/Water Quality	☒ Land Use/Planning	☐ Mineral Resources
☒ Noise	☒ Population/Housing	☐ Public Services
☐ Recreation	☒ Transportation	☐ Tribal Cultural Resources
☒ Utilities/Service Systems	☐ Wildfire	☒ Mandatory Findings of Significance

4. Determination

On the basis of this Initial Study:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☐ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☒ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Signature

July 28, 2021
Date

5. Evaluation of Environmental Effects

Appendix G of the CEQA Guidelines provides a suggested format to use when preparing an Initial Study. The Environmental Checklist used in this document adopts a different format while still addressing the Appendix G checklist questions for each environmental issue area.

The attached Environmental Checklist uses the following response headings to identify potential environmental effects that will be addressed in the NHPH EIR:

1. **Impact to be Analyzed in NHPH EIR:** An effect that may or may not be significant that will be addressed in the NHPH EIR. The effect may be a less-than-significant impact that will be addressed to provide a more comprehensive analysis; an impact for which further analysis is necessary or desirable before a determination about significance can be made; an impact that is potentially significant but may be reduced to a less-than-significant level with the adoption of mitigation measures identified in the CPHP Final EIR and/or newly added mitigation measures in this EIR; or an impact that may be significant and unavoidable.

2. **No Additional Analysis Required:** Implementation of the proposed NHPH would clearly result in no impact or result in a less-than-significant impact under CEQA criteria, no analysis beyond that provided in this Initial Study is necessary.

The 2014 LRDP Final EIR analyzed the impacts of the planned growth and development at the Parnassus Heights campus site under the 2014 LRDP at a program level. It also included a project-level analysis for a number of specific projects, and those projects were approved for implementation at the time the 2014 LRDP was approved.

In January 2021, the Regents approved Amendment #7 to the 2014 LRDP, which incorporated the CPHP planning concepts and proposals into the LRDP. The CPHP included a larger development program for the campus site than that included in the 2014 LRDP and analyzed in the 2014 LRDP Final EIR, with a longer time horizon under which the envisioned development program would be implemented. The CPHP excluded some of the specific projects that were previously approved in the 2014 LRDP as they will be implemented separately from the CPHP based upon the prior analysis and approval. The CPHP Final EIR analyzed the potential environmental impacts of the planned growth and development at the Parnassus Heights campus site under the CPHP at a program level, and provided Plan level mitigation measures to reduce the potential significant impacts to the extent feasible. The CPHP Final EIR also provided project-level analysis for certain CPHP Initial Phase developments. Relevant information from the CPHP Final EIR has been used to characterize existing conditions and inform the impact analysis in this Initial Study. Nonetheless, the Initial Study provides a complete, stand-alone analysis of the impacts that will not require additional analysis in the NHPH EIR.

5.1 Aesthetics

Issues (and Supporting Information Sources):		*Impact to be Analyzed in NHPH EIR*	*No Additional Analysis Required*
I.	**AESTHETICS —** Except as provided in Public Resources Code Section 21099, would the project:		
a)	Have a substantial adverse effect on a scenic vista?	☒	☐
b)	Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☒
c)	In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☒	☐
d)	Create a new source of substantial light or glare which would adversely affect daytime or nighttime views in the area?	☒	☐
e)	Create new shadow that substantially and adversely affects the use and enjoyment of publicly accessible open spaces?	☒	☐
f)	Create wind hazards in publicly accessible areas of substantial pedestrian use?	☒	☐

Discussion

CEQA Statute Section 21099(d) states that "Aesthetic and parking impacts of a residential, mixed-use residential, or employment center project on an infill site located within a transit priority area shall not be considered significant impacts on the environment."[10] Accordingly, aesthetics and parking are not considered in determining if a project has the potential to result in significant environmental effects for projects that meet all of the following three criteria:

a) The project is in a transit priority area;[11]

b) The project is on an infill site;[12] and

c) The project is residential, mixed-use residential, or an employment center.[13]

The proposed NHPH meets each of the above three criteria. Thus, the NHPH EIR will not consider aesthetics and the adequacy of parking in determining the significance of project impacts under CEQA. Nevertheless, the public and decision-makers may be interested in information pertaining to the aesthetic effects of the proposed NHPH, and may desire that such information be provided as part of the environmental review process. Therefore, this NHPH EIR will provide an

10 Refer to CEQA *Statute s*ection 21099(d)(1).

11 CEQA *Statute* 21099(a)(7) defines a "transit priority area" as an area within 0.5 mile of an existing or planned major transit stop. A "major transit stop" is defined in CEQA Statute 21064.3 as a site containing any of the following: an existing rail or bus rapid transit station, a ferry terminal served by either a bus or rail transit service, or the intersection of two or more major bus routes with a frequency of service interval of 15 minutes or less during the morning and afternoon peak commute periods.

12 CEQA *Statute* 21099(a)(4) defines an "infill site" as a lot located within an urban area that has been previously developed, or a vacant site where at least 75 percent of the perimeter of the site adjoins, or is *separated* only by an improved public right-of-way from, parcels that are developed with qualified urban uses.

13 CEQA *Statute* 21099(a)(1) defines an "employment center" as a project located on property zoned for commercial uses with a floor area ratio of no less than 0.75 and located within a transit priority area.

assessment of potential aesthetic impacts, and identifies, as feasible, mitigation measures to mitigate potential significant impacts.

a) As described in Section 2, *Project Description*, the New Hospital would be 15 stories plus rooftop mechanical equipment (i.e., approximately 271 feet to the roof level and approximately 294 feet to top of rooftop perimeter screening[14]). Given the massing and height of the New Hospital, and the prominent location of the project site adjacent to the north-facing slope of Mount Sutro, development of the New Hospital and related improvements would be visible from a number of distant public view locations. As a result, the NHPH EIR will consider the potential effects of the proposed development on scenic vistas.

b) There are no state-designated scenic highways in the vicinity of the Parnassus Heights campus site. Therefore, no further study of the effects of NHPH on scenic resources within a state scenic highway is necessary, and this topic will not be analyzed in the NHPH EIR.[15]

c) Given the location, height, and massing of the New Hospital, the potential for the proposed New Hospital and related improvements to conflict with applicable zoning and other regulations governing scenic quality will be evaluated in the NHPH EIR.

d) The majority of proposed improvements under the NHPH, including the New Hospital, would be located on the eastern side of the campus core, which is densely developed with multiple structures and is located in an urban environment characterized by high level of ambient nighttime illumination. Development of the New Hospital would increase the amount of nighttime illumination on the project site and vicinity. In addition, building roofs, windows and other exterior building features and materials constructed as part of the proposed project would have the potential to include reflective surfaces and increase glare. As a result, the NHPH EIR will consider the potential effects of light and glare from the proposed development.

e) The proposed New Hospital and related improvements would increase vertical development at the eastern side of the campus site and consequently, would have the potential to create new shadows. Public open spaces under the control of the San Francisco Recreation and Park Department (RPD) are protected by the City's Sunlight Ordinance (Section 295 of the Planning Code). Section 295 prohibits the issuance of building permits for structures or additions to structures greater than 40 feet in height that would shade property under the jurisdiction of or designated to be acquired by the Recreation and Park Commission, during the period from one hour after sunrise to one hour before sunset. Pursuant to the University of California's constitutional autonomy, development and uses on property under the control of

[14] An exception would be portions of mechanical equipment and antennas located on the roof would exceed the 294 feet in height.

[15] It should be noted that the NHPH would be visible from portions of San Francisco's 49-Mile Scenic Drive, which currently extends along Parnassus Avenue in the project vicinity. The 49-Mile Scenic Drive is not a State designated scenic highway. Given the origins of the 49-Mile Scenic Drive, its length, and the fact that both the Drive and views from the Drive along its length and in the vicinity of Parnassus Heights have changed over time, a location on the Drive does not necessarily increase the visual sensitivity of that location or suggest that visual changes from the Drive are significant impacts.

the University that are used in furtherance of the University's educational purposes are not subject to local land use regulation, including the City and County of San Francisco Planning Code. Although UCSF is not subject to local standards, UCSF strives to be consistent with the standards, where feasible.

The nearest public open spaces under control of the San Francisco RPD to the project site are Golden Gate Park, located two blocks (approximately 800 feet) to the north of the project site, Richard Gamble Memorial Park, located about five blocks or 2,000 feet to the northeast of the project site, Grattan Playground, located approximately 1,200 feet to the east of the project site, and the Interior Greenbelt, located approximately 800 feet southeast of the project site, adjacent to the campus site east of the Reserve. Due to the height of the proposed building relative to surrounding development, and a building height of approximately 294 feet, the New Hospital would cast shadow on nearby public open spaces. The New Hospital would also cast shadow on the Reserve, which is also open to the public, but not subject to the jurisdiction of the San Francisco RPD. The NHPH EIR will consider the potential effects of shadow on public open space from the New Hospital for informational purposes.

f) The NHPH would alter pedestrian-level wind conditions through construction of a 294-foot-tall building. For this reason, the NHPH EIR will consider the potential for the New Hospital to create hazardous street-level winds in publicly accessible areas of substantial pedestrian use within and in the vicinity of the Parnassus Heights campus site.

5.2 Agriculture and Forestry Resources

Issues (and Supporting Information Sources):		*Impact to be Analyzed in NHPH EIR*	*No Additional Analysis Required*
II.	**AGRICULTURE AND FORESTRY RESOURCES —** In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:		
a)	Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☒
b)	Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☒
c)	Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☒
d)	Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☒
e)	Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☒

Discussion

a) No agricultural uses are located on the NHPH site, and no land on the campus site is designated as Important Farmland on maps prepared pursuant to the Farmland Mapping and Monitoring Program. Consequently, no impact related to conversion of agricultural land would occur under the proposed NHPH, and this topic will not be evaluated further in the NHPH EIR.

b-c) The NHPH site is designated for urban uses. No portion of the project site is zoned for agricultural use, forest land or timberland. In addition, there is no Williamson Act contract applicable to the project site or its vicinity. Consequently, no impact related to conflicts with zoning for these lands would occur under the proposed NHPH, and these topics will not be evaluated further in the NHPH EIR.

d) The Reserve includes a variety of vegetation, including, but not limited to, blue gum eucalyptus, Monterey cypress, and Blackwood acacia (UCSF, 2014; UCSF, 2018). The proposed New Hospital would not alter the adjacent Reserve. There is the potential for certain related improvements proposed under the NHPH, including the proposed medical gas tanks replacement project, to result in the need to modify the Reserve boundary, and therefore, could result in a loss and conversion of forest land within the Reserve to a non-forest use. However, the area previously removed from the Reserve under 2014 LRDP Amendment #7 to accommodate the New Hospital footprint is now proposed to be returned to the Reserve. In addition, the area between the Surge and Woods parking lots that was added to the Reserve under 2014 LRDP Amendment #7 would remain as Reserve land.

These changes would result in a net increase to Reserve land and would maintain the Reserve at a minimum of 61 acres. Consequently, the impact related to the loss or conversion of forest land would be less than significant, and this topic will not be evaluated further in the NHPH EIR.

e) No Important Farmland or other agricultural land is present in the vicinity of the NHPH site. Therefore, the proposed NHPH would not involve any changes that could indirectly cause conversion of Important Farmland to non-agricultural use. As discussed in checklist item "d," above, changes to the Reserve boundary under the NHPH would result in a net increase to Reserve land and would maintain the Reserve at a minimum of 61 acres. Consequently, the impact resulting from conversion of forest land would be less than significant, and this topic will not be evaluated further in the NHPH EIR.

References

University of California, San Francisco (UCSF). 2014. *UCSF 2014 Long Range Development Plan Final Environmental Impact Report*. November.

UCSF. 2018. *UCSF Vegetation Management Plan for the Mount Sutro Open Space Reserve Final Environmental Impact Report*. March.

5.3 Air Quality

Issues (and Supporting Information Sources):		*Impact to be Analyzed in NHPH EIR*	*No Additional Analysis Required*
III.	**AIR QUALITY —** Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the project:		
a)	Conflict with or obstruct implementation of the applicable air quality plan?	☒	☐
b)	Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	☒	☐
c)	Expose sensitive receptors to substantial pollutant concentrations?	☒	☐
d)	Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☒
e)	Exceed the LRDP EIR standard of significance by exposing receptors to toxic air contaminant emissions that (1) result in a cancer risk greater than 10 cancer cases per 1 million people exposed in a lifetime; or (2) for acute or chronic effects, result in concentrations of toxic air contaminant emissions with a Hazard Index of 1.0 or greater.	☒	☐

Discussion

a) The most recent clean air plan is the Bay Area 2017 Clean Air Plan that was adopted by the Bay Area Air Quality Management District (BAAQMD) in April 2017. Consistency with this plan is the basis for determining whether the NHPH would conflict with or obstruct implementation of air quality plans. Development of the NHPH would increase both stationary and mobile sources of air pollutant emissions, which contribute to regional air pollution. Air pollutant emissions also could occur over the short term in association with construction activities that emit exhaust and dust that could affect local and regional air quality. The NHPH EIR will include an evaluation of the potential for the proposed NHPH to conflict with the local clean air plan.

b) Construction and operation of the NHPH would generate air pollutants that could be considerable in a regional, cumulative context. The NHPH EIR will include an evaluation of the air quality impacts that could result from pollutant emissions related to implementation of the NHPH for which the air basin is in nonattainment of the ambient air quality standards.

c, e) Construction and operation of the NHPH could expose sensitive receptors on the campus site and in adjacent residential neighborhoods to substantial pollutant concentrations (including toxic air contaminants resulting in health risks). The NHPH EIR will include an evaluation of the air quality impacts related to exposure of sensitive receptors to pollutant concentrations.

d) The proposed NHPH would not include development of land uses identified by BAAQMD as typically associated with odors, such as wastewater treatment plants, landfills, composting facilities, refineries, or chemical plants (BAAQMD, 2017). As the proposed NHPH would not result in development that would be a potential source of odors, this topic will not be evaluated further in the NHPH EIR.

References

Bay Area Air Quality Management District (BAAQMD). 2017. *California Environmental Quality Act Air Quality Guidelines*. May.

5.4 Biological Resources

Issues (and Supporting Information Sources):		*Impact to be Analyzed in NHPH EIR*	*No Additional Analysis Required*
IV.	**BIOLOGICAL RESOURCES —** Would the project:		
a)	Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☒	☐
b)	Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☒
c)	Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☒
d)	Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☒	☐
e)	Conflict with any local policies or ordinances protecting biological resources?	☐	☒
f)	Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☒
g)	Exceed the LRDP EIR standard of significance by damaging or removing heritage or landmark trees or native oak trees of a diameter specified in a local ordinance?	☐	☒

Discussion

a) Construction and operational activities under the proposed NHPH that would be within or in the vicinity of the Reserve have the potential to adversely impact special-status wildlife species, migratory birds, and bats inhabiting the Reserve forest through increased noise and visual disturbance. In addition, resident and migrating birds and bats could nest or roost in existing buildings in the project site vicinity. Removal of campus trees or other vegetation could result in the loss of nests or roosts. Further, the proposed project could adversely impact resident and migratory birds or bats through increased noise and visual disturbance during building construction. The potential for rare plant species to be impacted by the NHPH, including in the Reserve, is low because of the widespread alteration of vegetation communities that has occurred over time at the campus site, although coastal triquetrella, a special status moss, may occur open gravel areas along roadsides and hillsides. These potential impacts will be analyzed and discussed further in the NHPH EIR.

b) The proposed NHPH would not have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the CDFW or USFWS as no riparian habitat or other sensitive natural community is mapped or identified within the campus site. While there is the potential for certain improvements proposed under the NHPH, including the proposed medical gas tanks replacement project, to result in the need to modify the Reserve boundary, the Reserve is largely comprised of non-native eucalyptus forest with a non-native understory (UCSF, 2014; UCSF, 2018). No development associated with the NHPH is planned within undeveloped areas of the Reserve where sensitive habitats are present; thus, there would be no impacts on

riparian or sensitive habitats. No impact would occur, and this topic will not be evaluated further in the NHPH EIR.

c) Development of the NHPH site would not have a substantial adverse effect on State or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means as there are no jurisdictional or non-jurisdictional wetlands mapped or identified at the NHPH site. The only wetland feature in the project vicinity is an intermittent stream (Woodland Creek) that is located in the Reserve. The stream originates on the eastern slope of Mount Sutro and flows into the City's Interior Greenbelt to the east. However, as the proposed New Hospital and related improvements would not be located in this portion of the Reserve, this wetland feature would not be affected by development under the proposed NHPH. No impact would occur, and this topic will not be evaluated further in the NHPH EIR.

d) The Reserve contains suitable habitat for resident and migrating birds moving along the Pacific Flyway due to its expanse of mature trees and dense understory isolated within an urban setting. The proposed 294-foot-tall New Hospital developed adjacent to the Reserve could increase the likelihood of birds striking windows of the new building. These potential impacts will be analyzed and discussed further in the NHPH EIR.

e) Pursuant to the University of California's constitutional autonomy, development and uses on property under the control of the University that are in furtherance of the University's educational purposes are not subject to local land use regulation, including City of San Francisco General Plan policies regarding the protection of urban biological resources. Although UCSF is not subject to local standards, UCSF strives to be consistent with the standards, where feasible. Potential conflicts of any off-site improvements that may occur under the NHPH with the San Francisco Urban Forestry Ordinance, however, are discussed below [see topic (g)].

f) There are no adopted habitat conservation plans, natural community conservation plans, or other applicable habitat conservation plan that would be applicable to development under the proposed NHPH. No impact would occur, and this topic will not be analyzed in the NHPH EIR.

g) Tree removal would be required for the proposed NHPH as a result of clearing, demolition, excavation, regrading and/or other activities.

This would include areas within the NHPH project site, including adjacent to Medical Center Way and potentially, within the Reserve on the hillside east of the proposed New Hospital. In addition, trees within the public right-of-way on Parnassus Avenue adjacent to the project site would be removed. Pursuant to the University of California's constitutional autonomy, development and uses on property under control of the University that are in furtherance of the University's educational purposes are not subject to local land use regulation, including City and County of San Francisco General Plan policies regarding protection of biological resources. Although UCSF is not subject to City policies and regulations, UCSF strives to be consistent with City standards, where feasible.

The San Francisco Urban Forestry Ordinance (Article 16 of the San Francisco Public Works Code) was enacted to ensure the protection of trees on private land within and adjacent to public areas. The City and County of San Francisco currently considers street trees, significant trees, and landmark trees as protected. Significant trees are trees within 10 feet of the public right-of-way and are either 20 feet or greater in height, 15 feet or greater in canopy width, or 12 inches or greater in trunk diameter at 4.5 feet above grade. Landmark trees are trees that have received special designation by the San Francisco Board of Supervisors due to species rareness, size, age, structure, ecological contribution, or historical and cultural importance. Removal of such trees requires a permit and payment of costs associated with a public hearing and replacement of the tree. While as indicated above, UCSF is not subject to local policies or processes protecting biological resources on university-controlled property used in furtherance of the University's educational mission, UCSF will avoid removal of trees that would be considered significant or protected to the maximum extent feasible. In addition, trees within the public right-of-way that would be removed during the course of off-site construction under the NHPH would conform to the City's ordinance governing tree protection. Thus, this impact would be less than significant.

References

University of California, San Francisco (UCSF). 2014. *UCSF 2014 Long Range Development Plan Final Environmental Impact Report*. November.

UCSF. 2018. *UCSF Vegetation Management Plan for the Mount Sutro Open Space Reserve Final Environmental Impact Report*. March.

5.5 Cultural Resources

Issues (and Supporting Information Sources):		*Impact to be Analyzed in NHPH EIR*	*No Additional Analysis Required*
V.	**CULTURAL RESOURCES —** Would the project:		
a)	Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?	☒	☐
b)	Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☒
c)	Disturb any human remains, including those interred outside of formal cemeteries?	☐	☒

Discussion

a) The Parnassus Heights campus site is the oldest of the UCSF campus sites, having begun in 1896 as the Affiliated Colleges, and contains numerous buildings and structures that are listed in, or are eligible for listing in, the California Register of Historical Resources (CRHR) and/or the National Register of Historic Places (NRHP). There are several extant historic architectural resources identified within the NHPH vicinity, including the LPPI, Millberry Union Complex, the Health Sciences Instruction and Research (HSIR) West and East, the Medical Sciences Building, and the Clinical Sciences Building. In addition, the Reserve is identified as a cultural landscape in the CRHR. Of these historical resources, the LPPI and the Reserve are located within the footprint of the NHPH and/or certain related improvements.

The proposed New Hospital would be located on the site of the LPPI. As discussed in the Section 2, *Project Description*, the demolition and removal of the LPPI was previously planned and approved under the 2014 LRDP. In 2020, the LPPI was determined to be eligible for listing in the NRHP and the CRHR, and the effects of the demolition on this historical resource was addressed in the CPHP Final EIR as part of the CPHP. As such, the demolition and removal of the LPPI are not included in the NHPH project, and will be completed separately from the NHPH project.

Certain proposed improvements under the NHPH, including the proposed medical gas tanks replacement project, may require modification of the Reserve. The potential for these improvements to materially alter in an adverse manner those physical characteristics of an historical resources that convey its historical significance and that justify its inclusion in, or eligibility for inclusion in, the CRHR will be analyzed and discussed further in the NHPH EIR.

b) Previous studies and archival research conducted for the Parnassus Heights campus site, including NHPH site, have not identified archaeological resources, and the NHPH site is highly disturbed from extensive use and prior development. Archaeological sites are generally located near watercourses or water bodies, with the nearest prehistoric archaeological resources located over three miles to the east near Mission Bay or over three miles to the west near Ocean Beach (NWIC, 2019).

ESA also conducted a cultural resources pedestrian survey of the NHPH site on June 18, 2021. All areas of proposed disturbance were inspected for indications of past human use or

occupation, including midden soil, shell, and lithic/faunal remnants. The NHPH site is highly disturbed and there was very limited ground visibility. No cultural materials were identified.

Based on the extensive use and previous disturbance of the campus site, there is also a very low potential to uncover historic-era archaeological resources. Nevertheless, given the substantial new site alteration and excavation that would occur at the NHPH site, the potential for uncovering archaeological resources, including historic period resources, cannot be entirely discounted. In the event that archaeological materials are discovered during construction (including grading, excavation and other earthmoving activities), a substantial adverse change to a resource found to qualify as an historical resource per CEQA Guidelines Section 15064.5 or a unique archaeological resource, as defined in CEQA Section 21083.2(g), could be potentially significant. With implementation of **NHPH Mitigation Measure CUL-V.b**, the proposed NHPH would have a less-than-significant impact on previously unknown archaeological resources. Therefore, this impact would be less than significant with mitigation and will not be discussed further in the NHPH EIR.

NHPH Mitigation Measure CUL-V.b: Inadvertent Discovery of Archaeological Resources and Tribal Cultural Resources

Prior to commencement of construction activities, all on-site personnel shall attend a mandatory pre-project training to outline the general archaeological and tribal cultural sensitivity of the project area. The training will include a description of the types of resources that could be encountered and the procedures to follow in the event of an inadvertent discovery of resources.

If prehistoric or historic-era archaeological resources are encountered by construction personnel during ground-disturbing activities, all construction activities within 100 feet shall halt and the contractor shall notify the UCSF Environmental Coordinator (EC). The UCSF EC shall retain a Secretary of the Interior-qualified archaeologist (qualified archaeologist) to inspect the find within 24 hours of discovery. If it is determined that the project could damage a historical resource or a unique archaeological resource, construction shall cease in an area determined by the qualified archaeologist until a mitigation plan has been prepared and implemented [CEQA Guidelines 15064.5(b)(4)]. If the find is a potential tribal cultural resource, the UCSF EC shall contact a Native American representative or representatives (as provided by the Native American Heritage Commission) [PRC 21074(2)(c)]. The qualified archaeologist, in consultation with the UCSF EC and the Native American representative(s), shall determine when construction can resume.

If the resource is determined to be a historical resource or a unique archaeological resource, the preferred mitigation shall be preservation in place. In accordance with PRC Section 21083.2(b), preservation in place shall be accomplished through: (1) modifying the construction plan to avoid the resource; (2) incorporating the resource within open space; (3) capping and covering the resource; or (4) deeding the resource site into a permanent conservation easement. If preservation in place is not feasible, the qualified archaeologist, in consultation with the UCSF EC and the Native American representative(s) (if the resource is prehistoric), shall prepare and implement a detailed treatment plan. In all cases treatment will be carried out with dignity and respect (including protecting the cultural character, traditional use, and confidentiality of the resource). For prehistoric resources, the Native American representative(s) will be consulted on the research approach, methods,

and whether burial or data recovery or alternative mitigation is appropriate for the find. Treatment for most resources could consist of (but shall not be limited to) sample excavation, site documentation, and historical research, as appropriate to the discovered prehistoric resource. The treatment plan shall include provisions for analysis of data in a regional context as appropriate to the discovered prehistoric resource, reporting of results within a timely manner, and dissemination of reports to local and state repositories, libraries, and interested professionals.

Significance after Mitigation: Less than Significant.

c) There are no known human remains, including those interred outside of formal cemeteries located at the Parnassus Heights campus site, including the NHPH site. Due to prior ground disturbance and development on the NHPH site, excavation and other ground disturbing activities associated with the NHPH would have a low potential to affect previously unknown human remains. There still exists, however, the potential that ground disturbance under the NHPH could impact previously undiscovered human remains. As such, impacts to human remains could be potentially significant. With implementation of **NHPH Mitigation Measure CUL-V.c**, the NHPH and related improvements would have a less-than-significant impact on human remains. Therefore, this impact would be less than significant with mitigation and will not be discussed further in the NHPH EIR.

NHPH Mitigation Measure CUL-V.c: Inadvertent Discovery of Human Remains

In the event of discovery or recognition of any human remains during ground-disturbing activities, treatment shall comply with all applicable state and federal laws. All construction activities within 100 feet shall halt and the contractor shall notify the UCSF Environmental Coordinator (EC). In accordance with PRC 5097.98, the UCSF EC shall contact the San Francisco Office of the Medical Examiner (Medical Examiner) to determine that no investigation of the cause of death is required. The Medical Examiner shall contact the Native American Heritage Commission (NAHC) within 24 hours if it is determined that the remains are Native American. The NAHC will then identify the person or persons it believes to be the most likely descendant (MLD) from the deceased Native American. Within 48 hours, the MLD shall make recommendations to the UCSF EC of the appropriate means of treating the human remains and any grave goods. Whenever the NAHC is unable to identify an MLD, the MLD fails to make a recommendation, or the parties are unable to agree on the appropriate treatment measures, the human remains shall be reinterred with appropriate dignity on the property in a location not subject to further and future subsurface disturbance.

Significance after Mitigation: Less than Significant.

References

Northwest Information Center (NWIC). 2019. California Historical Resources Information System Database at Sonoma State University, Rohnert Park, California. File No. 19-0705.

University of California, San Francisco (UCSF). 2014. *UCSF 2014 Long Range Development Plan Final Environmental Impact Report*. November.

5.6 Energy

Issues (and Supporting Information Sources):		*Impact to be Analyzed in NHPH EIR*	*No Additional Analysis Required*
VI.	**ENERGY —** Would the project:		
a)	Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☒	☐
b)	Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☒	☐

Discussion

a) Construction and operation of the proposed NHPH would require the use of refined fossil fuels, primarily gasoline and diesel, and electricity. Construction activities would require the short-term use of heavy-duty construction equipment that would run on diesel fuel or electricity. Gasoline would be required primarily to fuel construction-worker automobiles to commute to and from the construction site. Once operational, development under the proposed NHPH would generate new long-term automobile and truck trips that would require the use of gasoline and diesel fuel. Operation of the proposed NHPH would also result in energy consumption that could increase the natural gas demand of the Central Utility Plant. Natural gas consumption could also increase relative to increased space heating. Potential effects related to wasteful, inefficient, or unnecessary consumption of energy resources will be analyzed in the NHPH EIR.

b) The proposed NHPH would be required to comply with the *UC Policy on Sustainable Practices*, which requires that new construction meet a minimum standard of LEED-NC Silver and strive for LEED-NC Gold when possible and requires 20 percent better energy performance than Title 24 (and strives to achieve 30 percent). While the NHPH is not expected to conflict with the University's policy, this potential impact will be analyzed in the NHPH EIR.

5.7 Geology and Soils

Issues (and Supporting Information Sources):	*Impact to be Analyzed in NHPH EIR*	*No Additional Analysis Required*
VII. GEOLOGY AND SOILS — Would the project:		
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:		
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☒
ii) Strong seismic ground shaking?	☒	☐
iii) Seismic-related ground failure, including liquefaction?	☒	☐
iv) Landslides?	☒	☐
b) Result in substantial soil erosion or the loss of topsoil?	☒	☐
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	☒	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	☐	☒
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☒
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☒
g) Exceed the LRDP EIR standard of significance by exposing people to structural hazards in an existing building rated Level V (Poor), or Level VI (Very Poor), under the University's seismic performance rating system, or substantial nonstructural hazards?	☐	☒

Discussion

a.i) The NHPH site is located on a bedrock outcrop of the Franciscan Complex, a mix of chert, greenstone, meta-sandstone and shale. The NHPH site is not located within or immediately adjacent to an active fault trace (i.e., Alquist-Priolo Earthquake Fault zone) and as a result is considered to have a very low potential for fault rupture (Jennings, 2010). No impact would occur, and this topic will not be analyzed in the NHPH EIR.

a.ii) The entire City of San Francisco, including the NHPH site, is located in a seismically active area with a high probability of experiencing a substantial earthquake in the future, and a fundamental purpose of the NHPH project is to meet State-mandated seismic safety requirements. Nonetheless, development under the proposed NHPH could put people or structures at risk of loss, injury, or death involving strong seismic ground shaking. The NHPH EIR will assess the potential for the proposed NHPH to directly or indirectly cause substantial adverse effects resulting from strong seismic ground shaking.

a.iii) The NHPH site vicinity is mapped as having a low to moderate risk of liquefaction from seismic ground shaking (ABAG, 2019). Development under the proposed NHPH could expose people or structures to loss, injury, or death due to seismic-related ground failure,

including liquefaction. The NHPH EIR will assess the potential for the proposed NHPH and related improvements to directly or indirectly cause substantial adverse effects resulting from seismic-related ground failure.

a.iv) Certain areas within the Parnassus Heights campus site have the potential for future slope movement (Rutherford & Chekene, 2019). Previous slope failures and landslides have occurred on the Reserve slope adjacent to Medical Center Way. The proposed regrading of ground elevations, and excavation for the New Hospital and related improvements (e.g., slope cut excavation for the widened Medical Center Way) could result in exposure of persons or structures to loss, injury, or death due to landslides. The NHPH EIR will assess the potential for the proposed NHPH and associated improvements to directly or indirectly cause substantial adverse effects resulting from landslides.

b) Development under the proposed NHPH could potentially change drainage patterns that could lead to substantial soil erosion or the loss of topsoil. The NHPH EIR will assess the potential for the proposed NHPH and associated improvements to result in substantial soil erosion and loss of topsoil from the proposed land development activities.

c) The NHPH site is located on geologic units and soils that could become unstable as a result of land development activities under the proposed NHPH. The NHPH EIR will assess the potential for the proposed NHPH and associated improvements to result in substantial harm due to geologic and soil instability, including on- or off-site landslides, lateral spreading, subsidence, liquefaction, or collapse.

d) Expansive soils are defined as those that shrink when dry and swell when moist; they typically contain a high proportion of clay particles. In general, expansive soils are commonly addressed in the evaluation of onsite geotechnical hazards, and past geotechnical investigations at the campus site has not revealed the presence of expansive soils. Furthermore, the University requires all new facilities to adhere to the current California Building Code (CBC), which includes detailed provisions to ensure that the design of new facilities is appropriate to site soil conditions, including requirements to address expansive and otherwise problematic soils. With adherence to the CBC, impacts related to site soil conditions – including but not limited to expansive soils, if any are present – would be less than significant, and this topic will not be evaluated further in the NHPH EIR.

e) The proposed NHPH does not propose any activities that would require the utilization of septic systems or alternative wastewater disposal systems. Therefore, there would be no adverse effects from wastewater disposal associated with development under the proposed NHPH and this topic will not be analyzed in the NHPH EIR.

f) A direct effect on a unique paleontological resource would result from the direct damage or destruction of such a resource. Indirect impacts are not specifically caused by a development project, but may be a reasonably foreseeable result of such a project. Typical indirect impacts to paleontological resources include the destruction or loss of surface fossils from increased erosion or the non-scientific or unauthorized surface collection or subsurface excavation of a fossil or paleontological site. Following the guidelines of the Society of

Vertebrate Paleontology (SVP), a review of the scientific literature and geologic mapping were used to determine paleontological sensitivities of the geologic units present on the NHPH site that would be subject to ground-disturbing activities (SVP 1995, SVP 2010). Review of geological maps, databases, and previous analysis suggests that there are no known unique paleontological resources or unique geologic features at the NHPH site. The surficial Quaternary deposits that overlie the Franciscan Complex on the NHPH site have no paleontological potential. Furthermore, while invertebrate fossils have been discovered in the Franciscan Complex, they are not considered unique due to their abundance. The potential for encountering vertebrate fossils in the Franciscan sedimentary rocks is considered very rare because of the high deformity for most of the units. As a result, the Franciscan Complex has a low paleontological sensitivity. Due to the prior ground disturbance and development on the NHPH site, excavation and other ground disturbing activities associated with the New Hospital and related improvements would have a low potential to affect previously unknown paleontological resources.

However, the unmetamorphosed sedimentary rocks of the Franciscan Complex would have a higher sensitivity for containing paleontological resources. Excavation and ground disturbing activities for the New Hospital and related improvements could extend into less disturbed and potentially sensitive units. As a result, the subsurface construction at the NHPH site could have the potential, albeit low, to directly or indirectly destroy a previously unknown unique paleontological resource, which would be a significant impact. The impact would be reduced to a less-than-significant level by implementation of **NHPH Mitigation Measure GEO-VII.f**, which would require that work halt in the event that paleontological resources are discovered during construction, and appropriate action is taken, and will not be discussed further in the NHPH EIR.

NHPH Mitigation Measure GEO-VII.f: Prior to commencement of construction activities, all on-site personnel shall attend a mandatory pre-project training to outline the general paleontological sensitivity of the project area. The training will include a description of the types of resources that could be encountered and the procedures to follow in the event of an inadvertent discovery of resources.

If paleontological resources, such as fossilized bone, teeth, shell, tracks, trails, casts, molds, or impressions are discovered during ground-disturbing activities, work shall stop in that area and within 100 feet of the find until a qualified paleontologist meeting the Society of Vertebrate Paleontology (SVP) Standards can assess the nature and importance of the find and, if necessary, develop appropriate salvage measures in conformance with SVP standards (2010). If the discovery can be avoided and no further impacts will occur, no further effort shall be required. If the resource cannot be avoided and may be subject to further impact, a qualified paleontologist shall evaluate the resource and determine whether it is “unique” under CEQA.

Any discovered paleontological resources that are determined by the qualified paleontologist to be “unique” in accordance with CEQA shall be given appropriate salvage measures in conformance with SVP standards (2010).

Significance after Mitigation: Less than Significant.

g) The University of California has developed a system of seismic performance ratings based on the existing California Building Code. UC hospitals, including Moffitt and Long Hospitals, and the proposed New Hospital, are not subject to this ratings system. As such, the NHPH would not expose people to structural hazards in buildings rated Level V (Poor) or Level VI (Very Poor) under the University's seismic performance rating system. Accordingly, no impact would occur, and this topic will not be analyzed in the NHPH EIR.

However, hospitals fall under the jurisdiction of the Alfred E. Alquist Hospital Facilities Seismic Safety Act and Senate Bill 1953, which require acute care facilities to comply with seismic safety building standards as defined by the Office of Statewide Health Planning and Development (OSHPD). OSHPD assigns structural and nonstructural performance ratings for these facilities. The NHPH will be evaluated against these OSHPD standards in the NHPH EIR as part of VII.a, above.

References

Association of Bay Area Governments (ABAG). 2019. Liquefaction Study Zones and Liquefaction Susceptibility, http://gis.abag.ca.gov/website/Hazards/?hlyr=cgsLiqZones, accessed September 3, 2019.

Jennings C. W. 2010. 2010 Fault Activity Map of California.

Rutherford & Chekene. 2019. New Campus-Wide Slope Stability Risk Assessment, University of California San Francisco, Parnassus Campus, San Francisco, California. March 29.

Society of Vertebrate Paleontology (SVP). 1995. Assessment and mitigation of adverse impacts to nonrenewable paleontologic resources: standard guidelines. Society of Vertebrate Paleontology News Bulletin 163:22-27.

SVP. 2010. Standard procedures for the assessment and mitigation of adverse impacts to paleontological resources. Available: http://vertpaleo.org/Membership/Member-Ethics/SVP_Impact_Mitigation_Guidelines.aspx

University of California, San Francisco (UCSF). 2014. *UCSF 2014 Long Range Development Plan Final Environmental Impact Report*. November.

5.8 Greenhouse Gas Emissions

Issues (and Supporting Information Sources):	*Impact to be Analyzed in NHPH EIR*	*No Additional Analysis Required*
VIII. GREENHOUSE GAS EMISSIONS — Would the project:		
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☒	☐
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☒	☐

Discussion

a, b) Construction and operation of the proposed NHPH would generate greenhouse gas (GHG) emissions that could result in a potentially significant impact. The NHPH EIR will estimate the direct and indirect GHG emissions from development under the proposed NHPH and discuss whether the emissions would comply with UCSF's Climate Action Plan and the UCSF Greenhouse Gas Reduction Strategy, a qualified greenhouse gas reduction plan. In addition, the NHPH EIR will discuss any conflicts that development under the proposed NHPH may have with applicable State regulations such as Assembly Bill 32, Executive Order B-30-15, Senate Bill 350, and Senate Bill 32.

5.9 Hazards and Hazardous Materials

Issues (and Supporting Information Sources):		*Impact to be Analyzed in NHPH EIR*	*No Additional Analysis Required*
IX.	**HAZARDS AND HAZARDOUS MATERIALS —** Would the project:		
a)	Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☒	☐
b)	Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☒	☐
c)	Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☒	☐
d)	Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☒	☐
e)	For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	☐	☒
f)	Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☒
g)	Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires.	☐	☒

Discussion

a) The proposed New Hospital would be located on the site of the LPPI. As discussed in the Section 2, *Project Description*, the demolition and removal of the LPPI was previously included and analyzed in the 2014 LRDP Final EIR and again analyzed in the CPHP Final EIR due to its recent eligibility for listing in the NRHP and the CRHR, and therefore is not included in the NHPH EIR. Accordingly, potential effects associated with encountering hazardous building materials in the LPPI demolition, and/or potentially disturbing underlying materials that may contain naturally occurring asbestos, were previously determined to be less than significant with compliance with applicable laws and regulations governing the management and disposal of hazardous materials, and implementation of mitigation measures identified in the 2014 LRDP Final EIR.

The proposed renovation of the Moffitt and Long Hospitals would disturb older structures where hazardous building materials such as asbestos, lead-based paint (LBP), polychlorinated biphenyls (PCBs), mercury-containing items, and other hazardous materials may be present (UCSF, 2014). If present, renovation activities could disturb these materials, thus resulting in potentially adverse effects to workers and the public. In addition, San Francisco is among the identified counties where ultramafic bedrock materials are present and have the potential for naturally occurring asbestos fibers, which could be encountered during site alteration and excavation activities at the NHPH site (UCSF, 2014). If present, ground disturbing activities could disturb these fibers causing them to become airborne, thus resulting in potentially adverse effects to workers and the public. The NHPH EIR will evaluate potential effects from the exposure to hazardous materials during construction activities associated with development under the proposed NHPH.

Operation of the New Hospital would result in an increase in clinical uses on the campus site that would involve the routine use, transport, or disposal of hazardous materials, including hazardous chemical, radioactive, and biohazardous materials. The NHPH EIR will evaluate potential effects that could arise through the routine transport, use, or disposal of hazardous materials during operation of the New Hospital and related improvements.

b) As discussed above, the hazardous materials impacts associated with demolition and removal of the LPPI were sufficiently analyzed in the 2014 LRDP Final EIR. The potential for foreseeable or accidental release of hazardous materials associated with the demolition of the LPPI was determined to be less than significant with compliance with applicable laws and regulations governing the management and disposal of hazardous materials, and implementation of mitigation measures identified in the 2014 LRDP Final EIR.

Construction activities for the proposed NHPH would require the use of hazardous materials such as fuels, oils, and lubricants for construction equipment; paints and thinners; and solvents and cleaners. While compliance with local, State, and federal regulations would minimize risks associated with the accidental release of hazardous materials during construction, this topic will be addressed in the NHPH EIR.

Operation of the New Hospital and related improvements would result in an increase in storage and use of hazardous materials. The NHPH EIR will evaluate the potential for the NHPH to increase hazards to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials, and will discuss applicable UCSF policies, and State and federal regulations that govern the management of hazardous materials to reduce potential hazards from upset and accident conditions.

c) There are two child care centers currently operating within the Parnassus campus site (Kirkham Child Development Center and UCSF Marilyn Reed Lucia Child Development Center) located within a quarter mile of the NHPH site. The Grattan Elementary School and a private child care center are also located within a quarter mile of the NHPH site. Construction of the proposed NHPH could result in hazardous emissions due to the presence of hazardous building materials. The NHPH EIR will evaluate potential effects that could arise due to hazardous emissions or the handling of hazardous or acutely hazardous materials, substances, or waste during NHPH construction and operation within one-quarter mile of an existing or proposed school.

d) Two cases in the NHPH site vicinity found on the Geotracker database maintained by the State Water Resources Control Board were closed in accordance with applicable regulatory agency oversight, with no further action required (SWRCB 2019a; SWRCB 2019b). However, given the routine use of hazardous materials on the NHPH site, it is possible that unknown contamination may be present on the project site. The NHPH EIR will evaluate potential hazards to the public or the environment from potential contamination in the NHPH site vicinity.

e) There are no public use airports within two miles of the City of San Francisco. San Francisco International Airport and Oakland International Airport are over eight and 12 miles from the

project site, respectively. No impact would occur, and this topic will not be discussed in the NHPH EIR.

f) The proposed NHPH would be required to ensure that the street system can accommodate emergency response and evacuation. The proposed NHPH and related improvements would be designed to ensure appropriate emergency access to and egress from all areas. Additionally, all project-specific designs, including internal circulation and building site plans, would be subject to review and approval by the State Fire Marshall for emergency response and evacuation concerns. UCSF design criteria and existing emergency response requirements are sufficient to ensure that the potential health and safety effects resulting from possible impairment or interference with any emergency response or evacuation plans would remain less than significant, and this topic will not be analyzed in the NHPH EIR.

g) According to the California Department of Forestry and Fire Protection (CAL FIRE) Fire Hazard Severity Zone Map of San Francisco County, the Reserve is designated as Local Responsibility Area (LRA) moderate fire hazard severity zone (CAL FIRE, 2007). In September 2018, UCSF began implementing the Mount Sutro Open Space Reserve Vegetation Management Plan, a 20-year phased plan covering the management of the Reserve. In addition, as described in the Project Description, in compliance with California Code of Regulations Title 14 Section 1299.03 and California Public Resources Code Section 4291, and consistent with the vegetation management practices listed in the Mount Sutro Open Space Reserve Vegetation Management Plan, tree and vegetation removal would occur on the hillside adjacent to the proposed new Hospital to maintain defensible space around the building, and reduce the risk of wildland fire hazard. Consequently, the impact associated with the exposure of people or structures developed under the proposed NHPH, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires would be less than significant. This topic will not be analyzed in the NHPH EIR.

References

California Department of Forestry and Fire Protection (CAL FIRE). 2007. Draft Fire Hazard Severity Zones in LRA – San Francisco County. October 5.

State Water Resources Control Board (SWRCB). 2019a. Geotracker database, http://geotracker.waterboards.ca.gov/map/?CMD=runreport&myaddress=315+Parnassus+Avenue. Accessed August 21, 2019.

SWRCB. 2019b. Geotracker database, http://geotracker. waterboards.ca.gov/map/?CMD=runreport&myaddress=50+Medical+Center+Way. Accessed August 21, 2019.

University of California, San Francisco (UCSF). 2018. *UCSF Vegetation Management Plan for the Mount Sutro Open Space Reserve Final EIR*. March.

5.10 Hydrology and Water Quality

Issues (and Supporting Information Sources):		*Impact to be Analyzed in NHPH EIR*	*No Additional Analysis Required*
X.	**HYDROLOGY AND WATER QUALITY —** Would the project:		
a)	Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	☒	☐
b)	Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☒
c)	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:		
	i) result in substantial erosion or siltation on- or off-site;	☒	☐
	ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;	☒	☐
	iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	☒	☐
	iv) impede or redirect flood flows?	☒	☐
d)	In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☒
e)	Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☒

Discussion

a, c.i to c.iv) The majority of surface water runoff from the project site is directed to the City's combined sewer system (CSS) that conveys flows to both the City's Oceanside Treatment Plant (OSP) at Ocean Beach on the City's western shoreline and the Southeast Treatment Plant (SEP) at Hunters Point on the City's eastern waterfront. Both treatment plants have a permit from the National Pollutant Discharge Elimination System (NPDES) program administered by the San Francisco Regional Water Quality Control Board (RWQCB) that regulates discharge from the plant to the Pacific Ocean.

Construction activities under the NHPH could result in accidental spills of oil, gasoline, and other pollutants that could degrade water quality. In addition, as discussed above in Section 5.7, *Geology and Soils*, construction under the proposed NHPH could increase erosion, which could potentially increase sediment discharged into storm water and degrade water quality. During operation, development under the proposed NHPH could also potentially generate surface water runoff with elevated levels of sediment and urban contaminants such as oil, grease, metals, pesticides, herbicides, and entrained dust. The NHPH EIR will evaluate these potential impacts related to water quality during construction and operation of the NHPH, and describe applicable regulations and programs that the NHPH would be required to comply with to ensure these impacts would be minimized.

The NHPH site is largely developed and covered in impervious surfaces. Additional building development under the NHPH could incrementally increase the amount of impervious surfaces over existing conditions. Development under the proposed NHPH would change

drainage patterns on the NHPH site that could potentially result in flooding on- or off-site downstream. Stormwater runoff would be collected by existing and new on-site stormwater collection infrastructure, depending on location, that would direct the runoff to the existing off-site City CSS infrastructure in adjacent streets, and depending on point of discharge, treated at the City's OSP or SEP.

Operation of the NHPH would increase the amount of stormwater and wastewater volumes from the NHPH site which could increase the volume or frequency of overflow events at one or both of the City's treatment plants under certain wet weather conditions. The NHPH's proposed stormwater management plan will be described, and its ability to avoid exceeding the capacity of the City CSS, and avoid increasing the frequency, duration or volume of combined sewer discharges to receiving waters during wet weather conditions will be evaluated in the NHPH EIR.

b) Large portions of the NHPH site where development under the proposed NHPH would occur are currently under impervious surfaces. Development under the proposed NHPH could result in an increase in impervious surfaces, but not enough to interfere with groundwater recharge. In addition, dewatering during construction may be required. However, dewatering activities would be temporary and would not result in a long-term lowering of the local water table. Finally, development under the proposed NHPH would not require the use of groundwater during construction or operation. For these reasons, development under the proposed NHPH would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge, and this topic will not be analyzed in the NHPH EIR.

d) The NHPH site is not located within a 100-year flood zone (SFWPS, 2019). In addition, given the elevation of the NHPH site (greater than 400 feet asl), it has no potential to be affected by future sea level rise (CCSF 2016). Finally, due to its elevation and inland location, and its distance from the nearest major body of water, the campus site is not susceptible to the potential effects of a tsunami or seiche (CalEMA 2009). No impact would occur, and this topic will not be analyzed in the NHPH EIR.

e) Water quality in the City and County of San Francisco is regulated by the San Francisco RWQCB through the Water Quality Control Plan (Basin Plan) for the San Francisco Bay Basin. As discussed under item (a) above, development under the proposed NHPH could negatively impact water quality during construction and operation. The NHPH EIR will evaluate potential conflicts of the proposed NHPH with the Basin Plan.

The NHPH site is located in the Westside groundwater basin. The basin has not been identified as a medium- or high-priority groundwater basin by the California Department of Water Resources (DWR, 2019); therefore, a Groundwater Sustainability Plan (GSP) does not need to be prepared for the basin per the requirements of the Sustainable Groundwater Management Act (SGMA). Thus, development under the proposed NHPH would not conflict with a sustainable groundwater management plan, no impact would occur, and this topic will not be analyzed in the NHPH EIR.

References

San Francisco Water Power Sewer (SFWPS). 2019. 100-Year Storm Flood Risk Map, http://www.sfwater.org/index.aspx?page=1229. Accessed August 27, 2019.

City and County of San Francisco (CCSF). 2016. *San Francisco Sea Level Rise Action Plan.* March.

California Department of Water Resources (DWR). 2019. Basin Prioritization, https://water.ca.gov/Programs/GroundwaterManagement/Basin-Prioritization. Accessed August 28, 2019.

California Emergency Management Agency (CalEMA). 2009. Tsunami Inundation Map for Emergency Planning, State of California – City and County of San Francisco, San Francisco North Quadrangle, San Francisco South Quadrangle (Pacific Coast). June 15.

5.11 Land Use and Planning

Issues (and Supporting Information Sources):		*Impact to be Analyzed in NHPH EIR*	*No Additional Analysis Required*
XI.	**LAND USE AND PLANNING —** Would the project:		
a)	Physically divide an established community?	☐	☒
b)	Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☒	☐
c)	Exceed an LRDP EIR standard of significance by conflicting with local land use regulations such that a significant incompatibility is created with adjacent land uses?	☒	☐

Discussion

a) No development outside of the established campus site boundary is proposed, and no intrusion into, or division of, surrounding residential communities would occur under the proposed NHPH. The campus site would continue to remain as a distinct entity, consisting of clinical, research, educational and associated support (such as child care and housing) land uses that are woven into the fabric of the surrounding neighborhood, and the boundary of the campus site would not change as a result of the proposed NHPH and related improvements. The widening of Medical Center Way would also not alter existing connections within the adjacent Reserve. No impact would occur, and this topic will not be analyzed in the NHPH EIR.

b) The 2014 LRDP, as amended to incorporate the CPHP, is the current applicable land use plan for the proposed NHPH. The NHPH EIR will evaluate the consistency of the proposed NHPH with the 2014 LRDP, as amended.

c) Land within the City and County of San Francisco's jurisdiction is subject to plans, policies and zoning controls that regulate future development proposals and mitigate certain environmental effects. UCSF is not subject to local land use regulations whenever using property under its control in furtherance of its education mission. However, the NHPH EIR will evaluate the potential for development under the proposed NHPH to directly or indirectly conflict with City plans, policies and zoning controls such that a significant incompatibility is created with adjacent land uses.

5.12 Mineral Resources

Issues (and Supporting Information Sources):	*Impact to be Analyzed in NHPH EIR*	*No Additional Analysis Required*
XII. MINERAL RESOURCES — Would the project:		
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☒
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	☐	☒

Discussion

a, b) The NHPH site is not located in an area of known mineral resources. In addition, the NHPH site does not contain a locally important mineral resource recovery site. Therefore, no impact would occur, and this topic will not be analyzed in the NHPH EIR.

5.13 Noise

Issues (and Supporting Information Sources):		*Impact to be Analyzed in NHPH EIR*	*No Additional Analysis Required*
XIII.	**NOISE —** Would the project result in:		
a)	Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☒	☐
b)	Generation of excessive groundborne vibration or groundborne noise levels?	☒	☐
c)	For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☒
d)	Exceed an LRDP EIR standard of significance by contributing to an increase in average daily noise levels (Ldn) of 3 dB(A) or more at property lines, if ambient noise levels in areas adjacent to proposed development already exceed local noise levels set forth in local general plans or ordinances for such areas based on their use?	☒	☐

Discussion

a) Development under the proposed NHPH could result in increases or changes in noise levels from sources such as construction activities, stationary sources, and increased vehicular traffic, which could exceed applicable noise standards. The NHPH EIR will evaluate the potential for the proposed New Hospital and related improvements to expose sensitive receptors to noise in excess of applicable standards.

b) Construction activities that would occur under the proposed NHPH would generate perceptible groundborne vibration levels when heavy equipment or impact tools are used. Structures, researchers and residents in the proximity of the NHPH site and related improvements could be adversely affected by groundborne vibration and groundborne noise generated during the construction of the project. The potential for significant vibration impacts will be analyzed in the NHPH EIR.

c) There are no public use airports within two miles of the City of San Francisco. San Francisco International Airport and Oakland International Airport are over eight and 12 miles from the campus site, respectively, and therefore well outside of the area of influence identified in their respective airport land use compatibility plans. Consequently, there would be a less than significant impact with regard to exposure to excessive noise levels from public use airports, and this topic will not be analyzed in the NHPH EIR.

d) Modeled noise levels in the vicinity of the campus site are above 70 dB(A) Ldn along the Parnassus Avenue and Irving Street frontages (CCSF, 2009). While operation of the New Hospital is not expected to contribute to an increase in average daily noise levels of 3 dB(A) Ldn or more at property lines in an area where ambient noise levels already exceed local noise levels set forth in City's General Plan, as that would require the projects to result in a doubling of traffic in the area, this potential impact will be analyzed in the NHPH EIR. In addition, there would be new mechanical equipment (e.g., heating ventilation and air

conditioning) associated with the operation of the New Hospital. The potential impact of noise from these stationary sources will also be analyzed in the NHPH EIR.

References

City and County of San Francisco (CCSF). 2009. *San Francisco General Plan Environmental Protection Element*.

5.14 Population and Housing

Issues (and Supporting Information Sources):		*Impact to be Analyzed in NHPH EIR*	*No Additional Analysis Required*
XIV. POPULATION AND HOUSING — Would the project:			
a)	Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☒	☐
b)	Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☒
c)	Exceed the LRDP EIR standard of significance by creating a demand for housing outside the market area where the facilities or site are located?	☒	☐

Discussion

a) The proposed New Hospital would result in population growth on the Parnassus Heights campus site through increased employment**,** patients, and visitors. The NHPH EIR will evaluate the potential for the proposed NHPH to induce substantial unplanned population growth in the San Francisco Bay Area.

b) The proposed NHPH and related improvements would not displace any residents or housing units since no housing units currently exist on the project site. Therefore, the proposed NHPH would have no impact related to displacement of housing units or people and would not necessitate the construction of replacement housing. This topic will not be evaluated further in the NHPH EIR.

c) The proposed NHPH would result in population growth in the San Francisco Bay Area through increased employment. This anticipated population increase could result in an increased demand for housing in the Bay Area. The NHPH EIR will evaluate the potential for the proposed NHPH to create demand for housing outside the market area.

5.15 Public Services

Issues (and Supporting Information Sources):		*Impact to be Analyzed in NHPH EIR*	*No Additional Analysis Required*
XV. PUBLIC SERVICES —			
a)	Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the following public services:		
i)	Fire protection?	☐	☒
ii)	Police protection?	☐	☒
iii)	Schools?	☐	☒
iv)	Parks?	☐	☒
v)	Other public facilities?	☐	☒

Discussion

a.i) The San Francisco Fire Department (SFFD) provides fire protection and emergency services to the Parnassus Heights campus site. The nearest SFFD fire station is Station No. 12, located about 0.3 mile from the campus site at 1145 Stanyan Street. Station No. 12 responds to all calls for fire protection service at the campus site. Other fire stations in proximity to the project site include Station 20 at 285 Olympia Way (1.5 miles south of the NHPH site); Station 22 at 1290 16th Avenue (1.1 mile west of the NHPH site); and Station 24 at 100 Hoffman Avenue (3.0 miles from the NHPH site).

Development under the proposed NHPH would result in an increase in population and an incremental increase in demand for fire protection services at the site. However, the population increase associated with the proposed NHPH would be minimal in comparison to the population served by the existing fire stations near the project site. The increase in calls for fire protection and medical emergency response would not be substantial in light of the existing demand and capacity for fire protection and emergency medical services in the City. The campus site, including the NHPH site, is located in an urban area and would not extend demand of the SFFD beyond the current limits of its service area. The anticipated population increase associated with the CPHP, including the New Hospital, would not adversely affect SFFD service standards nor require an increase in SFFD staff and/or equipment that would require the construction of new fire protection facilities (SFFD, 2019).

Furthermore, development under the proposed NHPH would be designed to comply with building and fire codes and include appropriate fire safety measures and equipment, including but not limited to, use of fire retardant building materials, inclusion of emergency water infrastructure (e.g., fire hydrants and sprinkler systems), installation of smoke detectors and fire extinguishers, emergency response notification systems and provision of adequate emergency access ways for emergency vehicles.

As such, with implementation of the proposed NHPH, the existing fire stations in the vicinity of the NHPH site would be adequate to meet the increases in demand for fire

protection and emergency medical response services associated with the proposed NHPH, and no additional new or physically altered facilities would be necessary. Therefore, implementation of the proposed NHPH would have a less than significant impact regarding the construction of new or physically altered fire protection facilities, and this topic will not be analyzed in the NHPH EIR.

a.ii) The UC Police Department (UCPD) provides police protection services to the Parnassus Heights campus site, including the NHPH site. The UCPD is headquartered at 654 Minnesota Street, approximately four miles from the NHPH site. The UCPD also operates a patrol station at the Parnassus Heights campus site. The increase in daily population associated with the proposed New Hospital would increase demand on UCPD services. It is UCPD's practice to review staffing levels and to provide necessary staffing to meet standard response times (less than 3 min for emergency/in-progress calls and less than 5 min for normal service). New staffing required to serve the increase in daily population as a result of the proposed NHPH would either be accommodated by existing facilities or within future facilities at the campus. The UCPD also has a mutual-aid agreement with the San Francisco Police Department (SFPD) to provide cooperative assistance within a 1-mile radius of the Parnassus Heights campus site. However, the SFPD is generally only called where an unusual need for assistance is required. As a result, daily campus population growth due to the proposed NHPH is not anticipated to substantially increase demand on SFPD services. For these reasons, impacts to police protection services would be less than significant, and this topic will not be analyzed in the NHPH EIR.

a.iii) The proposed NHPH would not increase the residential population on the campus site, and therefore, would not result in new school age children. As a result, there would be no effect from the NHPH on public schools, and this topic will not be analyzed in the NHPH EIR.

a.iv) Effects on local and regional parks are discussed in Section 5.16, *Recreation*, below.

a.v) Development under the proposed NHPH would not affect any other public facilities. No impact would occur, and this topic will not be analyzed in the NHPH EIR.

References

California Department of Education (CDE). 2020. Educational Demographics Office. Available online at http://dq.cde.ca.gov/dataquest/. Accessed March 10, 2021.

San Francisco Fire Department. 2019. Personal communication with Lt. Baxter, Community Affairs and Media Relations, September 6.

San Francisco Unified School District (SFUSD). 2020a, Personal communication with Karissa Yee Findley, Director of School Portfolio Planning, February 25, 2020.

SFUSD. 2020b. *Demographic Analyses and Enrollment Forecasts San Francisco Unified School District*, prepared by Lapkoff & Gobalet Demographic Research, Inc. for SFUSD, January 2020.

5.16 Recreation

Issues (and Supporting Information Sources):	*Impact to be Analyzed in NHPH EIR*	*No Additional Analysis Required*
XVI. RECREATION —		
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☒
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☒

Discussion

The Parnassus Heights campus site features three primary areas with open space and recreation opportunities – the Mount Sutro Open Space Reserve (Reserve), a number of plazas, and the Millberry Fitness and Recreation Center. The Reserve consists of 61 acres of largely undeveloped forest located within the Parnassus Heights campus site. A portion of UCSF's Reserve is located in the vicinity of the NHPH site, on the hillside east of Medical Center Way. There are two trailheads in the NHPH site vicinity: the Campus Trailhead, which provides trail access into the Reserve from Medical Center Way (near the UCSF Central Utilities Plant); and the Farnsworth Trailhead, which connects to the Reserve via Farnworth Lane. Two public trails and a stairway extend through the Reserve in the NHPH site vicinity connecting the trailheads and the Surge parking lot.

The San Francisco Recreation and Park Department (SFRPD) maintains parks, playgrounds, and open spaces throughout the City. The SFRPD operates and maintains the Interior Greenbelt natural area adjacent to the east side of the Reserve. Golden Gate Park, located one block north of the NHPH site, is the City's largest park, comprised of 1,017 acres. The SFRPD also operates the 1.5-acre Grattan Playground, located approximately 1,000 feet east of the campus site; the approximate 3-acre Tank Hill natural area, located approximately one-quarter mile east of the campus site; and the 64-acre Twin Peaks natural area located approximately one-half mile southeast of the campus site. The San Francisco Public Utilities Commission (SFPUC) operates Laguna Honda Park, approximately 600 feet southwest of the campus site; and owns land approximately 800 feet southeast of the campus site that is occupied by Twin Peaks Reservoir and Summit Reservoir.

a) Implementation of the New Hospital would result in an increase in the on-campus daytime population at Parnassus Heights related to an increase in employees who would commute to the campus site, as well as patients and visitors. These persons are expected to primarily use recreation facilities near their homes, and any use of recreational facilities by this population on or near the Parnassus Heights campus site is expected to be passive in nature and result in minimal increases in demand for these recreation facilities.

   As discussed in Chapter 3, *Project Description*, there is the potential for certain related improvements proposed under the NHPH, including the proposed medical gas tanks replacement project, to result in the need to modify the Reserve boundary. However, the area

previously removed from the Reserve under 2014 LRDP Amendment #7 to accommodate the New Hospital footprint is now proposed to be returned to the Reserve. In addition, the area between the Surge and Woods parking lots that was added to the Reserve under 2014 LRDP Amendment #7 would remain as Reserve land. These changes would result in a net increase to Reserve land and would maintain the Reserve at a minimum of 61 acres. Furthermore, under the NHPH, while the Campus Trailhead may be temporarily closed or inaccessible during certain NHPH construction, UCSF would not permanently remove any existing Reserve trailheads or access to and from these trailheads.

For these reasons, implementation of the proposed NHPH would not increase the use of existing on-campus recreational facilities and off-campus neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of any of the facilities would occur or be accelerated, and this impact is considered less than significant, and will not be discussed further in the NHPH EIR.

b) As discussed in Section 2, *Project Description*, the NHPH would provide a ground-level central landscaped courtyard that would be surrounded by the New Hospital, and Moffitt and Long Hospitals; and a proposed publicly accessible terrace on Level 6 of the New Hospital. Construction-related regulatory requirements discussed in this Initial Study and/or further, in the forthcoming Draft EIR, would reduce construction-related effects of new recreational facilities to less than significant levels. Accordingly, this impact will not be discussed further in the NHPH EIR.

5.17 Transportation

Issues (and Supporting Information Sources):	*Impact to be Analyzed in NHPH EIR*	*No Additional Analysis Required*
XVII. TRANSPORTATION — Would the project:		
a) Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	☒	☐
b) Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	☒	☐
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☒	☐
d) Result in inadequate emergency access?	☒	☐
e) Construction activities adversely affect travel conditions along sidewalks and roadways serving the project site?	☒	☐

Discussion

a) Although UCSF is not subject to local land use regulation whenever using property under its control in furtherance of its educational mission, the NHPH EIR will evaluate the potential for the proposed NHPH to conflict with programs, plans, ordinances, and policies addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities.

b) Development under the proposed NHPH would increase both the amount of building space on the project site and the daily population, which would result in increased vehicle trips to and from the project site. This increase in trips would in turn increase the total amount of vehicle miles traveled (VMT) to and from the campus site. The NHPH EIR will evaluate the potential for development under the proposed NHPH to conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b).

c) Although development under the proposed NHPH is not expected to include hazardous roadway design features or incompatible uses, the potential for impacts related to site access will be evaluated in the NHPH EIR.

d) Although development under the proposed NHPH is not expected to result in inadequate emergency access, this topic will be evaluated in the NHPH EIR.

e) Construction activities at the campus site under the proposed NHPH would result in construction truck trips and vehicle trips to and from the site by construction workers. These trips would have the potential to cause temporary disruptions to nearby streets, transit services, and pedestrian and bicycle facilities. This topic will be evaluated in the NHPH EIR.

5.18 Tribal Cultural Resources

Issues (and Supporting Information Sources):	*Impact to be Analyzed in NHPH EIR*	*No Additional Analysis Required*
XVIII. TRIBAL CULTURAL RESOURCES —		
a) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:		
i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources. Code Section 5020.1(k), or	☐	☒
ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☒

Discussion

a.i-ii) Previous studies and archival research conducted for the Parnassus Heights campus site, including the site of the NHPH, have not identified tribal cultural resources, and the majority of the NHPH site is highly disturbed from extensive prior development. The proposed NHPH would not be constructed within a reported location of geographic features associated with UCSF's early 19th century Native American resident *Ishi*. On June 21, 2021, UCSF sent notification letters of UCSF's proposal to undertake the NHPH to the designated representatives for the Amah Mutsun Tribal Band of Mission San Juan Bautista; Coastanoan Rumsen Carmel Tribe; Ohlone Indian Tribe; Indian Canyon Mutsun Band of Costanoan; Wuksache Indian Tribe/Eshom Valley Band; and Muwekma Ohlone Indian Tribe of the San Francisco Bay Area. No responses to the notification letters were received from the tribes within the 30-day response period, consistent with the requirements of PRC 21080.3.1(d).

There remains, however, the potential that the new site alteration and excavation that would occur at the NHPH site could impact previously undiscovered or buried tribal cultural resources. As such, impacts to tribal cultural resources could be potentially significant. With implementation of **NHPH Mitigation Measure CUL-V.b,** the NHPH and related improvements would have less than significant impact on tribal cultural resources. Therefore, this impact would be less than significant with mitigation and will not be discussed further in the NHPH EIR.

Mitigation: Implement NHPH Mitigation Measure CUL-V.b.

Significance after Mitigation: Less than Significant.

5.19 Utilities and Service Systems

Issues (and Supporting Information Sources):		*Impact to be Analyzed in NHPH EIR*	*No Additional Analysis Required*
XIX. UTILITIES AND SERVICE SYSTEMS — Would the project:			
a)	Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	☒	☐
b)	Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	☒	☐
c)	Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☒	☐
d)	Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☒
e)	Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☒

Discussion

a) Development under the proposed NHPH could require or result in relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities. The NHPH EIR will evaluate whether the construction or relocation of these facilities would cause significant environmental effects.

b) The San Francisco Public Utilities Commission (SFPUC) provides regional water services to approximately 2.6 million people in San Francisco, Santa Clara, Alameda, San Mateo, and Tuolumne Counties, including all of the City and County of San Francisco. About 85 percent of the water delivered to SFPUC customers comes from the Tuolumne River watershed stored in Hetch Hetchy Reservoir in the Sierra Nevada, and the remaining 15 percent comes from runoff in the Alameda and Peninsula watersheds captured in reservoirs located in San Mateo and Alameda Counties, supplemented with local groundwater and recycled water. The New Hospital would require additional water supplies, and the NHPH EIR will evaluate whether the SFPUC would have sufficient water supplies to serve the proposed New Hospital and reasonably foreseeable future development during normal, dry, and multiple dry years.

   As UCSF is neither a city nor a county it is not subject to SB 610, which requires cities and counties, when evaluating large development and redevelopment projects, to request an assessment of the availability of water supplies from the water supply entity that will provide water to a project. However, UCSF voluntarily prepared a WSA-like document, a Water Supply Evaluation (WSE), to determine and demonstrate the sufficiency of the SFPUC's water supplies to satisfy the water demand of the planned development at the Parnassus Heights campus site under the 2014 LRDP and CPHP. This evaluation is anticipated to rely in part on this WSE.

c) The SFPUC maintains and operates the City's combined sewer system (CSS) that serves most of San Francisco, including the campus site. Wastewater generated by the New

Hospital site would enter the CSS and would be treated at the City's Oceanside Treatment Plant and/or Southeast Treatment Plant. The New Hospital could result in the need for additional wastewater treatment, and the NHPH EIR will evaluate whether the City's treatment plants have adequate capacity to serve the projected demand of the New Hospital in addition to current and future demands.

d-e) Recology provides solid waste collection, recycling, and disposal services for residential and commercial garbage, recycling, and composting in San Francisco. Solid waste generated on the project site is collected and hauled to a transfer station near Candlestick Point and recycled as feasible. Recyclable materials are taken to Recology's Pier 96 facility, where they are separated into commodities (e.g., aluminum, glass, and paper) and transported to other users for reprocessing. Compostables (e.g., food waste, plant trimmings, and soiled paper) are transferred to a Recology composting facility in Solano County, where they are converted to soil amendment and compost. The remaining material that cannot otherwise be reprocessed ("trash") is transported to landfills.

In September 2015, the City approved an agreement with Recology, Inc., for the transport and disposal of the City's municipal solid waste at the Recology Hay Road Landfill in Solano County. The City began disposing its municipal solid waste at the landfill in January 2016, and that practice is anticipated to continue for approximately nine years, with an option to renew the agreement thereafter for an additional six years. The Hay Road Landfill has a permitted peak maximum daily disposal of 2,400 tons per day and an estimated remaining capacity of approximately 30.4 million cubic yards or 82 percent of its permitted capacity.[16] The estimated closure date of the landfill is 2077 (CalRecycle, 2021).

Based on the most conservative waste rates for nonresidential construction and renovation provided by the USEPA, the proposed NHPH would result in an estimated 2,563 tons of solid waste (USEPA, 2009).[17] Construction debris would be transported by a registered transporter to a registered facility that must recover for reuse or recycling and divert from landfill at least 65 percent of all received construction and demolition debris. As a result, construction associated with the NHPH would generate an estimated 897 tons of waste that would require disposal at a landfill.

Given the existing and potential future landfill capacities of the landfills where UCSF solid waste is disposed, construction that would occur under the proposed NHPH would not result in solid waste generation that exceeds the permitted capacity of the landfills that serve the campus or in non-compliance with federal, State, and local statutes and regulations related to solid waste. Therefore, this impact would be less than significant.

16 Tons is a unit of weight, and cubic yards is a unit of volume; conversion from one unit to other takes into account a density factor for the material.

17 Conservative generation rates of 4.34 lb/ft^{2}for new nonresidential construction and 12.7 lb/ft^2 for nonresidential renovation were used for this calculation. Construction: 870,000 gsf (New Hospital) + 9,500 net new gsf (Moffitt/Long Hospitals) = 879,500 gsf new construction. 879,500 net new square feet * 4.34 lb/ft^2 / 2000 lb/ton = 1,909 tons. Renovation: 103,000 gsf (Moffitt/Long Hospitals) * 12.7 lb/ft^2/ 2000 lb/ton = 654 tons.

Operation of the New Hospital and increase in space at the renovated Moffitt and Long Hospitals would increase the amount of solid waste generated at the campus site and is estimated to generate approximately 963 tons[18] of solid waste per year. UCSF employees, students, visitors and patients at the New Hospital would continue to participate in UCSF's recycling and composting programs and other efforts to reduce the total amount of waste produced and/or requiring landfill disposal. UCSF has consistently increased its landfill diversion rate, rising from 64 percent in 2013 to 78 percent in 2018, as it strives to meet the UC Policy on Sustainable Practices goal of zero waste. As a result, if the latest diversion rate of 78 percent is applied, the New Hospital would generate approximately 212 tons of solid waste per year that would require disposal in a landfill.

Given the existing and anticipated increase in solid waste recycling and the existing and potential future landfill capacities of the landfills where UCSF solid waste is disposed, implementation of the proposed NHPH would not result in solid waste generation that exceeds the permitted capacity of the landfills that serve the campus or in non-compliance with federal, State, and local statutes and regulations related to solid waste. Therefore, this impact would be less than significant and this topic will not be analyzed in the NHPH EIR.

References

California Department of Resources Recycling and Recovery (CalRecycle). 2019. SWIS Facility Detail: Recology Hay Road (48-AA-0002) Available: https://www2.calrecycle.ca.gov/swfacilities/Directory/48-AA-0002/. Accessed July 21, 2021.

U.S. EPA. 2009. Estimating 2003 Building-Related Construction and Demolition Materials Amounts, March.

[18] 870,000 gsf (New Hospital) + 9,500 net new gsf (Moffitt/Long Hospitals) = 879,500 net new gsf. (879,500 net new gsf * 6 lb/1,000 sf per day) * 365 days per year/2,000 lb/ton = 963 tons.

5.20 Wildfire

Issues (and Supporting Information Sources):		*Impact to be Analyzed in NHPH EIR*	*No Additional Analysis Required*
XX.	**WILDFIRE —** If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:		
a)	Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☒
b)	Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☒
c)	Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☒
d)	Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☒

Discussion

a-d) As discussed in Section 5.9, *Hazards and Hazardous Resources*, above, the Reserve is designated as LRA moderate fire hazard severity zone by CAL FIRE. Development under the proposed NHPH would not be located in or near a state responsibility area or land classified as a very high fire hazard severity zone.

In addition, as described in the Project Description, in compliance with California Code of Regulations Title 14 Section 1299.03 and California Public Resources Code Section 4291, and consistent with the vegetation management practices listed in the Mount Sutro Open Space Reserve Vegetation Management Plan, tree and vegetation removal would occur on the hillside adjacent to the proposed new Hospital to maintain defensible space around the building, and reduce the risk of wildland fire hazard. The proposed NHPH would also be required to ensure that the street system can accommodate emergency response and evacuation. As discussed in the Project Description, Medical Center Way in the vicinity of the New Hospital would be standardized to 26 feet in width (curb to curb) to meet the San Francisco Fire Department's required fire truck access. The proposed New Hospital and related improvements would be designed to ensure appropriate emergency access to and egress from all areas. No impact to wildfire would occur, and this topic will not be analyzed in the NHPH EIR.

5.21 Mandatory Findings of Significance

Issues (and Supporting Information Sources):	*Impact to be Analyzed in NHPH EIR*	*No Additional Analysis Required*
XXI. MANDATORY FINDINGS OF SIGNIFICANCE —		
a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☒	☐
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☒	☐
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☒	☐

Discussion

a) As indicated in the discussions above, the proposed NHPH has the potential to result in significant biological and cultural resource impacts, and substantially degrade the quality of the environment. The NHPH EIR will evaluate the potential for development under the proposed New Hospital and related improvements to substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory.

b) The proposed NHPH would add approximately 879,500 gsf of new clinical and support facilities to the project site. The NHPH EIR will evaluate whether the potential impacts of development under the proposed NHPH, combined with other current projects and probable future projects and projected regional growth in the surrounding area, would be cumulatively considerable.

c) As indicated in the discussions of each topic above, construction and operation of the proposed NHPH has the potential to result in significant environmental impacts. The NHPH EIR will evaluate whether any of those impacts have the potential to result in substantial adverse effects on human beings either directly or indirectly.

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Appendix B
EIR Scoping Comments

NATIVE AMERICAN HERITAGE COMMISSION

NAHC HEADQUARTERS
1550 Harbor Boulevard
Suite 100
West Sacramento,
California 95691
(916) 373-3710
nahc@nahc.ca.gov
NAHC.ca.gov

August 4, 2021

Diane Wong, UCSF
UCSF Campus Planning
654 Minnesota Street
San Francisco, CA 94143-0286

Re: 2021070547, University of California, San Francisco (UCSF) New Hospital at Parnassus Heights Project, San Francisco County

Dear Ms. Wong:

The Native American Heritage Commission (NAHC) has received the Notice of Preparation (NOP), Draft Environmental Impact Report (DEIR) or Early Consultation for the project referenced above. The California Environmental Quality Act (CEQA) (Pub. Resources Code §21000 et seq.), specifically Public Resources Code §21084.1, states that a project that may cause a substantial adverse change in the significance of a historical resource, is a project that may have a significant effect on the environment. (Pub. Resources Code § 21084.1; Cal. Code Regs., tit.14, §15064.5 (b) (CEQA Guidelines §15064.5 (b)). If there is substantial evidence, in light of the whole record before a lead agency, that a project may have a significant effect on the environment, an Environmental Impact Report (EIR) shall be prepared. (Pub. Resources Code §21080 (d); Cal. Code Regs., tit. 14, § 5064 subd.(a)(1) (CEQA Guidelines §15064 (a)(1)). In order to determine whether a project will cause a substantial adverse change in the significance of a historical resource, a lead agency will need to determine whether there are historical resources within the area of potential effect (APE).

CEQA was amended significantly in 2014. Assembly Bill 52 (Gatto, Chapter 532, Statutes of 2014) (AB 52) amended CEQA to create a separate category of cultural resources, "tribal cultural resources" (Pub. Resources Code §21074) and provides that a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment. (Pub. Resources Code §21084.2). Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource. (Pub. Resources Code §21084.3 (a)). **AB 52 applies to any project for which a notice of preparation, a notice of negative declaration, or a mitigated negative declaration is filed on or after July 1, 2015.** If your project involves the adoption of or amendment to a general plan or a specific plan, or the designation or proposed designation of open space, on or after March 1, 2005, it may also be subject to Senate Bill 18 (Burton, Chapter 905, Statutes of 2004) (SB 18). **Both SB 18 and AB 52 have tribal consultation requirements.** If your project is also subject to the federal National Environmental Policy Act (42 U.S.C. § 4321 et seq.) (NEPA), the tribal consultation requirements of Section 106 of the National Historic Preservation Act of 1966 (154 U.S.C. 300101, 36 C.F.R. §800 et seq.) may also apply.

The NAHC recommends consultation with California Native American tribes that are traditionally and culturally affiliated with the geographic area of your proposed project as early as possible in order to avoid inadvertent discoveries of Native American human remains and best protect tribal cultural resources. Below is a brief summary of portions of AB 52 and SB 18 as well as the NAHC's recommendations for conducting cultural resources assessments.

Consult your legal counsel about compliance with AB 52 and SB 18 as well as compliance with any other applicable laws.

AB 52

AB 52 has added to CEQA the additional requirements listed below, along with many other requirements:

1. Fourteen Day Period to Provide Notice of Completion of an Application/Decision to Undertake a Project: Within fourteen (14) days of determining that an application for a project is complete or of a decision by a public agency to undertake a project, a lead agency shall provide formal notification to a designated contact of, or tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, to be accomplished by at least one written notice that includes:

- **a.** A brief description of the project.
- **b.** The lead agency contact information.
- **c.** Notification that the California Native American tribe has 30 days to request consultation. (Pub. Resources Code §21080.3.1 (d)).
- **d.** A "California Native American tribe" is defined as a Native American tribe located in California that is on the contact list maintained by the NAHC for the purposes of Chapter 905 of Statutes of 2004 (SB 18). (Pub. Resources Code §21073).

2. Begin Consultation Within 30 Days of Receiving a Tribe's Request for Consultation and Before Releasing a Negative Declaration, Mitigated Negative Declaration, or Environmental Impact Report: A lead agency shall begin the consultation process within 30 days of receiving a request for consultation from a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project. (Pub. Resources Code §21080.3.1, subds. (d) and (e)) and prior to the release of a negative declaration, mitigated negative declaration or Environmental Impact Report. (Pub. Resources Code §21080.3.1(b)).

- **a.** For purposes of AB 52, "consultation shall have the same meaning as provided in Gov. Code §65352.4 (SB 18). (Pub. Resources Code §21080.3.1 (b)).

3. Mandatory Topics of Consultation If Requested by a Tribe: The following topics of consultation, if a tribe requests to discuss them, are mandatory topics of consultation:

- **a.** Alternatives to the project.
- **b.** Recommended mitigation measures.
- **c.** Significant effects. (Pub. Resources Code §21080.3.2 (a)).

4. Discretionary Topics of Consultation: The following topics are discretionary topics of consultation:

- **a.** Type of environmental review necessary.
- **b.** Significance of the tribal cultural resources.
- **c.** Significance of the project's impacts on tribal cultural resources.
- **d.** If necessary, project alternatives or appropriate measures for preservation or mitigation that the tribe may recommend to the lead agency. (Pub. Resources Code §21080.3.2 (a)).

5. Confidentiality of Information Submitted by a Tribe During the Environmental Review Process: With some exceptions, any information, including but not limited to, the location, description, and use of tribal cultural resources submitted by a California Native American tribe during the environmental review process shall not be included in the environmental document or otherwise disclosed by the lead agency or any other public agency to the public, consistent with Government Code §6254 (r) and §6254.10. Any information submitted by a California Native American tribe during the consultation or environmental review process shall be published in a confidential appendix to the environmental document unless the tribe that provided the information consents, in writing, to the disclosure of some or all of the information to the public. (Pub. Resources Code §21082.3 (c)(1)).

6. Discussion of Impacts to Tribal Cultural Resources in the Environmental Document: If a project may have a significant impact on a tribal cultural resource, the lead agency's environmental document shall discuss both of the following:

- **a.** Whether the proposed project has a significant impact on an identified tribal cultural resource.
- **b.** Whether feasible alternatives or mitigation measures, including those measures that may be agreed to pursuant to Public Resources Code §21082.3, subdivision (a), avoid or substantially lessen the impact on the identified tribal cultural resource. (Pub. Resources Code §21082.3 (b)).

7. Conclusion of Consultation: Consultation with a tribe shall be considered concluded when either of the following occurs:

a. The parties agree to measures to mitigate or avoid a significant effect, if a significant effect exists, on a tribal cultural resource; or

b. A party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached. (Pub. Resources Code §21080.3.2 (b)).

8. Recommending Mitigation Measures Agreed Upon in Consultation in the Environmental Document: Any mitigation measures agreed upon in the consultation conducted pursuant to Public Resources Code §21080.3.2 shall be recommended for inclusion in the environmental document and in an adopted mitigation monitoring and reporting program, if determined to avoid or lessen the impact pursuant to Public Resources Code §21082.3, subdivision (b), paragraph 2, and shall be fully enforceable. (Pub. Resources Code §21082.3 (a)).

9. Required Consideration of Feasible Mitigation: If mitigation measures recommended by the staff of the lead agency as a result of the consultation process are not included in the environmental document or if there are no agreed upon mitigation measures at the conclusion of consultation, or if consultation does not occur, and if substantial evidence demonstrates that a project will cause a significant effect to a tribal cultural resource, the lead agency shall consider feasible mitigation pursuant to Public Resources Code §21084.3 (b). (Pub. Resources Code §21082.3 (e)).

10. Examples of Mitigation Measures That, If Feasible, May Be Considered to Avoid or Minimize Significant Adverse Impacts to Tribal Cultural Resources:

a. Avoidance and preservation of the resources in place, including, but not limited to:

i. Planning and construction to avoid the resources and protect the cultural and natural context.

ii. Planning greenspace, parks, or other open space, to incorporate the resources with culturally appropriate protection and management criteria.

b. Treating the resource with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource, including, but not limited to, the following:

i. Protecting the cultural character and integrity of the resource.

ii. Protecting the traditional use of the resource.

iii. Protecting the confidentiality of the resource.

c. Permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or places.

d. Protecting the resource. (Pub. Resource Code §21084.3 (b)).

e. Please note that a federally recognized California Native American tribe or a non-federally recognized California Native American tribe that is on the contact list maintained by the NAHC to protect a California prehistoric, archaeological, cultural, spiritual, or ceremonial place may acquire and hold conservation easements if the conservation easement is voluntarily conveyed. (Civ. Code §815.3 (c)).

f. Please note that it is the policy of the state that Native American remains and associated grave artifacts shall be repatriated. (Pub. Resources Code §5097.991).

11. Prerequisites for Certifying an Environmental Impact Report or Adopting a Mitigated Negative Declaration or Negative Declaration with a Significant Impact on an Identified Tribal Cultural Resource: An Environmental Impact Report may not be certified, nor may a mitigated negative declaration or a negative declaration be adopted unless one of the following occurs:

a. The consultation process between the tribes and the lead agency has occurred as provided in Public Resources Code §21080.3.1 and §21080.3.2 and concluded pursuant to Public Resources Code §21080.3.2.

b. The tribe that requested consultation failed to provide comments to the lead agency or otherwise failed to engage in the consultation process.

c. The lead agency provided notice of the project to the tribe in compliance with Public Resources Code §21080.3.1 (d) and the tribe failed to request consultation within 30 days. (Pub. Resources Code §21082.3 (d)).

The NAHC's PowerPoint presentation titled, "Tribal Consultation Under AB 52: Requirements and Best Practices" may be found online at: http://nahc.ca.gov/wp-content/uploads/2015/10/AB52TribalConsultation_CalEPAPDF.pdf

SB 18

SB 18 applies to local governments and requires local governments to contact, provide notice to, refer plans to, and consult with tribes prior to the adoption or amendment of a general plan or a specific plan, or the designation of open space. (Gov. Code §65352.3). Local governments should consult the Governor's Office of Planning and Research's "Tribal Consultation Guidelines," which can be found online at: https://www.opr.ca.gov/docs/09_14_05_Updated_Guidelines_922.pdf.

Some of SB 18's provisions include:

1. Tribal Consultation: If a local government considers a proposal to adopt or amend a general plan or a specific plan, or to designate open space it is required to contact the appropriate tribes identified by the NAHC by requesting a "Tribal Consultation List." If a tribe, once contacted, requests consultation the local government must consult with the tribe on the plan proposal. **A tribe has 90 days from the date of receipt of notification to request consultation unless a shorter timeframe has been agreed to by the tribe**. (Gov. Code §65352.3 (a)(2)).
2. No Statutory Time Limit on SB 18 Tribal Consultation. There is no statutory time limit on SB 18 tribal consultation.
3. Confidentiality: Consistent with the guidelines developed and adopted by the Office of Planning and Research pursuant to Gov. Code §65040.2, the city or county shall protect the confidentiality of the information concerning the specific identity, location, character, and use of places, features and objects described in Public Resources Code §5097.9 and §5097.993 that are within the city's or county's jurisdiction. (Gov. Code §65352.3 (b)).
4. Conclusion of SB 18 Tribal Consultation: Consultation should be concluded at the point in which:
    a. The parties to the consultation come to a mutual agreement concerning the appropriate measures for preservation or mitigation; or
    b. Either the local government or the tribe, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached concerning the appropriate measures of preservation or mitigation. (Tribal Consultation Guidelines, Governor's Office of Planning and Research (2005) at p. 18).

Agencies should be aware that neither AB 52 nor SB 18 precludes agencies from initiating tribal consultation with tribes that are traditionally and culturally affiliated with their jurisdictions before the timeframes provided in AB 52 and SB 18. For that reason, we urge you to continue to request Native American Tribal Contact Lists and "Sacred Lands File" searches from the NAHC. The request forms can be found online at: http://nahc.ca.gov/resources/forms/.

NAHC Recommendations for Cultural Resources Assessments

To adequately assess the existence and significance of tribal cultural resources and plan for avoidance, preservation in place, or barring both, mitigation of project-related impacts to tribal cultural resources, the NAHC recommends the following actions:

1. Contact the appropriate regional California Historical Research Information System (CHRIS) Center (http://ohp.parks.ca.gov/?page_id=1068) for an archaeological records search. The records search will determine:
    a. If part or all of the APE has been previously surveyed for cultural resources.
    b. If any known cultural resources have already been recorded on or adjacent to the APE.
    c. If the probability is low, moderate, or high that cultural resources are located in the APE.
    d. If a survey is required to determine whether previously unrecorded cultural resources are present.

2. If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
    a. The final report containing site forms, site significance, and mitigation measures should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum and not be made available for public disclosure.

b. The final written report should be submitted within 3 months after work has been completed to the appropriate regional CHRIS center.

3. Contact the NAHC for:

a. A Sacred Lands File search. Remember that tribes do not always record their sacred sites in the Sacred Lands File, nor are they required to do so. A Sacred Lands File search is not a substitute for consultation with tribes that are traditionally and culturally affiliated with the geographic area of the project's APE.

b. A Native American Tribal Consultation List of appropriate tribes for consultation concerning the project site and to assist in planning for avoidance, preservation in place, or, failing both, mitigation measures.

4. Remember that the lack of surface evidence of archaeological resources (including tribal cultural resources) does not preclude their subsurface existence.

a. Lead agencies should include in their mitigation and monitoring reporting program plan provisions for the identification and evaluation of inadvertently discovered archaeological resources per Cal. Code Regs., tit. 14, §15064.5(f) (CEQA Guidelines §15064.5(f)). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American with knowledge of cultural resources should monitor all ground-disturbing activities.

b. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the disposition of recovered cultural items that are not burial associated in consultation with culturally affiliated Native Americans.

c. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the treatment and disposition of inadvertently discovered Native American human remains. Health and Safety Code §7050.5, Public Resources Code §5097.98, and Cal. Code Regs., tit. 14, §15064.5; subdivisions (d) and (e) (CEQA Guidelines §15064.5, subds. (d) and (e)) address the processes to be followed in the event of an inadvertent discovery of any Native American human remains and associated grave goods in a location other than a dedicated cemetery.

If you have any questions or need additional information, please contact me at my email address: Katy.Sanchez@nahc.ca.gov.

Sincerely,

Katy Sanchez

Katy Sanchez
Associate Environmental Planner

cc: State Clearinghouse

From: Robert Rudeen
To: Campus Planning - EIR
Subject: EIR - UCSF Scoping Comments
Date: Friday, August 13, 2021 3:34:39 PM

To whom it may concern,

Please consider the wind patterns along Parnassus. They can be strong. The building will likely funnel winds to make walking along the street or sitting on the terrace uncomfortable. I'm especially concerned that the design team is going to great lengths to have an outdoor terrace that may end up empty and unused because of the wind and fog. The current partial height glass partition may not solve be solving the issue.

Thank you.
Robert Rudeen

From: Denise Louie <denise_louie_sf@yahoo.com>
Sent: Tuesday, August 17, 2021 9:54 PM
To: Wong, Lily (University Relations) <lily.wong3@ucsf.edu>
Subject: Parnassus project

Hi Lily,
The EIR should include environmental impacts of water use. The more water SF takes from Hetch Hetchy, the less water will flow to the SF Bay.

Please get answers for me about water use during and after construction, as well as how buildings will minimize water use, use greywater, and collect rooftop rainwater. Please share my email with everyone involved with the EIR.

"The San Francisco Bay estuary is one of the world's great ecosystems – a natural treasure comparable in scale and importance to the Everglades, Chesapeake Bay or the Great Lakes....Perhaps the most serious and seemingly intractable threat comes from the large-scale and unsustainable diversion of the fresh water that should flow to the Bay from its vast watershed in California's Central Valley ("Bay inflow"). The radical alteration of Bay inflow is intimately connected to every other problem that threatens the Bay estuary's ecosystems. The dramatic decline in abundance of many populations closely tracks the dramatic decline in winter – spring Bay inflows; that is, less flow has resulted in less fish – for some species, populations are at record or near record low levels. In contrast, the abundance of many non-native species is inversely proportional to flow, increasing under low flow conditions."*

Thanks,
Denise Louie

* https://bayecotarium.org/wp-content/uploads/freshwater_report.pdf

San Francisco Group, SF Bay Chapter

Serving San Francisco County

August 21, 2021

Ms. Diane Wong
UCSF Campus Planning
654 Minnesota Street
San Francisco, CA 94143

EIR@ucsf.edu

Subject: Scoping Comments for UCSF New Hospital at Parnassus Heights (NHPH)

Dear Ms. Wong,

The Sierra Club submitted a letter on January 4, 2021, with concerns about the Comprehensive Parnassus Heights Plan (CPHP). Following up on that letter, we request that the following be covered in the Environmental Impact Report for the UCSF NHPH.

Transportation

What will be the projected increase in daily population in this area, due to this project?

What will be the distance(s) for people commuting to and from the project site?

How many additional trips will be by private automobile? How many automobile trips will be by ride-share? How many automobile trips will be by single-occupants?

How many trips will be by public transportation? How will public transportation be upgraded and/or expanded to handle the increased population? What will be the cost of upgrading the public transportation to handle the increased population? How will the upgrade of public transportation be financed?

What will be the increase in greenhouse gases due to the increased commuting population? How will this increase in greenhouse gases be mitigated?

Jobs and Housing Balance

How many new staff members, students, and workforce employees will be coming to the UCSF campus on Parnassus by 2030 and by 2050?

How many housing units will be developed by 2030 and 2050? If this number does not equal the number of new staff members, students and workforce employees, then how and where will they be housed? What will be the impact of developing new housing on the surrounding neighborhood? Will there be gentrification? How many existing residents may lose their homes? What is the economic, age, and racial make-up of those residents who will lose their homes? What will be the percent of new affordable housing and how many units will this be? When will the affordable housing be built?

Email: barry at hermansons.com (415) 255-9494

Open Space – Shadows and Wind

What will be the impact of the new hospital in terms of shadows on Golden Gate Park, the Park Nursery, the two neighboring schools and a neighboring park and playground, as well as the Reserve.

What will be the impact of the new hospital on habitat, on birds and on other wildlife? For example, what measures will be taken to avoid bird collisions with the many windows?

What will be the impact in terms of wind on the site, on the neighboring areas, on proposed and existing plantings, and on the public open spaces? For example, will there be wind baffles or design features to decrease windspeed and a stringent requirement for a low wind speed throughout the project?

The CPHP had proposed adding outdoor heating elements to mitigate the wind conditions on the project. What is the impact of the outdoor heating elements on greenhouse gas emissions and cities being urban heat islands? Are building and open space designs that naturally protect open space from wind and preserve natural sunlight being proposed?

Conclusion

The Sierra Club understands the importance of up-to-date facilities for medical care; however, we would also like to put forward the idea that a healthy environment is important for the well-being of local communities and to combat climate change. A project of this magnitude needs to address its environmental and social equity impacts.

Thank you for your consideration.

Sincerely,

Barry Hermanson

Barry Hermanson

On behalf of the
San Francisco Group Executive Committee

cc: San Francisco Board of Supervisors
San Francisco Planning Commission

Email: barry at hermansons.com (415) 255-9494

From: Greg Gaar
To: Campus Planning - EIR
Subject: EIR scoping for new hospital
Date: Sunday, August 22, 2021 11:23:35 AM

Dear UCSF and Consultants,

Please delete my one minute oral remarks and use my written comments. One can't be very specific in sixty seconds.

I volunteer in Golden Gate Park and it is apparent that UCSF staff, patients and ambulances use the park as a parking lot.
With UCSF proposing to expand it's facilities, which includes the huge new hospital, the adverse environmental impacts of more motor vehicles in the park will increase the stress and hazards on park users. The Golden Gate Park Master Plan states, "Reduce the impacts of motor vehicles on the park experience". More UCSF vehicles in the park will do just the opposite. How will UCSF mitigate these traffic impacts on Golden Gate Park? Also, will the new hospital shade Golden Gate Park?

The Mt. Sutro Communities Master Plan was approved by the Regents and the Chancellor in 1976. UCSF agreed to retain a "permanent" space ceiling of no more than 3.55 million square feet. The square footage agreement was unilaterally altered and inevitably ignored by the Regents to accommodate the proposed development of 5.1 million square feet which includes the new hospital The Regents are now facing three lawsuits for failing to abide by the square footage agreement. The draft EIR for the new hospital should include a copy of the 1976 agreement. Shouldn't the draft EIR include a comparison between the environmental impacts of the 3.55 million square feet as compared to the proposed 5.1 million square feet?

UCSF and neighbors must continue to lobby City Hall to reinstate the #6 Parnassus bus line. MTA and Mayor Breed have been hinting that this line will be discontinued. The #6 directly serves UCSF and its loss would have an adverse impact on the institution's expanding population.

Greg Gaar

TO: Diane Wong, Environmental Coordinator, UCSF Campus Planning

CC: Francesca Vega, Vice Chancellor, Community and Government Relations,
Brian Newman, Senior Associate Vice Chancellor, Real Estate,
UCSF Staff, and Members of the Community Advisory Committee

FROM: Susan Maerki. Members of the Future of UCSF Parnassus Heights Advisory Committee

IN RE: Comments on Notice of Preparation of Environmental Impact Report and Initial Study Notice of a Public Scoping Meeting regarding UCSF New Hospital at Parnassus Heights

DATE: August 26,2021

VIA EMAIL: EIR@planning.ucsf.edu

General Comments

While we recognize that it is impossible to provide details and precise estimates over the next 10-year planning period, the new hospital and the other projects planned for the first ten years represent a front-loaded impact of the CPHP. The NHPH EIR must incorporate more detailed information, broaden the discussion of environmental effects, and increase community commitments and touchpoints beyond those that are included in the draft scoping document.

1. **CPHP Environmental Impact Report must include a UCSF commitment to more project specific scoping over the time period.**
   - The draft proposes project level analysis for the projects in the Initial Phase – Irving Street entrance, RAB, and Aldea – but only commits to "determine the appropriate level of additional review, *if any (emphasis added)*, needed" for additional projects.
   - The new hospital is the only project that the draft scoping document identifies for a project specific EIR. At minimum, the proposal for proposed housing on the Fourth Avenue extension appears to warrant a project specific EIR.
   - We request a UCSF commitment to additional project specific review that will provide touchpoints to reassess changes to "baseline" conditions over the timeframe and permit identification of cumulative effects.

2. **CPHP impact timeline must be clarified to quantify the expected "front loading" of impacts.**
   - It appears that a large proportion of the population and transportation growth is expected within the Initial phase. This is obscured by presenting the current or 2020 estimates and then a 2050 number. At minimum, the EIR should present both Initial Phase (2030 or to 2035, the end of the 2014 LRDP) and 2050 estimates for the CPHP.
   - Include timeline of proposed demolitions and replacement buildings. This should include discussion of changes relative to the 2014 LRDP.

- For example, the 2014 LRDP proposed demolition of Woods and Surge in the 2014-2019 timeframe and demolition of Proctor and Langley Porter in the 2020-2024 timeframe. Obviously, the Surge and Woods buildings are still standing. How will the demolition and construction timelines differ?

3. **CPHP impact timeline must be clarified to quantify the expected "front loading" of impacts.**
   - It appears that a large proportion of the population and transportation growth is expected within the Initial phase. This is obscured by presenting the current or 2020 estimates and then a 2050 number. At minimum, the EIR should present both Initial Phase (2030 or to 2035, the end of the 2014 LRDP) and 2050 estimates for the CPHP.
   - Include timeline of proposed demolitions and replacement buildings. This should include discussion of changes relative to the 2014 LRDP.
     - For example, the 2014 LRDP proposed demolition of Woods and Surge in the 2014-2019 timeframe and demolition of Proctor and Langley Porter in the 2020-2024 timeframe. Obviously, the Surge and Woods buildings are still standing. How will the demolition and construction timelines differ?
   - Incorporate timeline of expected concurrent renovations/upgrades to buildings included in the 2014 LRDP but not addressed in CPHP.
     - For example, the 2014 LRDP proposed renovation of the Faculty Alumni House and Moffitt Hospital, as well as smaller projects (medical gas storage tanks, retaining wall) by 2035. Where will these occur in the CHCP timeline?

Specific Comments and Questions

This section follows the Table of Contents for the UCSF CPHP Initial Study and references questions and comments on sections.

2.4 Relationship of the NHPH to the CPHP to 2014 LRDP

- The NOP indicates that the proposed size of the NHPH has been reduced from that proposed in the CPHP. This is accomplished primarily by increasing the number of inpatient beds expected to be housed in a remodeled Moffit and increasing the modestly increasing the size of both Long and Moffit. This an appreciated modification.
- However, I object to the apparent assumption that the Regents approval was for total square footage and it appropriate to allocate the "surplus square footage" to other buildings in the CPHP. Adding one to two stories to Millberry and to the Research and Academic (RAB) buildings is a substantial increase above the CPHP proposed heights. Assuming a 12-foot story and those two floors are added to the frontage on Parnassus Avenue, the Millberry Towers would increase 43%-87% above their current height and the RAB would be 75% taller than UC Hall.
    - Please explain the rationale for adding to these buildings, including assumptions about possible programming in these locations
    - Please provide all assumptions and details, particularly related to wind and shading, that would occur related to these modifications for both Parnassus, and if applicable, Irving Street.

2.6 Objectives of the NHPH

One of the listed objectives is to increase inpatient beds at Parnassus to allow for capacity to provide inpatient care in times of severe strain, such as the current pandemic, without resorting to reducing or cancelling non-essential surgeries to crate bed capacity.

- The proposal <u>does</u> increase bed capacity and <u>reduces</u> the size of the NHPH. Please clarify how the COVID experience has affected planning for the size and layout of NHPH and renovations at Long and Moffitt.

2.7 Objectives of the NHPH

<u>Proposed New Hospital Use Program and Space Summary</u>

The Proposed New Hospital Use Program and Space Summary states "when considering all three hospitals , the collective hospital building space at the campus site under the NHPH would be ... approximately four percent less than... assumed under the approved CHCP.

- Again, please clarify how the COVID experience has affected planning for the size and layout of NHPH and renovations at Long and Moffitt.

<u>New Hospital Design</u>

- Please provide renderings (per Figure 4 in NOP NHPH) to include the overhead pedestrian bridge

- Include pedestrian bridge in analysis of wind on Parnassus Avenue
- Clarify Figure 7 by adding information on where the underground tunnel will connect to the NHPH
- Include analysis of an alternative design for NHPH that would lower the overall height by locating more facilities below ground level, at least to the depth where the underground tunnel will connect to the NHPH. Since the NOP indicates it will be 30-40 feet below grade, I expect this allows for at least two stories below grade. Note: ZSFGH placed more services below ground than is being considered by the NHPH.

New Hospital Pedestrian and Vehicular Circulation, and Loading

- Provide more detail on the proposed new traffic signal at the intersection of Parnassus and Hillway Avenue.
    - Is this an addition to the two traffic lights already there?
    - What is the expected light timing to assure traffic movement?
    - If this disrupts MUNI bus service on Parnassus, UCSF should consider installation of transportation preferential switches, etc. for all the lights to improve/not disturb public transportation service. This should be in addition to funds committed to MUNI improvements for the N Judah as part of the MOU with the City and County of San Francisco.

New Hospital Lighting

- Provide detail on how interior lighting would also comply and contribute to the desired sustainability goals and LEED certification.

New Hospital Sustainability

- Please commit to a schedule and forum (CAG meetings, Regent Reports, Construction Update meetings?) to report progress towards meeting sustainability goals.

Related Improvements

Renovation of Moffitt and Long Hospitals

Some renovation of Moffitt will extend to 2034, beyond the 2030 seismic requirement for inpatient facilities.

- Please clarify that initial renovations to Moffitt mean the hospital/entire building will meet inpatient seismic requirements by 2030.
- Explain the sequence of renovation to Moffitt hospital, particularly the 49 inpatient beds, separate from lobby and stairwell, that will meet the 2030 seismic requirements. Are the noted improvements to the Emergency Department, surgery and surgical support, clinical labs, pathology, radiation oncology, and interventional labs all in Long, rather than Moffitt?

2.8 NHPH Construction

- Please clarify "potential on-site construction materials/construction worker staging areas"
    - Breakdown estimated construction vehicle travel, material delivery, debris removal and related activity that will occur during NHPH construction. Estimate this a proportion of total construction related staging (e.g., RAB, Irving entrance) for the period to 2030.
    - Re-commit and include neighborhood agreements re travel routes, delivery and work time periods, and other considerations for the neighborhood, such as construction supervisor on-site management.

5. Evaluation of Environmental Effects - General Comments

- To provide context, include a list of projects and estimated timing that will also occur in the 2022-2034 time period (e.g., RAB, Irving, LPP and other demolition). I understand that these are not included in the NOP for the NHPH.
    - Include timeline of proposed demolitions and replacement buildings to 2030/2035
    - Incorporate timeline of expected concurrent renovations/upgrades to buildings included in the 2014 LRDP but not addressed in CPHP.
        - For example, the 2014 LRDP proposed renovation of the Faculty Alumni House. Will this occur in the NHPH timeline?

5.1 Aesthetics

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- The shadow study must include impacts to recreational areas that currently exist, such as schoolyards, Kezar Triangle, and Golden Gate Park, both during and after the proposed CPHP construction.
    - Measures for shadowing in GG should provide <u>separate measurements</u> for areas of the GG Park that are dedicated to specific uses. The denominator <u>should not</u> be the total area of GG Park. I would expect separate reporting on Kezar Triangle, the community garden, the baseball field, the plant propagation area, lawn bowling, tennis courts, the arboretum, and other areas possibly affected.

5.8 and 5.9. Greenhouse Gas Emissions/Hazards and Hazardous Materials

- In addition to air quality concerns associated with the construction period, include evaluation of estimated air quality changes associated with the expected increase in building size and energy use, campus population, housing, and car/shuttle traffic.
- The NOP does not mention building material or naturally occurring asbestos that is likely to be encountered during demolition and excavation activities. This should be studied and mitigation measures should be identified in the EIR to protect employees, residents, patients, children, and the construction workers.
- Describe expected mitigation measures to reduce/contain construction traffic and debris that affect air quality.

- Describe expected mitigation measures to reduce/contain changes associated with the expected increase in building size and energy use, campus population, housing, and car/shuttle traffic that affect air quality.

5.16 Recreation

- See comment on potential shadow impact in Golden Gate Park under Aesthetics.

5.17 Transportation

- In addition to evaluation of the impact on the N-Judah, please refer back to earlier comments on the proposed new traffic signal at Parnassus and Hillway Avenue.
- For context, include an analysis of parking availability and expected changes due to proposed construction through 2030/2034. This includes reductions due to proposed removal of parking at Millberry Union and conversion of staff, student, patient and visitor parking for construction parking and staging.
- Although not a requirement under CEQA and SF Planning Department guidelines, we request a level-of-service (LOS) analysis of traffic impacts. This is similar to the request that UCSF made to the developers of the Kirkham Heights Project proposed in 2016-2017.
    - We request that traffic analyses be reviewed and updated over the time period of the NHPH/CPHP to assess changes to baseline and cumulative effects.
    - The analyses should be comprehensive, to include the major streets and intersections (e.g., Irving, Parnassus, Medical Center Way Service corridor, Fifth Avenue at Kirkham) and be flexibly designed to monitor all vehicle (personal car, shuttle, ride-hailing, delivery truck, construction) and other modes of transportation such as pedestrian, bicycle, and scooters.
- Describe expected mitigation measures to reduce/contain transportation changes associated with the expected increase in campus population and housing. Include changes to UCSF faculty and employee parking passes and access, shuttle service, programs to encourage and promote use of public transportation (e.g., increase use of Federal pre-tax commuter benefits, additional transportation subsidies to low-income workers, taxi/voucher programs for patients or employees who work late hours) and other programs under consideration
- Commit to regular surveys and reporting on these efforts.

5.21 Mandatory Findings of Significance

- The commitment to analyze cumulative impacts must be incorporated into the NHPH EIR, and must also be a component of additional construction and development over the course of the CPHP. At present, there is no clear commitment to conduct a separate EIR for any other components of the CPHP or for any regular (10-year?) review of cumulative impacts.

Thank you for considering these remarks. I look forwards to the Draft EIR for the NHPH.

From: San Francisco CC
To: Campus Planning - EIR
Subject: GGAS Comments for EIR Scoping -New Hospital Initial Study
Date: Friday, August 27, 2021 11:11:04 AM

Aug 27, 2021

Ms. Diane Wong
UCSF Campus Planning, Box 0286
San Francisco, CA 94143-0286

Re: EIR-New Hospital Initial Study

Dear Ms. Wong,

Thank you for the opportunity to comment on this initial study for the New Hospital EIR. Golden Gate Audubon Society (GGAS) is a non-profit organization with over 7,000 members and supporters in San Francisco and the East Bay. Our mission is to engage people to experience the wonder of birds and translate that wonder into action to conserve and restore natural ecosystems, focusing on birds, other wildlife, and their habitats for the benefit of humanity and the earth's biological diversity.

We applaud the proposal to seek LEED Gold or above certification for this building. Will this project have the LEED and US Green Building Council's Pilot Credit 55 bird collision deterrence? And reducing the footprint of the hospital so that it no longer extends across Medical Center Way is a big improvement.

The New Hospital will be the tallest building in this part of the city, standing just north of the Mt. Sutro Reserve. One of our major concerns with this structure is the unavoidable bird strikes that will occur. The initial study states "UCSF proposes to coordinate with a qualified ornithologist to incorporate design features into the New Hospital generally consistent with the City's *Standards for Bird-Safe Guidelines* that would minimize the potential for bird strikes." Please describe the qualifications of the Ornithologist and their knowledge of the most up-to-date methods of deterring bird strikes. San Francisco has the oldest Bird-safe building ordinance in the US. It was state of the art in 2011 when it was passed. Since then many scientific studies have contributed to additional knowledge about the bird building collision issue. Now it is important to go beyond what is actually required in that ordinance. In particular we recommend ground level and higher glazed surfaces should be treated with a product with a threat factor of 25 or lower according to American Bird Conservancy laboratory testing. (https://abcbirds.org/glass-collisions/products-database/)

Please describe how the project will minimize the use of natural resources for exterior lighting. The initial study says this about exterior lighting: "The New Hospital would comply with the allowed backlight, up light, and glare (BUG) ratings for exterior lighting, for its specific Model Lighting Ordinance (MLO) lighting zone, or the

maximum vertical and horizontal lumen allowances for its lighting zone. Either approach would serve to minimize lighting effects associated with the light sources." Up lighting is not safe for nearby nesting and migrating birds or for insects. We urge the project to use the minimum amount of exterior lighting necessary, minimize any blue light emissions, and provide fully shielded, 90 degree cutoff lighting fixtures. These fixtures direct the lighting to the areas where it is needed for people to see while minimizing sky glow, glare and light trespass.

The New Hospital design features an extensive terrace on the sixth level that is proposed to become a public "garden". In addition landscaping is proposed for balconies associated with articulated terraces and the upper levels. There are also spaces at ground level where there are opportunities for new landscaping. The initial study talks about using native and 'adaptive' plants for this landscaping. Golden Gate Audubon is mindful of the value of native plants for thriving bird populations and we advise that UCSF consult a native plant expert who is also experienced at the use of natives in landscape design. This huge project will inevitably remove habitat and thus have a negative effect on birds and other wild life. A commitment to the use of native plants in the landscaping of the New Hospital and throughout the CPHP is a small way to mitigate some of these effects going forward.

Thank you in advance for addressing these issues in the upcoming EIR draft.

Sincerely,

Whitney Grover

Chair, GGAS SF Conservation Committee
Board Member, GGAS

From: Nancy Wuerfel
To: Campus Planning - EIR
Subject: Initisl Study Comments on NHPH
Date: Friday, August 27, 2021 4:49:33 PM

August 27, 2021

Diana Wong:

This letter is in response to the Notice of Preparation/Initial Study for the UCSF New Hospital at Parnassus Heights (NHPH). I request that the environmental impacts on the Infrastructure and Service Systems and on Public Services by the NHPH project be carefully reviewed in the Initial Study prepared for this project. The safety and functioning of the NHPH will affect the city systems and services requiring a thorough impact analysis as part of the EIR.

Please acknowledge receipt of my comments.

The EIR approved in January 2021 for the CPHP is based on documentation and studies that contain outdated information. Since that time, the SFPUC has changed their underlying infrastructure plan for providing potable water to customers after a major earthquake from the Sunset Reservoir (SSR) in favor of designating the reservoir as the primary water source for post-seismic firefighting. This change may also affect the delivery of public services by the Fire Department if the volume of water in SSR is not sufficient to suppress the fire demand. See Background information below.

BACKGROUND

The January 2021 EIR for the CPHP only evaluated the demand for potable water, not the demand for or sources of non-potable water required for fighting fires after a major earthquake (FFE). The initial source of water for FFE is treated potable water stored locally in city reservoirs. The backup primary source of FFE water is the non-potable water stored in the city's independent, high-pressure pipeline and hydrant Auxiliary Water Supply System (AWSS) and the unlimited seawater pumped from the bay. The AWSS has been used to fight fires in San Francisco for 108 years saving potable water, but it serves only the eastern and central parts of the city. The SFPUC has decided NOT to expand this seawater supply as a redundant source for FFE to the city's western and southern districts, in favor of using the local potable Hetch Hetchy (HH) water for firefighting purposes.

The reason for this decision is that it is cheaper to reinforce regular water mains for FFE than to expand the AWSS, even though this plan depletes drinking water needed for human and sanitation uses after an earthquake that UCSF relies on.

Also, the FFE water volume is then limited to only the amount inside the reservoir for immediate firefighting purposes. The SFPUC "level of service" for supplying potable water anticipates that HH supplies from 167 miles away crossing four fault lines will arrive in the city in 24 hours after a major earthquake, so it is permissible to deplete local reservoirs to fight fires.

The SFPUC's backup water source for FFE is the raw water stored in Lake Merced which will be conveyed by a new pipeline to Sunset Reservoir then pumped to hydrants for firefighting. Lake Merced water will contaminate this and other pipelines and the reservoir requiring ALL potable water uses to be stopped immediately. The 14 miles of seismically resilient pipelines from Lake Merced to Sunset Reservoir must be flushed clean and recertified before restoring use for delivering potable water to customers. The SFPUC has no plan to decontaminate the pipeline or has a designated source of the clean water to flush the line immediately after an earthquake, leaving it out of service.

SCOPING REQUEST

1) The Initial Study for NHPH should not rely on the now-outdated information in the CPHP EIR. There must be a review of the SFPUC projects budgeted and scheduled in the Local Water Enterprise Capital Improvement Plan including the "Potable Emergency Firefighting Water System" (PEFWS) for drinking water and firefighting water, the "Emergency Firefighting Water System - pipelines" for Lake Merced, and "Emergency Firefighting Water System - pump stations." These projects document my statements.

2) The Initial Study for NHPH must also review the two new SFPUC-commissioned reports:
"Fire Following Earthquake Water Requirements Study" by Charles Scawthorn, S.E. June 7, 2021 and "EFWS Seawater Supply Pre-Feasibility Study" by AECOM June 4, 2021. Both reports provide detailed discussions for FFE water requirements supply after an earthquake and identify factors that will need to be considered for the development of an additional seawater supply.

3) Beyond using the SSR water, the SFPUC intends to use other city reservoirs of potable water for backup for fighting fires. Therefore, the SFPUC decision not to expand the AWSS that uses unlimited seawater or raw water from Lake Merced to protect lives and property impacts not just UCSF, but all hospitals. The environmental impact that the NHPH project will have on the SFPUC's plan to limit supplies of potable water in favor of supplying FFE water must be evaluated carefully and mitigated. The city's premier hospital may not be compromised by the city's failure to ensure sufficient water for both human uses and fire protection, because the city **anticipates** that the HH pipeline will function to supply enough water after a major earthquake.

4) Since UCSF cannot function without adequate ongoing supplies of potable water and the security of being protected from fires, the mitigation for this <u>significant impact</u> requires a negotiation between UCSF and the SFPUC to preserve all locally stored

potable water for human uses and sanitation, and to expand the non-potable AWSS pipelines and hydrants with building new pump stations to access unlimited seawater for FFE.

Thank you for considering my comments.

Sincerely,

Nancy Wuerfel

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PUBLIC SCOPING MEETING

FOR THE

NEW HOSPITAL AT PARNASSUS HEIGHTS

ENVIRONMENTAL IMPACT REPORT

TUESDAY, AUGUST 17, 2021

VIA ZOOM WEB CONFERENCING PLATFORM

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REPORTED BY: DEBORAH FUQUA, CSR #12948
CERTIFIED STENOGRAPHIC REPORTER

APPEARANCES

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ALICIA MURASAKI, Assistant Vice Chancellor - Campus Planning

DIANE WONG, UCSF Principal Planner, Environmental Quality Act Coordinator

LILY WONG, UCSF Associate Director, Community Relations

HILLARY GITELMAN, Environmental Science Associates, Consultant

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Tuesday, August 17, 2021 6:01 p.m.

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P R O C E E D I N G S

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LILY WONG: Hi. Welcome, everybody. It's just past 6:00, so we're going to give folks a little bit of time to come trickle in. We had about 185 RSVPs, so we don't know exactly how many people are going to be coming.

But while we kind of wait for folks to trickle in -- if we can go to the next slide.

So in case you don't know, my name is Lily. And I'm the Associate Director of Community Relations here at UCSF. I'm just going to be helping out a little bit in the beginning.

So for Zoom housekeeping, I think a lot of people know the platform by now, but in case this helps, we really recommend joining audio via the computer and putting the Zoom window into full screen mode so you can see all of the slides. And then adjust the presentation to fit the window.

So tonight is a scoping meeting. And we'll take the comments at the end of the presentation. The chat function is going to be used for technical questions only. Anything submitted via the chat won't

be picked up by the court reporter, who is present, and it won't be reflected in the hearing transcript, so it won't be a part of the public comment collected at the hearing.

If you wanted to submit written comments, send it to -- e-mail eir@ucsf.edu.

If you're on the phone -- so at the end of the evening, we will take the comments via the "raise hand" function. And that's going to be either your reactions button or underneath your participants button if you have an older version of Zoom. If you're on the phone only, you can hit star 9 on your phone to raise your digital hand, and we will see it.

And the commenters will be called in order of raised hands, so please don't lower your hands because you will drop back to the bottom of the queue.

Tonight's meeting is going to be recorded for note taking purposes. We do have a court reporter present, but the transcript will be made available in the Draft EIR.

So that's it. So I will pass it to I think -- I'll pass it to my next colleague to go.

ALICIA MURASAKI: Welcome. Good evening. My name is Alicia Murasaki. I am the campus architect and the Assistant Vice Chancellor for Campus Planning. I'd

like to welcome you to tonight's hearing. And just so everyone knows you're in the right place, this is the scoping meeting for the New Hospital at Parnassus Heights Environmental Impact Report, or as we sometimes call it, EIR.

The next slide, please.

So just quickly, here's our meeting agenda. Right now, welcome and introduction, but we will also cover the CEQA Environmental Review Process, the Notice Of Preparation and Initial Study, and then we will have the Public Comment on the EIR Scoping.

Next slide, please.

So why are we here?

So for over a century, our Parnassus Heights Campus has served San Francisco and the Bay Area. From the 1906 earthquake to the 1980s HIV epidemic to today, COVID-19, we have cared for our community during public health crises and every year in between.

We are planning a state-of-the-art hospital to keep pace with the city's growing healthcare needs. Through collocation with world renowned research and education, the facility will continue to provide exceptional care for decades to come.

So the primary purpose of this hearing is to receive your comments on the recently published Initial

Study which describes the scope and the content of the upcoming Draft EIR to be prepared for this project.

We would like to hear your views on what should be studied in the upcoming Draft EIR. So just want to clarify that this is not a community meeting on the proposed project itself. We have held numerous meetings over the past year regarding the project, and we will continue to do so. We anticipate the next community meeting to be sometime in September. And by registering for this meeting, you are already on our mailing list. So you will be notified of our next community meeting, where there will be an opportunity to provide feedback on the project.

Because the purpose of tonight's hearing is to receive public comment for UCSF to consider in preparing the Draft EIR, we will not be able to answer questions or engage in a dialog about the project itself. However, we are listening, and we will take note of all comments and will try our best to respond either by incorporating requested information or analysis to the Draft EIR or potentially in a future community meeting.

Tonight's hearing is being conducted pursuant to the University of California's procedures for the implementation of the California Environmental Quality

Act or CEQA. Public notice regarding this hearing and the availability of the Initial Study included in advertisement in the San Francisco Examiner, the Sunset Beacon, e-mail notification to responsible agencies, e-mail notification to a listserve of over 2,000 people and organizations, mailed postcards to 8,500 neighbors, and mailed notice to adjacent property owners and occupants and posting on the UCSF website.

This hearing will be transcribed by a court reporter. A complete transcript of this proceeding as well as written comments received during the Initial Study public review period will be included in this Draft EIR.

So I'll just repeat because it's really important that, if you need to contact the Zoom host during this meeting for a technical issue, please use the chat button to message the host. However, the chat is not a method to submit substantive comments. Anything submitted via the chat function will not be able to be picked up by the court reporter and will not be a part of the public comment collected at this hearing.

Of course, if you prefer not to give oral testimony, you are welcome to provide written comments by the deadline. And we will have a slide later on

that gives you the details of where to submit written comments.

I'd like to now pass over the microphone to our colleague Hillary from Environmental Science Associates.

HILLARY GITELMAN: Thank you so much, Alicia.

Again, my name is Hillary Gitelman. I work for the consulting firm Environmental Science Associates or ESA. My colleagues and I at ESA are supporting UCSF's preparation of the EIR.

And in tonight's meeting, I want to briefly summarize the EIR process, offer some high level information about the Initial Study that's been prepared, and then make way for your comments.

Next slide, please.

So the California Environmental Quality Act, or CEQA, requires an analysis of potential physical environmental effects of projects like the proposal to conduct the New Hospital and make associated changes at the Parnassus Heights Campus.

As indicated previously, UCSF has determined that an Environmental Impact Report is the level of CEQA review required. And once complete, the EIR will be presented to the UC Regents and will be used to inform their decision about the project.

Next slide.

The EIRs and the EIR process are intended to inform the public as well as decision makers and include opportunities for public comments.

First, there's the EIR scoping process, which is what we're engaged in now. This is where we solicit public and agency input on the analyses and alternatives that should be considered in the EIR. Then there will be a public review of the Draft EIR, which allows the public and agencies to review and comment on the EIR analysis and its findings.

once we receive those comments, we prepare written responses to substantive comments, and the comments and responses to comments are provided to the commenters and decision makers prior to certification of the Final EIR.

That certification happens at a public hearing which allows for public testimony prior to an action by the Regents.

Next slide.

So UCSF issued a Notice Of Preparation, or an NOP, on July 28th, initiating what will be a 30-day scoping period from July 28th to August 27th of this year. During this period, UCSF is asking for comments on the scope of the EIR that will be prepared.

An Initial Study was prepared and made available with the Notice Of Preparation. That Initial Study briefly describes the project and will be the subject -- that will be the subject of the EIR and identifies issues that will be analyzed in depth in the Draft EIR. Obviously, if you disagree with any of the analyses or conclusions in the Initial Study or want to amplify those conclusions and expand on topics requiring analysis in the EIR, we want to hear that from you tonight or in your written comments.

All comments we receive will inform our analysis of potential impacts in the Draft EIR.

Next slide.

The Draft EIR will make use of information and analysis from the LRDP EIR completed in 2014 and the EIR completed for the Comprehensive Parnassus Heights Plan, or CPHP, in January of this year. However, the EIR is being prepared as a standalone and project-specific EIR rather than a supplemental environmental document.

The New Hospital at Parnassus Heights EIR will analyze the proposed hospital and associated improvements as described in the Initial Study. Those who follow the CPHP process will see that more is now known about the design and components of the

New Hospital project than were known when the CPHP EIR was prepared, and there have been some refinements.

Next slide.

So, again, you have an opportunity to comment orally this evening or to provide your written comments by the end of the scoping period on August 27th. And the e-mail address for submittal of written comments is provided here. And we will show it again towards the end of the meeting.

So let's go to the next slide, and we'll talk a little bit about the project that's being analyzed in the Initial Study and now in the EIR. So next slide.

As shown in this slide, which comes from the Initial Study, the project that will be analyzed in the Draft EIR consists of the proposed New Hospital and a number of related improvements.

These include: limited renovations in Moffitt and Long Hospitals; widening of Medical Center Way in the vicinity of the New Hospital; replacement and relocation of existing diesel fuel tanks and medical gas tanks; implementation of vegetation management and slope stabilization improvements on the hill east of the New Hospital; construction of a proposed pedestrian bridge and tunnel across Parnassus Avenue.

When considering the New Hospital and the

renovation of Moffitt and Long, there will be an increase of approximately 200 inpatient beds at Parnassus Heights over existing conditions for a total of about 680 inpatient beds at the campus site.

The project's goal is to have the New Hospital and related improvements largely constructed and operational by the end of 2030.

Let's go to the next slide.

This is a massing diagram that's from the Initial Study. The proposed New Hospital is still in the early stages of design. However, the Draft EIR will include visual simulations showing the hospital from various viewpoints at street level, so it won't be this bird's-eye -- bird's-eye view.

The New Hospital will be approximately 870,000 gross square feet and consist of 15 stories plus rooftop mechanical equipment and a full basement. The height of the building above the ground will be approximately 271 feet to the roof level and approximately 9- -- I'm sorry, 294 feet to the top of rooftop perimeter screening. Portions of the mechanical equipment located on the roof would exceed the 294 feet in height.

Next slide.

This site plan shows that the New Hospital and

renovated Moffitt and Long Hospitals would effectively function as one hospital. The New Hospital would physically connect to both Moffitt and Long Hospitals on certain floors. And the three hospitals would be organized around a central courtyard.

The New Hospital footprint is located completely outside of and would not encroach within the Mount Sutro Open Space Reserve.

Proposed vehicular access to the New Hospital would occur from Parnassus Avenue with patient drop-off for the main entrance and Emergency Department entrance located beneath the New Hospital building podium at street level.

An ambulance parking area within the New Hospital would be accessed from Medical Center Way. The primary loading areas for the New Hospital and Moffitt and Long would be via the existing but rebuilt loading dock at the south side or rear of Long Hospital.

Utility upgrades for the New Hospital would include but would not be limited to domestic and emergency water, wastewater, storm water, electrical and telecommunications, and also a storm water detention tank would be contained within the basement of the New Hospital.

The Parnassus Avenue streetscape plan would be implemented along Parnassus Avenue including street furniture, lighting, street trees as well as sidewalk and crosswalk widening. The sixth floor of the New Hospital would also provide an elevated outdoor publicly accessible terrace, providing trees, seating, and walking paths.

And as we've talked about before, related improvements would include the renovation of Moffitt and Long Hospitals, widening of Medical Center Way in the vicinity of the hospital, replacement and relocation of existing diesel fuel tanks, replacement and relocation of existing medical gas tanks, vegetation management and slope stabilization improvements, and Parnassus Avenue pedestrian bridge and tunnel.

Next slide.

This is a figure that doesn't currently appear in the Initial Study, but something like this will be in the Draft EIR. It shows the changes to the Reserve that would occur under the New Hospital at Parnassus Heights project.

There are really three of them worth mentioning. One, the site for the proposed medical gas tank would be removed from the Reserve. In other

words, its classification would change from "Reserve" to "support." Second, the triangular-shaped piece that was previously taken out of the Reserve under the CPHP would be returned to the Reserve. So now it's classified as "clinical," and it would revert to "Reserve," as it was prior to the CPHP. Finally, the area between Surge and Woods parking lots that was added to the Reserve under the CPHP would be retained as Reserve. This results in the Reserve being a total of greater than 61 acres.

Next slide.

So CEQA requires a focus on potential physical environmental impacts and not social or economic impacts. Certain requirements, mostly about how we analyze traffic impacts, changed in 2014 with a change in the state law. In accordance with the current requirements, the EIR will include an analysis of the issues shown on this slide.

Please see the Initial Study to learn more about the issues we'll be analyzing in depth in the EIR. It goes into quite a bit more detail, obviously, than this one slide.

Next slide.

So it's time for your public comments. Comments on the scope of the EIR analysis will help

inform preparation of the Draft EIR that we will provide for your review later in the process.

As Alicia indicated, we have a court reporter transcribing the comments since we don't want to have to rely on Zoom's transcription tonight. And we'll make sure we receive and preserve all the oral comments we receive this evening.

We want your written comments as well. Please send your comments to the address shown on the screen by the end of the comment period, August 27th.

Thank you so much for your patience during this presentation. I'm going to hand this off to Diane now to introduce herself and begin calling on the commenters.

DIANE WONG: Thank you, Hillary.

So hi, everyone. I'm Diane Wong with the Campus Planning Office, and we're now at the public comment portion of the meeting.

As a reminder, as Alicia stated earlier, UCSF staff will not respond to your comments tonight as the purpose is for us to listen and to receive your comments.

So if you would like to speak, please raise your hand, your digital hand, by clicking on the button at bottom of the participants list or, on the newer

Zoom functions, the "reactions" button at the bottom of your screen. So the instructions are there now on the screen.

So I will begin to call out names. I'm going to give it a minute to give people a chance to raise their digital hand.

So I have two folks so far. As Lily stated earlier, we will allow one minute for public comment.

First speaker, Denise Louie and then Jeff Jones.

LILY WONG: Denise, I sent you a request to unmute.

DENISE LOUIE: Hi, can you hear me?

LILY WONG: Yes, we can hear you. Please speak your comment.

DENISE LOUIE: Okay. As you may know, the San Francisco Bay Delta is in crisis due to drought, not enough fresh water. In fact, pumping from the Delta has been suspended. I would like an answer to questions I asked before about how much water will be required for construction and post-construction, that is, when the building becomes operational. And how will the new buildings minimize water use, recycle gray water, and collect rooftop rainwater?

DIANE WONG: Thank you. Next commenter is

Jeff Jones.

LILY WONG: I sent you a request to unmute.

JEFF JONES: Yes, thank you. I received your request. Thank you for the chance to speak.

My one question specifically speaks to an aspect of air flow. In particular, I wanted to know about the potential wind tunnel effect through -- over both the Mount Sutro Open Space as well as Parnassus Avenue. Thank you.

DIANE WONG: Thank you, Jeff.

Are there any other speakers?

I don't see any digital hands raised. We'll give it another few seconds.

(Pause in proceedings)

DIANE WONG: Susan Maerki?

LILY WONG: Susan, I sent you a request to unmute.

SUSAN MAERKI: I'm unmuted now, I think.

LILY WONG: Yes, you are.

SUSAN MAERKI: I want to comment your reference to a surplus square footage saved on the hospital being reallocated to other buildings. And that I think underscores one, wind tunnel effects and shadow effects that the prior commenter talked about and just the comment that -- you know, I'm not sure I

can completely agree with the assumption that, if you save some space, you can reallocate it everyplace else without any consequences.

Second point, I think the drawings need to include the pedestrian bridge. We haven't seen anything that actually shows how it would look along the skyline and across Parnassus as opposed to just the drawings.

And I also have sort of a technical question. It looks like you're referring to refurbishing Moffitt beyond 2030. And I want to know if you can operate as an inpatient beyond the 2030 in Moffitt.

DIANE WONG: Thanks, Susan.

Victoria Fong?

VICTORIA FONG: Hi. I was just wondering if you are planning to have a shuttle service for residents in the neighborhood who might need to go to appointments at the hospital or visit people in the hospital.

DIANE WONG: Thank you, Victoria.

Are there any others who wish to make comments? If so, please raise your digital hand at this time.

(Pause in proceedings)

DIANE WONG: Susan, you had another comment?

SUSAN MAERKI: I have a question about the additional traffic light proposed at Hillway. It's not clear to me whether you're talking about three traffic lights in probably about a football-length field or whether you're talking about getting rid of one of the other traffic lights. But if, in fact, you are doing that, I think you would need to consider paying for the underground wiring so that the buses can do the light controls and not just install a streetlight.

DIANE WONG: Thank you, Susan.

Next speaker is Greg Gaar.

GREG GAAR: Yeah. Hello. Yeah, my concern is I volunteer in Golden Gate Park every day. And I see lots of UCSF staff and patients using Golden Gate Park as a free parking lot because they can park there for three or four hours for free. So I would hate to see Golden Gate Park with more traffic because of the expansion of UCSF. And I think our previous speaker mentioned a shuttle service. And I think that would be appropriate for the University to use.

Also, I'm extremely shocked by the size of this hospital and how you're not following the Mount Sutro's Community Master Plan of 1975.

Thank you very much.

DIANE WONG: Thank you, Greg.

Any other speakers? Please raise your digital hand.

(Pause in proceedings)

DIANE WONG: Give it another few minutes or few seconds. If you'd like to speak, please raise your digital hand.

(Pause in proceedings)

LILY WONG: Also for our participants that's on the phone, if you would like to raise your digital hand, please hit star 9 on your phone.

DIANE WONG: Thank you, Lily.

(Pause in proceedings)

DIANE WONG: Okay. Well, seeing no other raised hands, I think we will close the public comment portion of this meeting.

The next steps -- thank you everybody for your comments. The next steps are that the Initial Study, again, is available online at ucsf.edu/cphp/hospital. To give written feedback, please e-mail eir@ucsf.edu, or you may send a letter to myself at UCSF Campus Planning, Box 0286, San Francisco, California 94143.

The public comment period will end on August 27th, 2021. And if you'd like a paper copy of the Initial Study, please e-mail me, again, at eir@ucsf.edu, or you may call me at 415-502-5952.

We expect the Draft EIR to be published sometime later this year.

Thank you everybody, and have a great evening.

(Whereupon, the proceedings concluded at 6:28 p.m.)

STATE OF CALIFORNIA)
) ss.
COUNTY OF MARIN)

I, DEBORAH FUQUA, a Certified Shorthand Reporter of the State of California, do hereby certify that the foregoing proceedings were reported via Zoom web conferencing by me, a disinterested person, and thereafter transcribed under my direction into typewriting and which typewriting is a true and correct transcription of said proceedings.

I further certify that I am not of counsel or attorney for either or any of the parties in the foregoing proceeding and caption named, nor in any way interested in the outcome of the cause named in said caption.

Dated the 13th day of September, 2021.

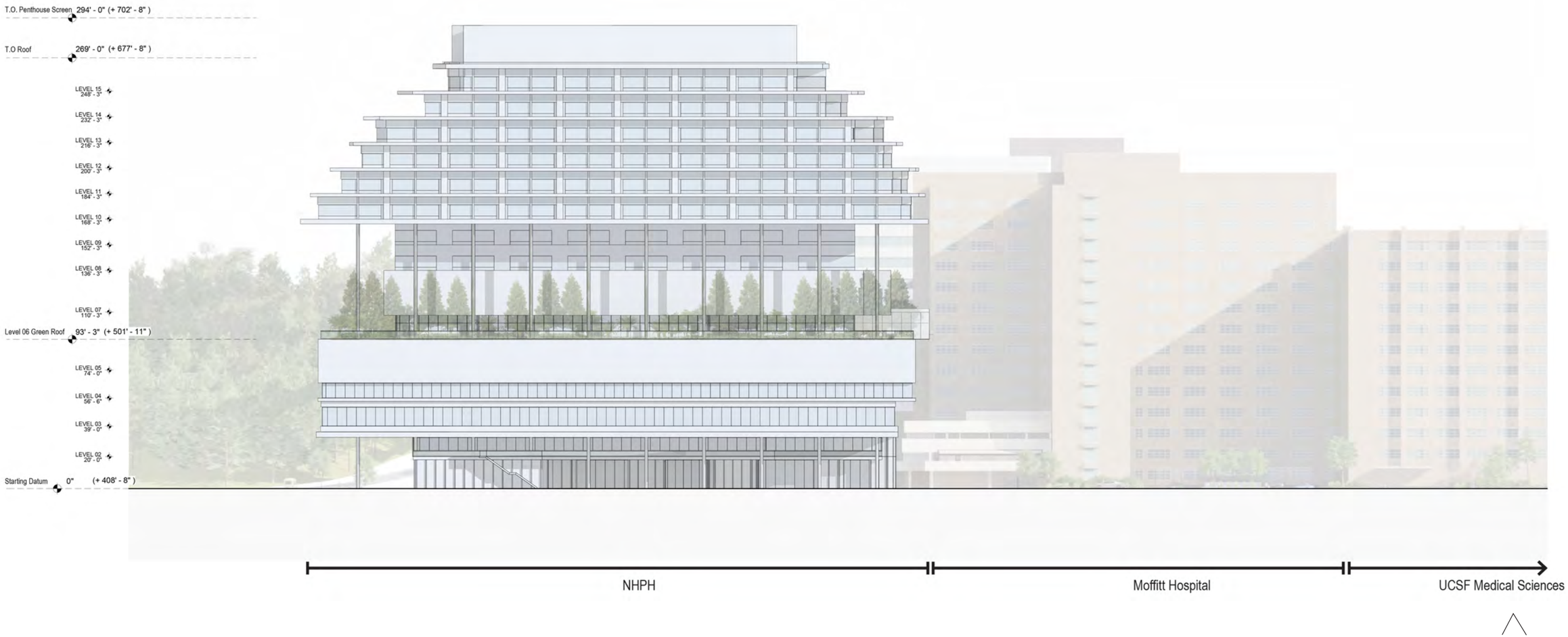
DEBORAH FUQUA

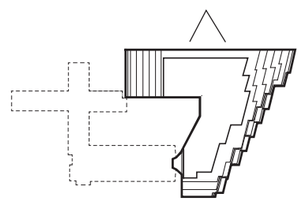
CSR NO. 12948

Appendix PD1

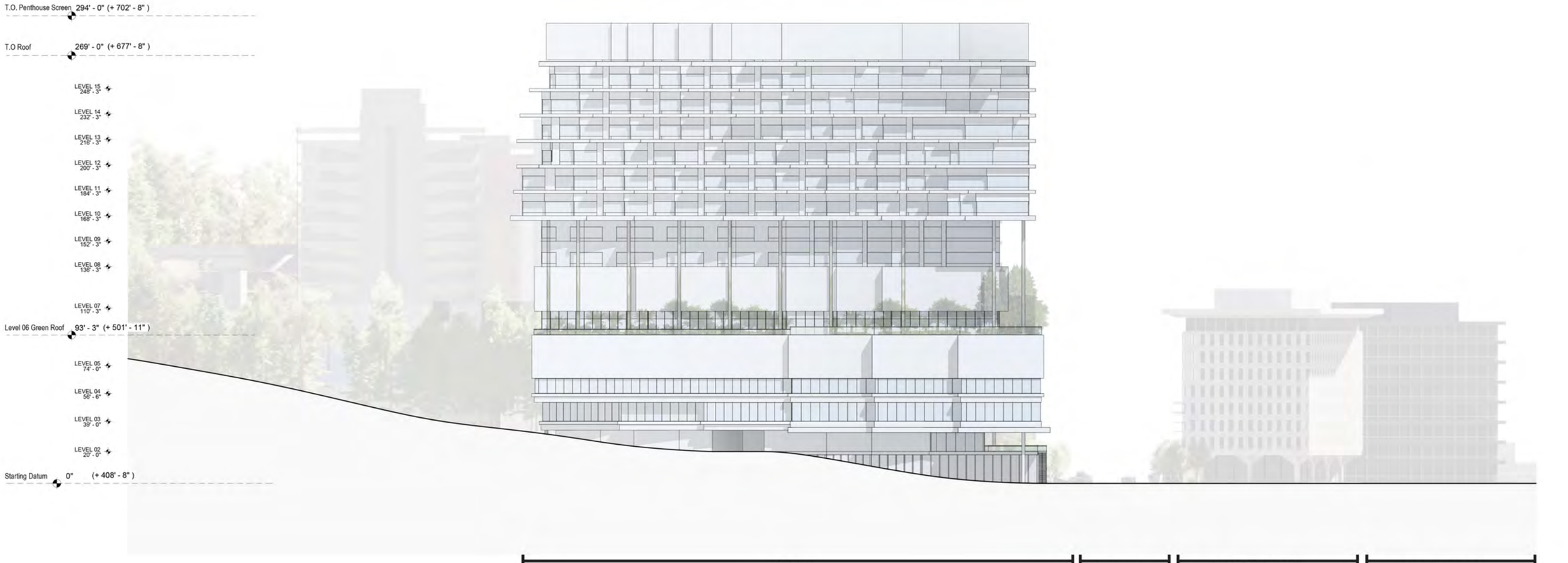
Elevation Drawings for New Hospital Design Option 1 (4-Foot Third Floor Projection) and Design Option 2 (11.5-Foot Third Floor Projection)

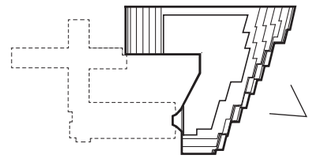
CANOPY 4’ PAST PROPERTY LINE - 3’ HIGH





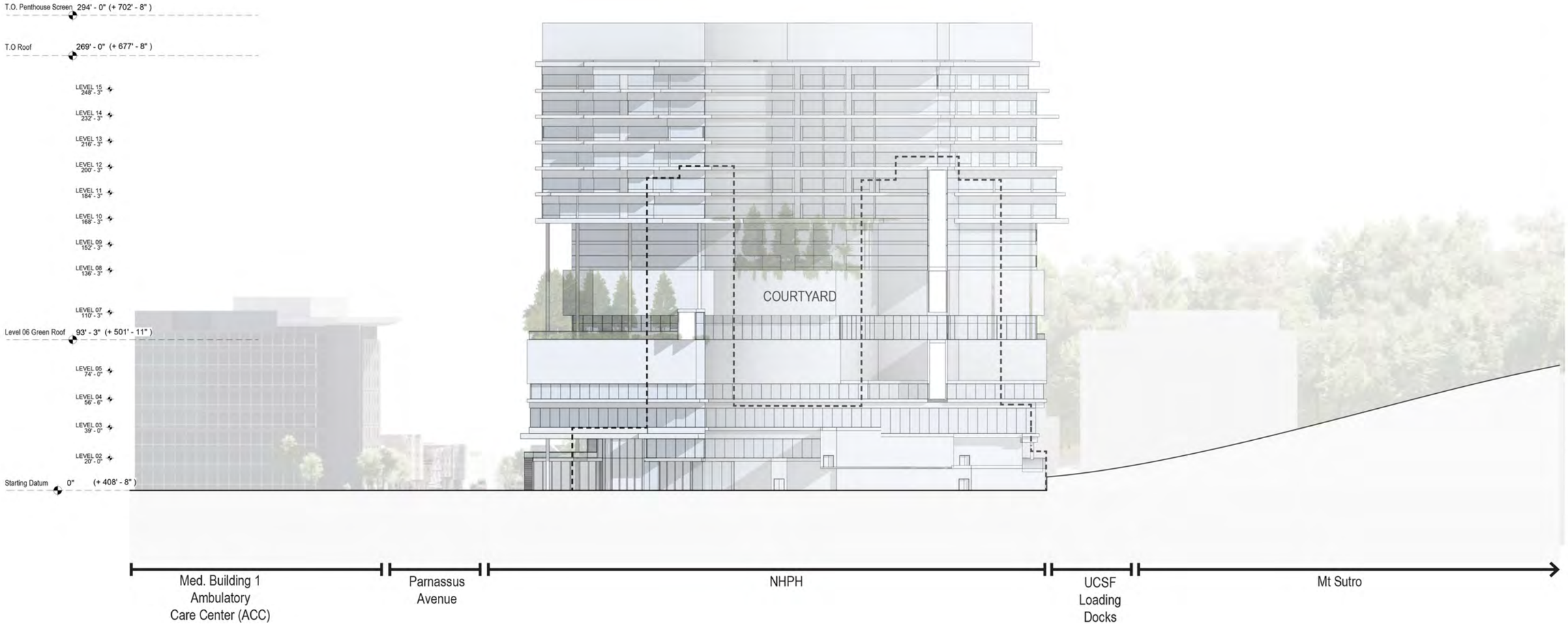
NORTH ELEVATION

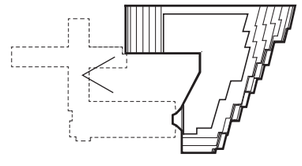




0 16' 32' 64' 128'

EAST ELEVATION

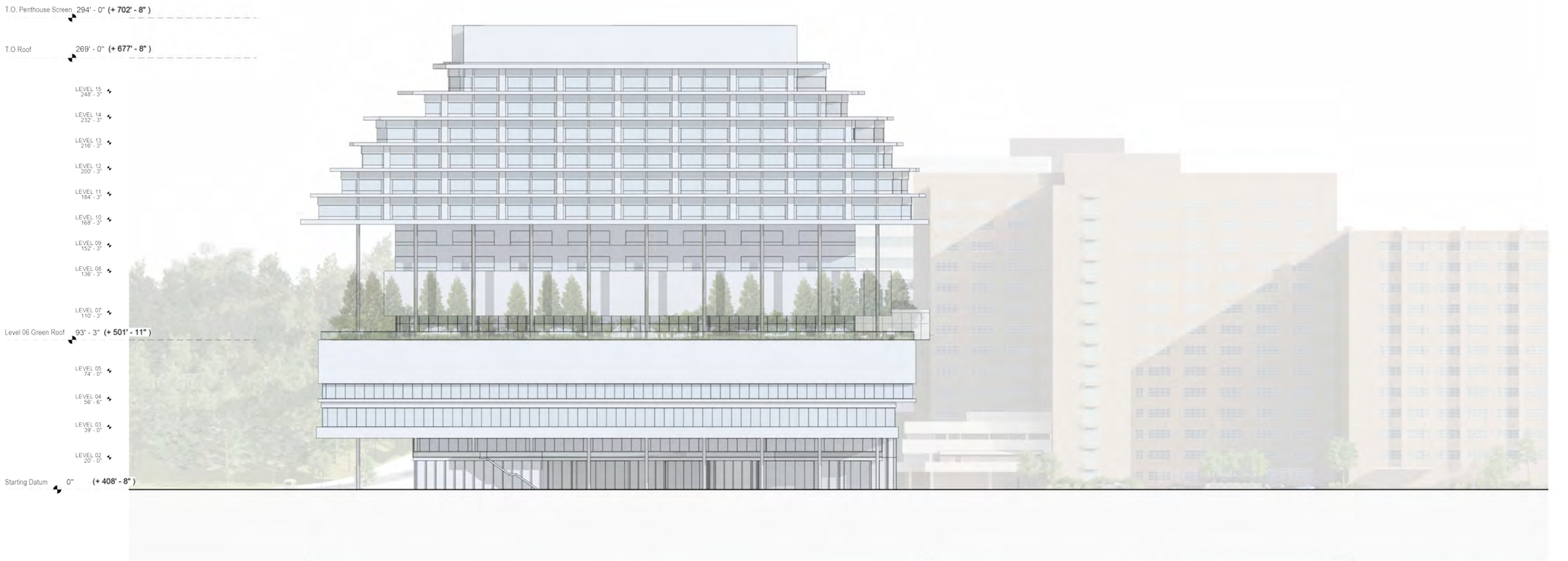


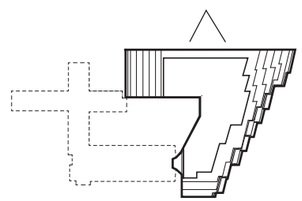


0 16' 32' 64' 128'

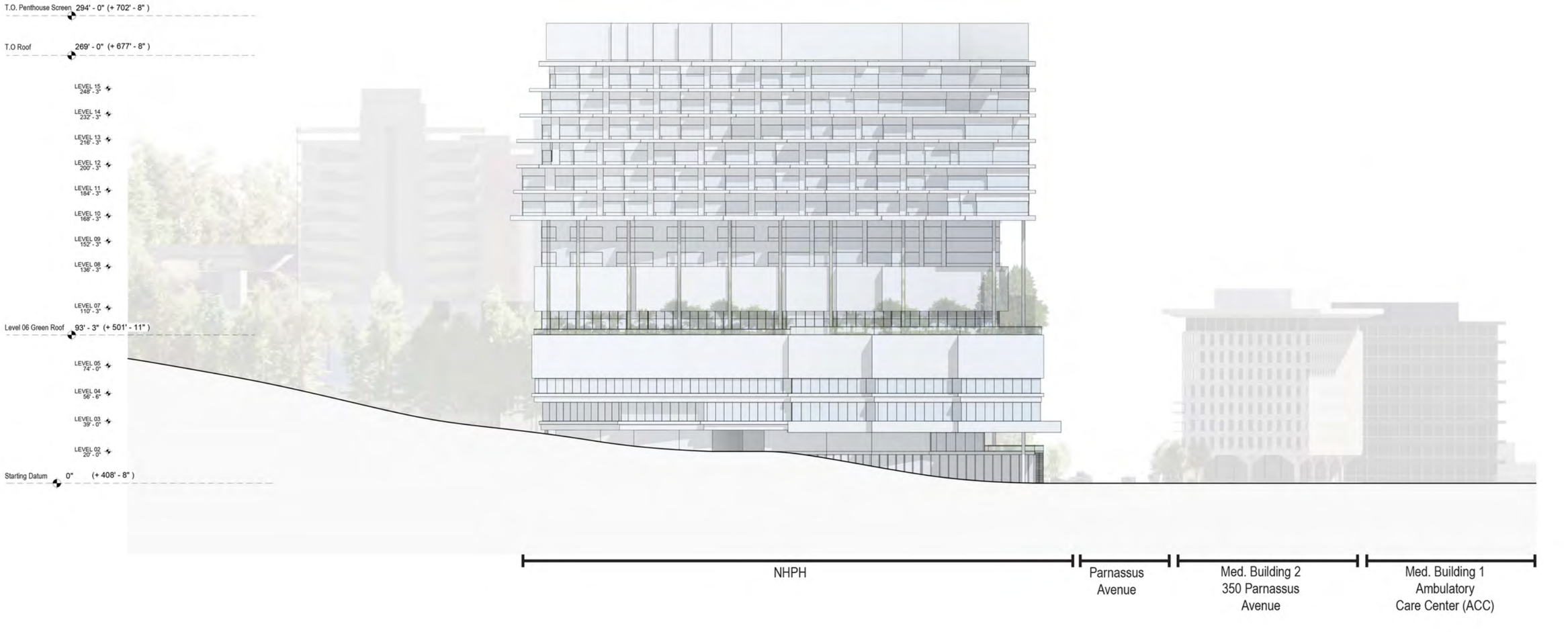
WEST ELEVATION

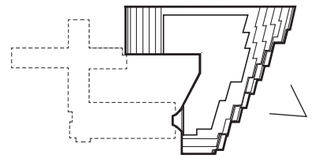
CANOPY 11’-6” PAST PROPERTY LINE - 7’ HIGH





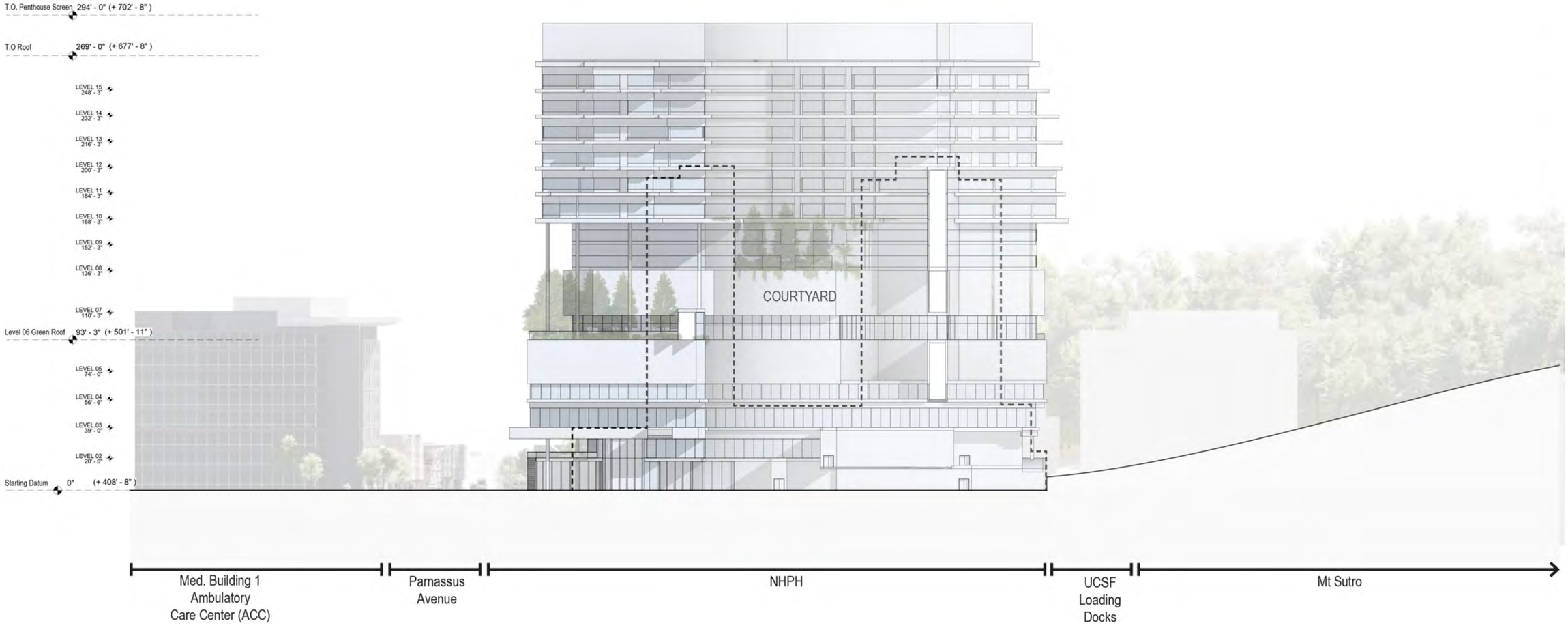
NORTH ELEVATION

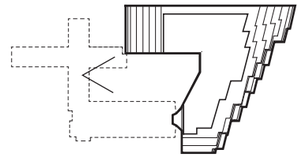




0 16' 32' 64' 128'

EAST ELEVATION

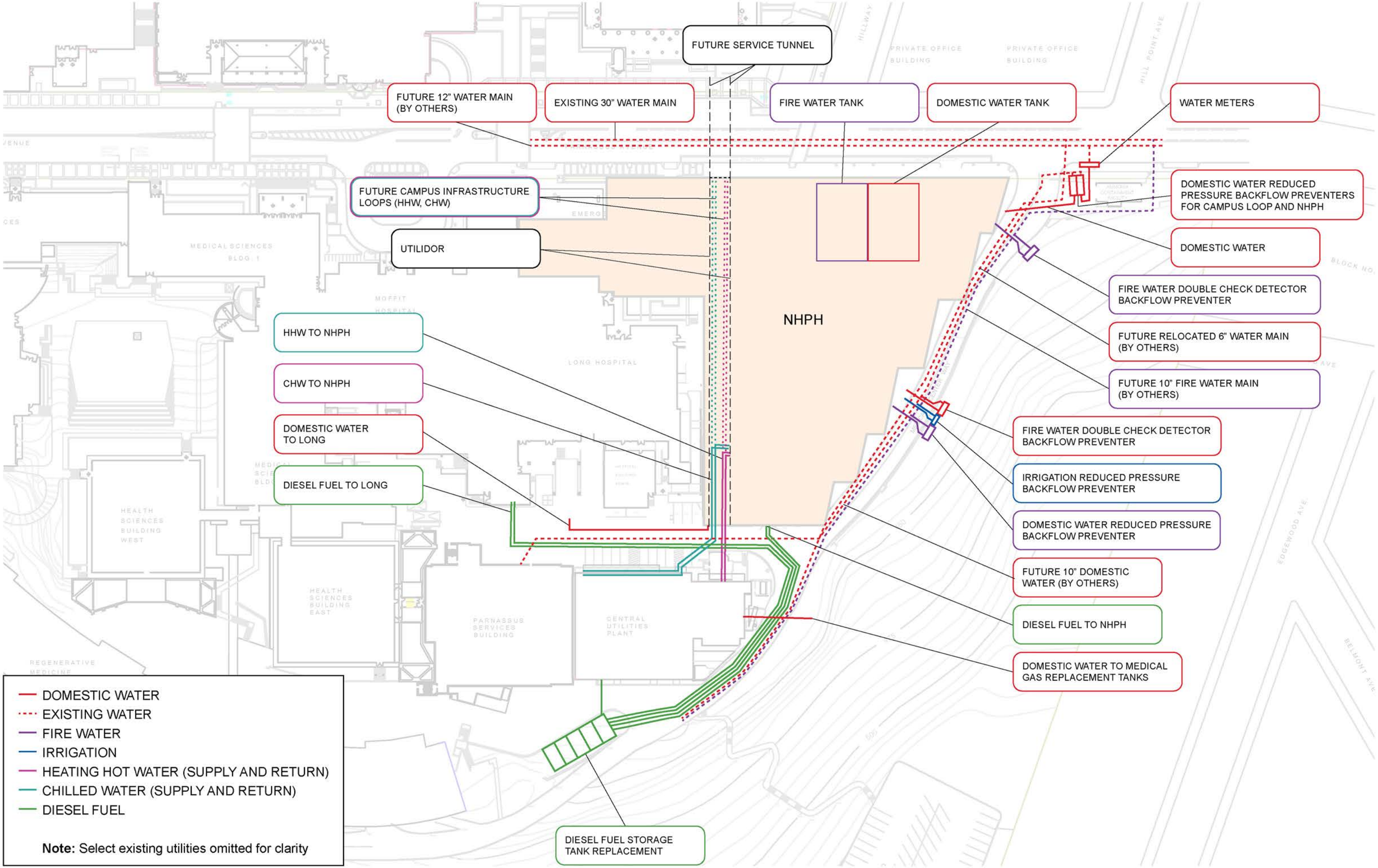


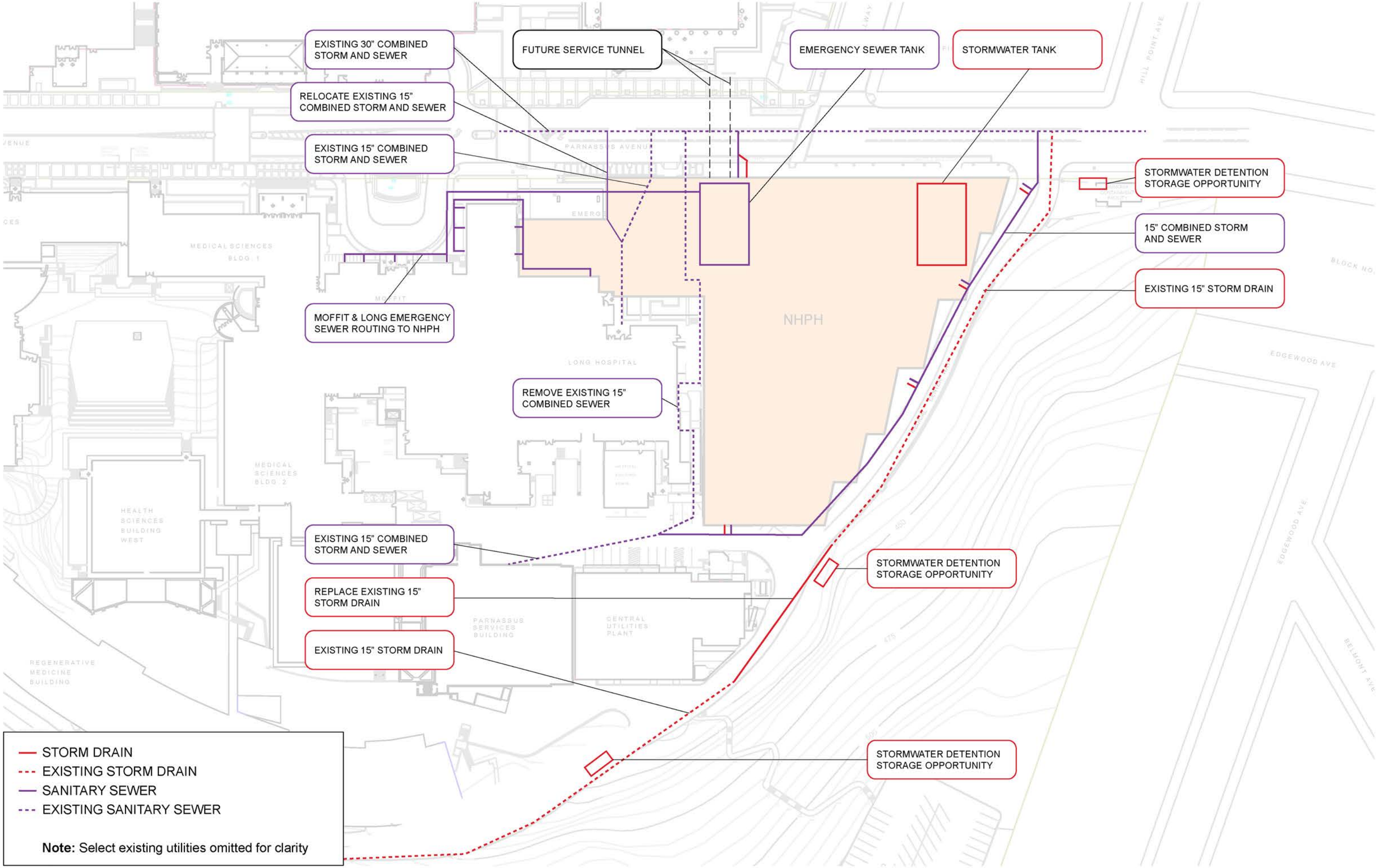


0 16' 32' 64' 128'

WEST ELEVATION

Appendix PD2
Preliminary Utility Plan Designs


FUTURE SERVICE TUNNEL
FUTURE 12" WATER MAIN (BY OTHERS)
EXISTING 30" WATER MAIN
FIRE WATER TANK
DOMESTIC WATER TANK
WATER METERS
FUTURE CAMPUS INFRASTRUCTURE LOOPS (HHW, CHW)
UTILIDOR
DOMESTIC WATER REDUCED PRESSURE BACKFLOW PREVENTERS FOR CAMPUS LOOP AND NHPH
DOMESTIC WATER
FIRE WATER DOUBLE CHECK DETECTOR BACKFLOW PREVENTER
FUTURE RELOCATED 6" WATER MAIN (BY OTHERS)
FUTURE 10" FIRE WATER MAIN (BY OTHERS)
NHPH
HHW TO NHPH
CHW TO NHPH
DOMESTIC WATER TO LONG
DIESEL FUEL TO LONG
FIRE WATER DOUBLE CHECK DETECTOR BACKFLOW PREVENTER
IRRIGATION REDUCED PRESSURE BACKFLOW PREVENTER
DOMESTIC WATER REDUCED PRESSURE BACKFLOW PREVENTER
FUTURE 10" DOMESTIC WATER (BY OTHERS)
DIESEL FUEL TO NHPH
DOMESTIC WATER TO MEDICAL GAS REPLACEMENT TANKS
DIESEL FUEL STORAGE TANK REPLACEMENT
DOMESTIC WATER
EXISTING WATER
FIRE WATER
IRRIGATION
HEATING HOT WATER (SUPPLY AND RETURN)
CHILLED WATER (SUPPLY AND RETURN)
DIESEL FUEL
Note: Select existing utilities omitted for clarity


EXISTING 30" COMBINED STORM AND SEWER
RELOCATE EXISTING 15" COMBINED STORM AND SEWER
EXISTING 15" COMBINED STORM AND SEWER
MOFFIT & LONG EMERGENCY SEWER ROUTING TO NHPH
FUTURE SERVICE TUNNEL
REMOVE EXISTING 15" COMBINED SEWER
EMERGENCY SEWER TANK
STORMWATER TANK
STORMWATER DETENTION STORAGE OPPORTUNITY
15" COMBINED STORM AND SEWER
EXISTING 15" STORM DRAIN
EXISTING 15" COMBINED STORM AND SEWER
REPLACE EXISTING 15" STORM DRAIN
EXISTING 15" STORM DRAIN
STORMWATER DETENTION STORAGE OPPORTUNITY
STORMWATER DETENTION STORAGE OPPORTUNITY
NHPH
PARNASSUS AVENUE
MEDICAL SCIENCES BLDG. 1
MEDICAL SCIENCES BLDG. 2
LONG HOSPITAL
HEALTH SCIENCES BUILDING WEST
PARNASSUS SERVICES BUILDING
CENTRAL UTILITIES PLANT
REGENERATIVE MEDICINE BUILDING
HILL POINT AVE
EDGEWOOD AVE
BELMONT AVE
STORM DRAIN
EXISTING STORM DRAIN
SANITARY SEWER
EXISTING SANITARY SEWER
Note: Select existing utilities omitted for clarity

RELOCATE EXISTING ELECTRICAL DUCTBANK

RELOCATE EXISTING 6" STEAM AND 2" CONDENSATE

FUTURE SERVICE TUNNEL

NHPH

CONNECT TO EXISTING TELECOM INFRASTRUCTURE - LOCATION TBD

EXISTING STEAM AND CONDENSATE

ADD NEW CONDUITS TO EXISTING TELECOM / ELECTRICAL INFRASTRUCTURE

TELECOM FIBER

N20

OXYGEN

RELOCATE EXISTING 6" STEAM AND 2" CONDENSATE

O2, CO2 AND N20 FROM NEW MEDICAL GAS REPLACEMENT TANKS

6" STEAM AND 2" CONDENSATE

TELECOM DUCTBANK

ELECTRICAL DUCTBANK

ELECTRICAL, FIRE ALARM, DATA/SECURITY

- STEAM AND CONDENSATE
- EXISTING STEAM AND CONDENSATE
- ELECTRICAL
- EXISTING ELECTRICAL
- N2O, CO2
- OXYGEN
- IT/TELECOM

Note: Select existing utilities omitted for clarity

Appendix AIR
Air Quality Appendix

Construction Vehicle Trips

CalEEmod Output Construction

CalEEmod Output Project Operation

Approach and Methodology to Health Risk Assessment

Construction Vehicle Trips

Calculation of Worker Construction Vehicle Trips - NHPH

Construction Workers

From EIR Attachment A from Hererro Bolt Webcor

Assume 2 trips per worker per day all in SOV
Otherwise use default

Phases (if applicable)	Number of Workers (Max.)	trips/day
LPPI Demolition		
Site Preparation / MCWUtilities	75	150
Grading / Shoring / Mass Excavation	75	150
Drainage / Utilities / Subgrade Utilities	75	150
Foundations	75	150
Structure	125	250
Exteriors Building Construction	125	250
Interiors Building Construction	250	500
Final Site Improvements	50	100
Other 1: Commissioning		
Other 2: ML Renovations/Bridge Tunnel Connection	TBD	

Calculation of Construction Haul Truck Trips

From EIR Attachment A from Hererro Bolt Webcor

			One Way Trips
Fuel Tank Excavation = 85 truck loads	85	truck loads	170
Moffett/Long Demo	230	truck loads	460
Hospital Export	110700	cy	
Truck capacity		20 cy	
Truck loads =		5535	11070
Hospital Import	5400	cy	
Truck capacity		15 cy	
Truck loads =		360	720
Total Hospital =			**11790**
Site Preparation Export	2600	cy	
Truck capacity		10 cy	
Truck loads =		260	520

Calculation of Concrete Vendor Truck Trips

From EIR Attachment A from Hererro Bolt Webcor

Bridge and Tunnels	truck loads	One Way Trips
Bridge	20	40
Public Tunnel	70	140
Service Tunnnel	51	102
Total =		**282**

truck loads

Hospital Foundation Concrete Pour

Total Concrete Volume = 18170 cy

Truck capacity	10 cy	One Way Trips
Truck loads =	1817	3634
Total # of days =	120	
Trucks/day =		30

Hospital Core and Shell SOMD Concrete Pour

Total Concrete Volume = 20000 cy

Truck capacity	10 cy	One Way Trips
Truck loads =	2000	4000
Total # of days =	260	
Trucks/day =		15

Total Concrete = **Trucks/day =** **46**

CalEEmod Output Construction

UCSF NHPH Construction Run - San Francisco County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

UCSF NHPH Construction Run

San Francisco County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Hospital	900.00	1000sqft	2.30	900,000.00	0
Parking Lot	1.00	Acre	0.00	43,560.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	0	**Precipitation Freq (Days)**	64
Climate Zone	5			**Operational Year**	2034
Utility Company	CleanPowerSF				
CO2 Intensity (lb/MWhr)	44.17	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Construction Only Run. Project operations on a separate run.

Land Use - Site specific acreage.

Construction Phase - Project-specific construction scheule provided by Herrero Bolt Webcor

Off-road Equipment - Construction equipment and usage factors provided by Herrero Bolt Webcor

Off-road Equipment - Construction equipment and usage factors provided by Herrero Bolt Webcor

Off-road Equipment - Construction equipment and usage factors provided by Herrero Bolt Webcor

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UCSF NHPH Construction Run - San Francisco County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Off-road Equipment - Construction equipment and usage factors provided by Herrero Bolt Webcor

Off-road Equipment - Construction equipment and usage factors provided by Herrero Bolt Webcor

Off-road Equipment - Construction equipment and usage factors provided by Herrero Bolt Webcor

Off-road Equipment - Equipment in previous phase. This phase for haul trips only.

Off-road Equipment - Construction equipment and usage factors provided by Herrero Bolt Webcor

Off-road Equipment - Construction equipment provided by Herrero Bolt Webcor

Trips and VMT - Number of workers and haul trips provided by Herrero Bolt Webcor.

Demolition -

Grading -

Architectural Coating - Surface area provided by Herrero Bolt Webcor

Vehicle Trips - Construction Run Only

Consumer Products - Construction Run Only.

Area Coating - Construction Run Only.

Landscape Equipment - Construction Run Only.

Energy Use - Construction Run Only.

Water And Wastewater - Construction Run Only.

Solid Waste - Construction Run Only.

Construction Off-road Equipment Mitigation - Cranes and welders electric. Forklifts CNG. All other equipment Tier 4 final.

Table Name	Column Name	Default Value	New Value
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tblArchitecturalCoating	EF_Parking	0.00	150.00
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tblConstEquipMitigation	FuelType	Diesel	CNG
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UCSF NHPH Construction Run - San Francisco County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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UCSF NHPH Construction Run - San Francisco County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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tblConstructionPhase	NumDays	220.00	370.00
tblConstructionPhase	NumDays	220.00	521.00
tblConstructionPhase	NumDays	220.00	717.00
tblConstructionPhase	NumDays	20.00	14.00
tblConstructionPhase	NumDays	6.00	131.00
tblConstructionPhase	NumDays	3.00	304.00
tblConsumerProducts	ROG_EF_PesticidesFertilizers	0	5.152E-08
tblEnergyUse	LightingElect	4.23	0.00
tblEnergyUse	NT24E	5.52	0.00
tblEnergyUse	NT24NG	15.80	0.00
tblEnergyUse	T24E	5.78	0.00
tblEnergyUse	T24NG	84.04	0.00
tblFleetMix	HHD	0.00	3.5520e-003
tblFleetMix	HHD	0.00	3.5520e-003
tblFleetMix	LDA	0.00	0.54
tblFleetMix	LDA	0.00	0.54
tblFleetMix	LDT1	0.00	0.06
tblFleetMix	LDT1	0.00	0.06
tblFleetMix	LDT2	0.00	0.19
tblFleetMix	LDT2	0.00	0.19
tblFleetMix	LHD1	0.00	0.02
tblFleetMix	LHD1	0.00	0.02

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tblFleetMix	LHD2	0.00	5.7750e-003
tblFleetMix	LHD2	0.00	5.7750e-003
tblFleetMix	MCY	0.00	0.03
tblFleetMix	MCY	0.00	0.03
tblFleetMix	MDV	0.00	0.12
tblFleetMix	MDV	0.00	0.12
tblFleetMix	MH	0.00	2.2100e-003
tblFleetMix	MH	0.00	2.2100e-003
tblFleetMix	MHD	0.00	0.02
tblFleetMix	MHD	0.00	0.02
tblFleetMix	OBUS	0.00	1.6160e-003
tblFleetMix	OBUS	0.00	1.6160e-003
tblFleetMix	SBUS	0.00	9.8500e-004
tblFleetMix	SBUS	0.00	9.8500e-004
tblFleetMix	UBUS	0.00	1.9330e-003
tblFleetMix	UBUS	0.00	1.9330e-003
tblGrading	MaterialExported	0.00	2,600.00
tblGrading	MaterialExported	0.00	108,100.00
tblGrading	MaterialImported	0.00	5,400.00
tblOffRoadEquipment	HorsePower	78.00	150.00
tblOffRoadEquipment	HorsePower	231.00	150.00
tblOffRoadEquipment	HorsePower	231.00	150.00
tblOffRoadEquipment	HorsePower	231.00	150.00
tblOffRoadEquipment	HorsePower	89.00	210.00
tblOffRoadEquipment	HorsePower	89.00	210.00
tblOffRoadEquipment	HorsePower	89.00	210.00
tblOffRoadEquipment	HorsePower	89.00	210.00

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tblOffRoadEquipment	HorsePower	367.00	330.00
tblOffRoadEquipment	HorsePower	97.00	120.00
tblOffRoadEquipment	HorsePower	97.00	120.00
tblOffRoadEquipment	HorsePower	97.00	120.00
tblOffRoadEquipment	HorsePower	97.00	120.00
tblOffRoadEquipment	HorsePower	78.00	150.00
tblOffRoadEquipment	HorsePower	78.00	150.00
tblOffRoadEquipment	HorsePower	78.00	150.00
tblOffRoadEquipment	HorsePower	221.00	700.00
tblOffRoadEquipment	HorsePower	81.00	33.00
tblOffRoadEquipment	HorsePower	231.00	350.00
tblOffRoadEquipment	HorsePower	158.00	385.00
tblOffRoadEquipment	HorsePower	89.00	210.00
tblOffRoadEquipment	HorsePower	89.00	210.00
tblOffRoadEquipment	HorsePower	84.00	10.00
tblOffRoadEquipment	HorsePower	402.00	325.00
tblOffRoadEquipment	HorsePower	402.00	325.00
tblOffRoadEquipment	HorsePower	402.00	325.00
tblOffRoadEquipment	HorsePower	402.00	325.00
tblOffRoadEquipment	HorsePower	130.00	74.00
tblOffRoadEquipment	HorsePower	130.00	74.00
tblOffRoadEquipment	HorsePower	80.00	40.00
tblOffRoadEquipment	HorsePower	80.00	40.00
tblOffRoadEquipment	HorsePower	97.00	350.00
tblOffRoadEquipment	HorsePower	97.00	120.00
tblOffRoadEquipment	HorsePower	97.00	350.00
tblOffRoadEquipment	HorsePower	158.00	385.00

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tblOffRoadEquipment	HorsePower	402.00	325.00
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00

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tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	8.00	2.40
tblOffRoadEquipment	UsageHours	7.00	1.60
tblOffRoadEquipment	UsageHours	7.00	1.60
tblOffRoadEquipment	UsageHours	7.00	2.40
tblOffRoadEquipment	UsageHours	7.00	1.60
tblOffRoadEquipment	UsageHours	6.00	0.80
tblOffRoadEquipment	UsageHours	7.00	2.00
tblOffRoadEquipment	UsageHours	7.00	2.00
tblOffRoadEquipment	UsageHours	8.00	0.80
tblSolidWaste	SolidWasteGenerationRate	9,720.00	0.00
tblTripsAndVMT	HaulingTripNumber	8.00	460.00
tblTripsAndVMT	HaulingTripNumber	14,188.00	11,790.00
tblTripsAndVMT	HaulingTripNumber	325.00	520.00
tblTripsAndVMT	HaulingTripNumber	0.00	170.00
tblTripsAndVMT	WorkerTripNumber	306.00	150.00
tblTripsAndVMT	WorkerTripNumber	306.00	250.00
tblTripsAndVMT	WorkerTripNumber	306.00	250.00
tblTripsAndVMT	WorkerTripNumber	306.00	250.00
tblTripsAndVMT	WorkerTripNumber	0.00	20.00
tblTripsAndVMT	WorkerTripNumber	28.00	150.00
tblTripsAndVMT	WorkerTripNumber	25.00	150.00
tblTripsAndVMT	WorkerTripNumber	25.00	150.00
tblTripsAndVMT	WorkerTripNumber	15.00	100.00

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tblVehicleTrips	ST_TR	7.72	0.00
tblVehicleTrips	SU_TR	6.77	0.00
tblVehicleTrips	WD_TR	10.72	0.00
tblWater	IndoorWaterUseRate	112,932,483.80	0.00
tblWater	OutdoorWaterUseRate	21,510,949.30	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.0416	0.2345	0.3995	1.1300e-003	0.0528	9.6700e-003	0.0625	0.0141	8.9700e-003	0.0230	0.0000	102.3599	102.3599	0.0185	2.1000e-003	103.4490
2023	0.1627	0.7369	1.5493	4.5500e-003	0.2728	0.0294	0.3022	0.0726	0.0272	0.0998	0.0000	411.4555	411.4555	0.0635	7.8400e-003	415.3783
2024	0.2143	2.2892	2.2964	0.0111	0.3551	0.0476	0.4026	0.0959	0.0441	0.1399	0.0000	1,100.8372	1,100.8372	0.2243	0.0899	1,133.2266
2025	0.1318	1.2756	1.3956	6.5800e-003	0.3092	0.0248	0.3341	0.0845	0.0231	0.1076	0.0000	645.0819	645.0819	0.0930	0.0547	663.7167
2026	0.8321	3.4093	3.4467	0.0175	1.0364	0.0465	1.0828	0.2836	0.0436	0.3272	0.0000	1,766.1070	1,766.1070	0.1859	0.1849	1,825.8623
2027	1.3266	2.5713	2.7982	0.0137	0.8434	0.0348	0.8782	0.2305	0.0330	0.2635	0.0000	1,377.8877	1,377.8877	0.1370	0.1407	1,423.2442
2028	0.8969	1.1082	1.3056	6.2400e-003	0.4016	0.0134	0.4151	0.1096	0.0130	0.1226	0.0000	627.7984	627.7984	0.0579	0.0630	648.0048
2029	0.0302	0.0860	0.3008	9.4000e-004	0.0948	3.9500e-003	0.0988	0.0252	3.6400e-003	0.0289	0.0000	85.1201	85.1201	7.9200e-003	1.4400e-003	85.7473
2030	0.0637	1.8161	0.9490	7.5100e-003	0.2643	0.0105	0.2748	0.0757	0.0102	0.0859	0.0000	803.3243	803.3243	0.1003	0.1133	839.5950

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2031	0.0630	1.7832	0.9412	7.3400e-003	0.2620	0.0104	0.2724	0.0753	0.0100	0.0853	0.0000	784.3611	784.3611	0.0978	0.1102	819.6440
2032	0.0624	1.7678	0.9446	7.2500e-003	0.2630	0.0103	0.2733	0.0756	9.9500e-003	0.0855	0.0000	774.1744	774.1744	0.0977	0.1086	808.9890
Maximum	**1.3266**	**3.4093**	**3.4467**	**0.0175**	**1.0364**	**0.0476**	**1.0828**	**0.2836**	**0.0441**	**0.3272**	**0.0000**	**1,766.1070**	**1,766.1070**	**0.2243**	**0.1849**	**1,825.8623**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.0280	0.1021	0.4513	1.1300e-003	0.0528	2.6700e-003	0.0555	0.0141	2.5100e-003	0.0166	0.0000	102.3598	102.3598	0.0185	2.1000e-003	103.4490
2023	0.1229	0.3793	1.7124	4.5500e-003	0.2728	0.0103	0.2831	0.0726	9.6400e-003	0.0822	0.0000	411.4553	411.4553	0.0635	7.8400e-003	415.3781
2024	0.1631	1.7768	2.9139	0.0109	0.3551	0.0229	0.3780	0.0959	0.0218	0.1176	0.0000	1,083.2622	1,083.2622	0.2186	0.0899	1,115.5094
2025	0.0966	0.9516	1.4361	6.2300e-003	0.3092	9.0200e-003	0.3182	0.0845	8.5800e-003	0.0931	0.0000	614.8170	614.8170	0.0840	0.0547	633.2259
2026	0.7739	2.9381	3.1046	0.0169	1.0364	0.0225	1.0589	0.2836	0.0213	0.3048	0.0000	1,714.5829	1,714.5829	0.1701	0.1849	1,773.9425
2027	1.2805	2.2418	2.6594	0.0134	0.8434	0.0177	0.8611	0.2305	0.0167	0.2472	0.0000	1,352.0153	1,352.0153	0.1287	0.1407	1,397.1626
2028	0.8764	0.9913	1.3343	6.2200e-003	0.4016	7.4600e-003	0.4091	0.1096	7.0800e-003	0.1167	0.0000	625.7167	625.7167	0.0572	0.0630	645.9062
2029	0.0249	0.0504	0.3352	9.4000e-004	0.0948	8.0000e-004	0.0956	0.0252	7.7000e-004	0.0260	0.0000	85.1201	85.1201	7.9200e-003	1.4400e-003	85.7473
2030	0.0492	1.8035	1.0688	7.5100e-003	0.2643	9.7100e-003	0.2740	0.0757	9.3500e-003	0.0851	0.0000	803.3243	803.3243	0.1003	0.1133	839.5949
2031	0.0483	1.7704	1.0629	7.3400e-003	0.2620	9.5400e-003	0.2716	0.0753	9.1800e-003	0.0845	0.0000	784.3610	784.3610	0.0978	0.1102	819.6439

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2032	0.0477	1.7550	1.0667	7.2500e-003	0.2630	9.4800e-003	0.2725	0.0756	9.1200e-003	0.0847	0.0000	774.1743	774.1743	0.0977	0.1086	808.9889
Maximum	**1.2805**	**2.9381**	**3.1046**	**0.0169**	**1.0364**	**0.0229**	**1.0589**	**0.2836**	**0.0218**	**0.3048**	**0.0000**	**1,714.5829**	**1,714.5829**	**0.2186**	**0.1849**	**1,773.9425**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**8.21**	**13.57**	**-5.02**	**1.73**	**0.00**	**49.38**	**2.71**	**0.00**	**48.82**	**8.08**	**0.00**	**1.50**	**1.50**	**3.65**	**0.00**	**1.46**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**9-1-2022**	**11-30-2022**	0.2072	0.0980
2	**12-1-2022**	**2-28-2023**	0.2165	0.1104
3	**3-1-2023**	**5-31-2023**	0.2648	0.1464
4	**6-1-2023**	**8-31-2023**	0.2629	0.1446
5	**9-1-2023**	**11-30-2023**	0.2020	0.1168
6	**12-1-2023**	**2-29-2024**	0.0748	0.0555
7	**3-1-2024**	**5-31-2024**	0.8396	0.7367
8	**6-1-2024**	**8-31-2024**	1.1130	0.8714
9	**9-1-2024**	**11-30-2024**	0.3564	0.2006
10	**12-1-2024**	**2-28-2025**	0.3342	0.1969
11	**3-1-2025**	**5-31-2025**	0.2456	0.1720
12	**6-1-2025**	**8-31-2025**	0.3981	0.3113
13	**9-1-2025**	**11-30-2025**	0.4052	0.3193
14	**12-1-2025**	**2-28-2026**	0.6082	0.5071
15	**3-1-2026**	**5-31-2026**	1.0543	0.9145
16	**6-1-2026**	**8-31-2026**	1.2267	1.0629
17	**9-1-2026**	**11-30-2026**	1.1152	0.9933
18	**12-1-2026**	**2-28-2027**	0.9784	0.8859

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19	**3-1-2027**	**5-31-2027**	0.9726	0.8781
20	**6-1-2027**	**8-31-2027**	0.9612	0.8667
21	**9-1-2027**	**11-30-2027**	0.9731	0.8796
22	**12-1-2027**	**2-29-2028**	0.8616	0.7848
23	**3-1-2028**	**5-31-2028**	0.6095	0.5678
24	**6-1-2028**	**8-31-2028**	0.6038	0.5621
25	**9-1-2028**	**11-30-2028**	0.2738	0.2629
26	**12-1-2028**	**2-28-2029**	0.0210	0.0138
27	**3-1-2029**	**5-31-2029**	0.0319	0.0207
28	**6-1-2029**	**8-31-2029**	0.0315	0.0202
29	**9-1-2029**	**11-30-2029**	0.0319	0.0208
30	**12-1-2029**	**2-28-2030**	0.3244	0.3203
31	**3-1-2030**	**5-31-2030**	0.4632	0.4563
32	**6-1-2030**	**8-31-2030**	0.4554	0.4485
33	**9-1-2030**	**11-30-2030**	0.4658	0.4590
34	**12-1-2030**	**2-28-2031**	0.4642	0.4574
35	**3-1-2031**	**5-31-2031**	0.4571	0.4502
36	**6-1-2031**	**8-31-2031**	0.4494	0.4425
37	**9-1-2031**	**11-30-2031**	0.4597	0.4529
38	**12-1-2031**	**2-29-2032**	0.4635	0.4566
39	**3-1-2032**	**5-31-2032**	0.4515	0.4446
40	**6-1-2032**	**8-31-2032**	0.4438	0.4369
41	**9-1-2032**	**9-30-2032**	0.1447	0.1425
		Highest	1.2267	1.0629

2.2 Overall Operational

Unmitigated Operational

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	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.3055	0.3055	2.3000e-004	3.0000e-005	0.3194
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.3055**	**0.3055**	**2.3000e-004**	**3.0000e-005**	**0.3194**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.3055	0.3055	2.3000e-004	3.0000e-005	0.3194
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

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Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.3055**	**0.3055**	**2.3000e-004**	**3.0000e-005**	**0.3194**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	9/1/2022	10/31/2023	5	304	
2	Drainage/Utilities/Subgrade	Trenching	2/1/2023	5/31/2024	5	348	
3	Grading/shoring/Mass	Grading	3/1/2024	8/31/2024	5	131	
4	Foundations	Building Construction	6/1/2024	3/31/2025	5	216	
5	Structure	Building Construction	5/1/2025	9/30/2026	5	370	
6	Exteriors	Building Construction	2/1/2026	1/31/2028	5	521	
7	Interiors	Building Construction	2/1/2026	10/31/2028	5	717	
8	Finishing	Architectural Coating	7/10/2026	9/24/2028	5	576	
9	Final Site Improvements	Trenching	1/1/2029	11/30/2029	5	240	
10	Moffitt/Long Demo	Demolition	1/5/2030	1/25/2030	5	14	
11	Diesel Fuel Tank/Bridge & Tunnel	Trenching	1/5/2030	12/31/2032	5	780	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

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Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 735,700; Non-Residential Outdoor: 190,000; Striped Parking Area: 2,614

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Air Compressors	1	0.80	150	0.48
Site Preparation	Concrete/Industrial Saws	1	0.80	33	0.73
Site Preparation	Excavators	2	2.00	385	0.38
Site Preparation	Graders	0	8.00	187	0.41
Site Preparation	Off-Highway Trucks	1	2.00	325	0.38
Site Preparation	Rollers	1	0.80	40	0.38
Site Preparation	Scrapers	0	8.00	330	0.48
Site Preparation	Tractors/Loaders/Backhoes	4	2.00	120	0.37
Drainage/Utilities/Subgrade	Forklifts	1	2.40	210	0.20
Drainage/Utilities/Subgrade	Generator Sets	1	0.40	10	0.74
Drainage/Utilities/Subgrade	Off-Highway Trucks	1	1.60	325	0.38
Drainage/Utilities/Subgrade	Pavers	1	0.40	74	0.42
Drainage/Utilities/Subgrade	Paving Equipment	1	0.40	132	0.36
Drainage/Utilities/Subgrade	Plate Compactors	1	0.60	8	0.43
Drainage/Utilities/Subgrade	Rollers	1	0.40	40	0.38
Drainage/Utilities/Subgrade	Skid Steer Loaders	1	0.80	65	0.37
Drainage/Utilities/Subgrade	Sweepers/Scrubbers	1	0.20	64	0.46
Drainage/Utilities/Subgrade	Tractors/Loaders/Backhoes	1	0.80	120	0.37
Grading/shoring/Mass	Cranes	1	0.80	350	0.29
Grading/shoring/Mass	Forklifts	1	6.00	210	0.20
Grading/shoring/Mass	Graders	0	8.00	187	0.41
Grading/shoring/Mass	Off-Highway Trucks	4	2.00	325	0.38

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Grading/shoring/Mass	Rubber Tired Dozers	0	8.00	247	0.40
Grading/shoring/Mass	Skid Steer Loaders	1	2.00	65	0.37
Grading/shoring/Mass	Sweepers/Scrubbers	1	0.40	64	0.46
Grading/shoring/Mass	Tractors/Loaders/Backhoes	1	2.00	120	0.37
Foundations	Air Compressors	1	0.40	150	0.48
Foundations	Bore/Drill Rigs	2	4.00	700	0.50
Foundations	Cranes	1	4.00	150	0.29
Foundations	Forklifts	1	1.60	210	0.20
Foundations	Generator Sets	0	8.00	84	0.74
Foundations	Rough Terrain Forklifts	1	1.60	100	0.40
Foundations	Skid Steer Loaders	1	0.80	65	0.37
Foundations	Sweepers/Scrubbers	1	0.20	64	0.46
Foundations	Tractors/Loaders/Backhoes	1	0.80	120	0.37
Foundations	Welders	0	8.00	46	0.45
Structure	Air Compressors	1	0.20	150	0.48
Structure	Cranes	1	6.00	150	0.29
Structure	Forklifts	1	1.60	210	0.20
Structure	Generator Sets	0	8.00	84	0.74
Structure	Off-Highway Trucks	1	2.00	325	0.38
Structure	Sweepers/Scrubbers	1	0.20	64	0.46
Structure	Tractors/Loaders/Backhoes	0	6.00	120	0.37
Structure	Welders	2	0.80	46	0.45
Exteriors	Cranes	2	2.40	150	0.29
Exteriors	Forklifts	2	2.40	210	0.20
Exteriors	Generator Sets	0	8.00	84	0.74
Exteriors	Tractors/Loaders/Backhoes	0	6.00	97	0.37
Exteriors	Welders	0	8.00	46	0.45

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Interiors	Cranes	0	8.00	231	0.29
Interiors	Forklifts	1	1.60	210	0.20
Interiors	Generator Sets	0	8.00	84	0.74
Interiors	Tractors/Loaders/Backhoes	0	6.00	97	0.37
Interiors	Welders	0	8.00	46	0.45
Finishing	Air Compressors	1	6.00	150	0.48
Final Site Improvements	Pavers	1	0.80	74	0.42
Final Site Improvements	Paving Equipment	1	0.80	132	0.36
Final Site Improvements	Plate Compactors	1	0.40	8	0.43
Final Site Improvements	Skid Steer Loaders	1	0.40	65	0.37
Final Site Improvements	Sweepers/Scrubbers	1	0.20	64	0.46
Final Site Improvements	Tractors/Loaders/Backhoes	1	0.80	350	0.37
Moffitt/Long Demo	Concrete/Industrial Saws	0	8.00	81	0.73
Moffitt/Long Demo	Rubber Tired Dozers	0	8.00	247	0.40
Moffitt/Long Demo	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Diesel Fuel Tank/Bridge & Tunnel	Off-Highway Trucks	1	0.80	402	0.38
Diesel Fuel Tank/Bridge & Tunnel	Plate Compactors	1	0.40	8	0.43
Diesel Fuel Tank/Bridge & Tunnel	Rough Terrain Forklifts	1	0.40	100	0.40
Diesel Fuel Tank/Bridge & Tunnel	Skid Steer Loaders	1	0.40	65	0.37
Diesel Fuel Tank/Bridge & Tunnel	Sweepers/Scrubbers	1	0.20	64	0.46
Diesel Fuel Tank/Bridge & Tunnel	Tractors/Loaders/Backhoes	3	0.80	350	0.37
Grading/shoring/Mass	Excavators	2	2.00	385	0.38
Foundations	Off-Highway Trucks	1	1.60	325	0.38

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class

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Site Preparation	10	150.00	0.00	520.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Drainage/Utilities/Subgrade	10	150.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading/shoring/Mass	11	150.00	0.00	11,790.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Foundations	10	150.00	46.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Structure	7	250.00	155.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Exteriors	4	250.00	155.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Interiors	1	250.00	155.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Finishing	1	61.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Final Site Improvements	6	100.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Moffitt/Long Demo	0	20.00	0.00	460.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Diesel Fuel Tank/Bridge & Tunnel	8	20.00	282.00	170.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Use Alternative Fuel for Construction Equipment

3.2 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0246	0.2067	0.2405	6.1000e-004		9.2300e-003	9.2300e-003		8.5600e-003	8.5600e-003	0.0000	53.1784	53.1784	0.0162	0.0000	53.5838
Total	**0.0246**	**0.2067**	**0.2405**	**6.1000e-004**	**0.0000**	**9.2300e-003**	**9.2300e-003**	**0.0000**	**8.5600e-003**	**8.5600e-003**	**0.0000**	**53.1784**	**53.1784**	**0.0162**	**0.0000**	**53.5838**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.7000e-004	0.0165	5.5700e-003	5.0000e-005	1.2500e-003	1.0000e-004	1.3600e-003	3.4000e-004	1.0000e-004	4.4000e-004	0.0000	5.9552	5.9552	1.0500e-003	9.8000e-004	6.2735
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0167	0.0113	0.1535	4.7000e-004	0.0516	3.4000e-004	0.0519	0.0137	3.1000e-004	0.0140	0.0000	43.2263	43.2263	1.2300e-003	1.1200e-003	43.5918
Total	**0.0171**	**0.0278**	**0.1590**	**5.2000e-004**	**0.0528**	**4.4000e-004**	**0.0533**	**0.0141**	**4.1000e-004**	**0.0145**	**0.0000**	**49.1814**	**49.1814**	**2.2800e-003**	**2.1000e-003**	**49.8653**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0109	0.0743	0.2923	6.1000e-004		2.2300e-003	2.2300e-003		2.1000e-003	2.1000e-003	0.0000	53.1784	53.1784	0.0162	0.0000	53.5837

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Total	**0.0109**	**0.0743**	**0.2923**	**6.1000e-004**	**0.0000**	**2.2300e-003**	**2.2300e-003**	**0.0000**	**2.1000e-003**	**2.1000e-003**	**0.0000**	**53.1784**	**53.1784**	**0.0162**	**0.0000**	**53.5837**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.7000e-004	0.0165	5.5700e-003	5.0000e-005	1.2500e-003	1.0000e-004	1.3600e-003	3.4000e-004	1.0000e-004	4.4000e-004	0.0000	5.9552	5.9552	1.0500e-003	9.8000e-004	6.2735
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0167	0.0113	0.1535	4.7000e-004	0.0516	3.4000e-004	0.0519	0.0137	3.1000e-004	0.0140	0.0000	43.2263	43.2263	1.2300e-003	1.1200e-003	43.5918
Total	**0.0171**	**0.0278**	**0.1590**	**5.2000e-004**	**0.0528**	**4.4000e-004**	**0.0533**	**0.0141**	**4.1000e-004**	**0.0145**	**0.0000**	**49.1814**	**49.1814**	**2.2800e-003**	**2.1000e-003**	**49.8653**

3.2 Site Preparation - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Off-Road	0.0573	0.4625	0.5953	1.5200e-003		0.0197	0.0197		0.0183	0.0183	0.0000	132.7227	132.7227	0.0404	0.0000	133.7332
Total	**0.0573**	**0.4625**	**0.5953**	**1.5200e-003**	**0.0000**	**0.0197**	**0.0197**	**0.0000**	**0.0183**	**0.0183**	**0.0000**	**132.7227**	**132.7227**	**0.0404**	**0.0000**	**133.7332**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	5.3000e-004	0.0347	0.0133	1.2000e-004	3.1300e-003	1.8000e-004	3.3100e-003	8.6000e-004	1.8000e-004	1.0400e-003	0.0000	14.2779	14.2779	2.6100e-003	2.3600e-003	15.0451
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0392	0.0251	0.3585	1.1400e-003	0.1286	8.0000e-004	0.1294	0.0342	7.3000e-004	0.0350	0.0000	104.4184	104.4184	2.7900e-003	2.6200e-003	105.2677
Total	**0.0397**	**0.0598**	**0.3718**	**1.2600e-003**	**0.1317**	**9.8000e-004**	**0.1327**	**0.0351**	**9.1000e-004**	**0.0360**	**0.0000**	**118.6962**	**118.6962**	**5.4000e-003**	**4.9800e-003**	**120.3128**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

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Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0265	0.1707	0.7277	1.5200e-003		5.0600e-003	5.0600e-003		4.7900e-003	4.7900e-003	0.0000	132.7225	132.7225	0.0404	0.0000	133.7331
Total	**0.0265**	**0.1707**	**0.7277**	**1.5200e-003**	**0.0000**	**5.0600e-003**	**5.0600e-003**	**0.0000**	**4.7900e-003**	**4.7900e-003**	**0.0000**	**132.7225**	**132.7225**	**0.0404**	**0.0000**	**133.7331**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	5.3000e-004	0.0347	0.0133	1.2000e-004	3.1300e-003	1.8000e-004	3.3100e-003	8.6000e-004	1.8000e-004	1.0400e-003	0.0000	14.2779	14.2779	2.6100e-003	2.3600e-003	15.0451
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0392	0.0251	0.3585	1.1400e-003	0.1286	8.0000e-004	0.1294	0.0342	7.3000e-004	0.0350	0.0000	104.4184	104.4184	2.7900e-003	2.6200e-003	105.2677
Total	**0.0397**	**0.0598**	**0.3718**	**1.2600e-003**	**0.1317**	**9.8000e-004**	**0.1327**	**0.0351**	**9.1000e-004**	**0.0360**	**0.0000**	**118.6962**	**118.6962**	**5.4000e-003**	**4.9800e-003**	**120.3128**

3.3 Drainage/Utilities/Subgrade - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

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Category	tons/yr										MT/yr					
Off-Road	0.0227	0.1870	0.1890	5.2000e-004		7.8600e-003	7.8600e-003		7.2500e-003	7.2500e-003	0.0000	45.5132	45.5132	0.0146	0.0000	45.8774
Total	**0.0227**	**0.1870**	**0.1890**	**5.2000e-004**		**7.8600e-003**	**7.8600e-003**		**7.2500e-003**	**7.2500e-003**	**0.0000**	**45.5132**	**45.5132**	**0.0146**	**0.0000**	**45.8774**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0430	0.0276	0.3932	1.2500e-003	0.1411	8.7000e-004	0.1419	0.0375	8.0000e-004	0.0383	0.0000	114.5234	114.5234	3.0600e-003	2.8700e-003	115.4549
Total	**0.0430**	**0.0276**	**0.3932**	**1.2500e-003**	**0.1411**	**8.7000e-004**	**0.1419**	**0.0375**	**8.0000e-004**	**0.0383**	**0.0000**	**114.5234**	**114.5234**	**3.0600e-003**	**2.8700e-003**	**115.4549**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Category	tons/yr										MT/yr					
Off-Road	0.0137	0.1212	0.2198	5.2000e-004		3.3700e-003	3.3700e-003		3.1300e-003	3.1300e-003	0.0000	45.5132	45.5132	0.0146	0.0000	45.8774
Total	**0.0137**	**0.1212**	**0.2198**	**5.2000e-004**		**3.3700e-003**	**3.3700e-003**		**3.1300e-003**	**3.1300e-003**	**0.0000**	**45.5132**	**45.5132**	**0.0146**	**0.0000**	**45.8774**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0430	0.0276	0.3932	1.2500e-003	0.1411	8.7000e-004	0.1419	0.0375	8.0000e-004	0.0383	0.0000	114.5234	114.5234	3.0600e-003	2.8700e-003	115.4549
Total	**0.0430**	**0.0276**	**0.3932**	**1.2500e-003**	**0.1411**	**8.7000e-004**	**0.1419**	**0.0375**	**8.0000e-004**	**0.0383**	**0.0000**	**114.5234**	**114.5234**	**3.0600e-003**	**2.8700e-003**	**115.4549**

3.3 Drainage/Utilities/Subgrade - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Category	tons/yr										MT/yr					
Off-Road	0.0102	0.0805	0.0868	2.4000e-004		3.3200e-003	3.3200e-003		3.0600e-003	3.0600e-003	0.0000	21.0411	21.0411	6.7300e-003	0.0000	21.2095
Total	**0.0102**	**0.0805**	**0.0868**	**2.4000e-004**		**3.3200e-003**	**3.3200e-003**		**3.0600e-003**	**3.0600e-003**	**0.0000**	**21.0411**	**21.0411**	**6.7300e-003**	**0.0000**	**21.2095**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0188	0.0115	0.1711	5.6000e-004	0.0652	3.8000e-004	0.0656	0.0173	3.5000e-004	0.0177	0.0000	51.2046	51.2046	1.2900e-003	1.2400e-003	51.6075
Total	**0.0188**	**0.0115**	**0.1711**	**5.6000e-004**	**0.0652**	**3.8000e-004**	**0.0656**	**0.0173**	**3.5000e-004**	**0.0177**	**0.0000**	**51.2046**	**51.2046**	**1.2900e-003**	**1.2400e-003**	**51.6075**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

UCSF NHPH Construction Run - San Francisco County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Category	tons/yr										MT/yr					
Off-Road	6.2000e-003	0.0528	0.1012	2.4000e-004		1.4300e-003	1.4300e-003		1.3300e-003	1.3300e-003	0.0000	21.0411	21.0411	6.7300e-003	0.0000	21.2094
Total	**6.2000e-003**	**0.0528**	**0.1012**	**2.4000e-004**		**1.4300e-003**	**1.4300e-003**		**1.3300e-003**	**1.3300e-003**	**0.0000**	**21.0411**	**21.0411**	**6.7300e-003**	**0.0000**	**21.2094**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0188	0.0115	0.1711	5.6000e-004	0.0652	3.8000e-004	0.0656	0.0173	3.5000e-004	0.0177	0.0000	51.2046	51.2046	1.2900e-003	1.2400e-003	51.6075
Total	**0.0188**	**0.0115**	**0.1711**	**5.6000e-004**	**0.0652**	**3.8000e-004**	**0.0656**	**0.0173**	**3.5000e-004**	**0.0177**	**0.0000**	**51.2046**	**51.2046**	**1.2900e-003**	**1.2400e-003**	**51.6075**

3.4 Grading/shoring/Mass - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

UCSF NHPH Construction Run - San Francisco County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0509	0.3817	0.4024	1.4500e-003		0.0142	0.0142		0.0131	0.0131	0.0000	127.4189	127.4189	0.0412	0.0000	128.4491
Total	**0.0509**	**0.3817**	**0.4024**	**1.4500e-003**	**0.0000**	**0.0142**	**0.0142**	**0.0000**	**0.0131**	**0.0131**	**0.0000**	**127.4189**	**127.4189**	**0.0412**	**0.0000**	**128.4491**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0161	1.0661	0.4263	3.8200e-003	0.0993	5.8500e-003	0.1051	0.0273	5.5900e-003	0.0329	0.0000	443.9147	443.9147	0.0831	0.0733	467.8487
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0223	0.0137	0.2038	6.6000e-004	0.0776	4.6000e-004	0.0781	0.0207	4.2000e-004	0.0211	0.0000	60.9800	60.9800	1.5400e-003	1.4800e-003	61.4599
Total	**0.0384**	**1.0797**	**0.6301**	**4.4800e-003**	**0.1769**	**6.3100e-003**	**0.1832**	**0.0479**	**6.0100e-003**	**0.0539**	**0.0000**	**504.8946**	**504.8946**	**0.0847**	**0.0748**	**529.3086**

Mitigated Construction On-Site

UCSF NHPH Construction Run - San Francisco County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0331	0.2320	0.5113	1.3900e-003		7.4400e-003	7.4400e-003		6.9400e-003	6.9400e-003	0.0000	122.3973	122.3973	0.0396	0.0000	123.3869
Total	**0.0331**	**0.2320**	**0.5113**	**1.3900e-003**	**0.0000**	**7.4400e-003**	**7.4400e-003**	**0.0000**	**6.9400e-003**	**6.9400e-003**	**0.0000**	**122.3973**	**122.3973**	**0.0396**	**0.0000**	**123.3869**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0161	1.0661	0.4263	3.8200e-003	0.0993	5.8500e-003	0.1051	0.0273	5.5900e-003	0.0329	0.0000	443.9147	443.9147	0.0831	0.0733	467.8487
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0223	0.0137	0.2038	6.6000e-004	0.0776	4.6000e-004	0.0781	0.0207	4.2000e-004	0.0211	0.0000	60.9800	60.9800	1.5400e-003	1.4800e-003	61.4599
Total	**0.0384**	**1.0797**	**0.6301**	**4.4800e-003**	**0.1769**	**6.3100e-003**	**0.1832**	**0.0479**	**6.0100e-003**	**0.0539**	**0.0000**	**504.8946**	**504.8946**	**0.0847**	**0.0748**	**529.3086**

3.5 Foundations - 2024

Unmitigated Construction On-Site

UCSF NHPH Construction Run - San Francisco County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0664	0.5333	0.7002	2.8200e-003		0.0220	0.0220		0.0202	0.0202	0.0000	247.5870	247.5870	0.0794	0.0000	249.5715
Total	**0.0664**	**0.5333**	**0.7002**	**2.8200e-003**		**0.0220**	**0.0220**		**0.0202**	**0.0202**	**0.0000**	**247.5870**	**247.5870**	**0.0794**	**0.0000**	**249.5715**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.7500e-003	0.1865	0.0693	7.2000e-004	0.0229	8.5000e-004	0.0237	6.6200e-003	8.1000e-004	7.4300e-003	0.0000	77.9357	77.9357	9.2500e-003	0.0121	81.7683
Worker	0.0259	0.0159	0.2365	7.7000e-004	0.0901	5.3000e-004	0.0906	0.0240	4.9000e-004	0.0245	0.0000	70.7554	70.7554	1.7800e-003	1.7200e-003	71.3122
Total	**0.0297**	**0.2024**	**0.3057**	**1.4900e-003**	**0.1130**	**1.3800e-003**	**0.1144**	**0.0306**	**1.3000e-003**	**0.0319**	**0.0000**	**148.6911**	**148.6911**	**0.0110**	**0.0138**	**153.0805**

Mitigated Construction On-Site

UCSF NHPH Construction Run - San Francisco County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0369	0.1984	1.1944	2.6800e-003		6.0000e-003	6.0000e-003		5.8400e-003	5.8400e-003	0.0000	235.0336	235.0336	0.0753	0.0000	236.9165
Total	**0.0369**	**0.1984**	**1.1944**	**2.6800e-003**		**6.0000e-003**	**6.0000e-003**		**5.8400e-003**	**5.8400e-003**	**0.0000**	**235.0336**	**235.0336**	**0.0753**	**0.0000**	**236.9165**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.7500e-003	0.1865	0.0693	7.2000e-004	0.0229	8.5000e-004	0.0237	6.6200e-003	8.1000e-004	7.4300e-003	0.0000	77.9357	77.9357	9.2500e-003	0.0121	81.7683
Worker	0.0259	0.0159	0.2365	7.7000e-004	0.0901	5.3000e-004	0.0906	0.0240	4.9000e-004	0.0245	0.0000	70.7554	70.7554	1.7800e-003	1.7200e-003	71.3122
Total	**0.0297**	**0.2024**	**0.3057**	**1.4900e-003**	**0.1130**	**1.3800e-003**	**0.1144**	**0.0306**	**1.3000e-003**	**0.0319**	**0.0000**	**148.6911**	**148.6911**	**0.0110**	**0.0138**	**153.0805**

3.5 Foundations - 2025

Unmitigated Construction On-Site

UCSF NHPH Construction Run - San Francisco County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0262	0.1985	0.2934	1.1900e-003		8.0300e-003	8.0300e-003		7.4000e-003	7.4000e-003	0.0000	104.4295	104.4295	0.0335	0.0000	105.2665
Total	**0.0262**	**0.1985**	**0.2934**	**1.1900e-003**		**8.0300e-003**	**8.0300e-003**		**7.4000e-003**	**7.4000e-003**	**0.0000**	**104.4295**	**104.4295**	**0.0335**	**0.0000**	**105.2665**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.5200e-003	0.0768	0.0291	3.0000e-004	9.6400e-003	3.5000e-004	9.9900e-003	2.7900e-003	3.4000e-004	3.1200e-003	0.0000	32.0850	32.0850	3.8900e-003	4.9900e-003	33.6684
Worker	0.0103	6.0800e-003	0.0941	3.1000e-004	0.0379	2.1000e-004	0.0381	0.0101	2.0000e-004	0.0103	0.0000	28.7824	28.7824	6.8000e-004	6.8000e-004	29.0029
Total	**0.0119**	**0.0828**	**0.1232**	**6.1000e-004**	**0.0476**	**5.6000e-004**	**0.0481**	**0.0129**	**5.4000e-004**	**0.0134**	**0.0000**	**60.8674**	**60.8674**	**4.5700e-003**	**5.6700e-003**	**62.6713**

Mitigated Construction On-Site

UCSF NHPH Construction Run - San Francisco County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0154	0.0813	0.5027	1.1300e-003		2.4300e-003	2.4300e-003		2.3700e-003	2.3700e-003	0.0000	99.1426	99.1426	0.0318	0.0000	99.9369
Total	**0.0154**	**0.0813**	**0.5027**	**1.1300e-003**		**2.4300e-003**	**2.4300e-003**		**2.3700e-003**	**2.3700e-003**	**0.0000**	**99.1426**	**99.1426**	**0.0318**	**0.0000**	**99.9369**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.5200e-003	0.0768	0.0291	3.0000e-004	9.6400e-003	3.5000e-004	9.9900e-003	2.7900e-003	3.4000e-004	3.1200e-003	0.0000	32.0850	32.0850	3.8900e-003	4.9900e-003	33.6684
Worker	0.0103	6.0800e-003	0.0941	3.1000e-004	0.0379	2.1000e-004	0.0381	0.0101	2.0000e-004	0.0103	0.0000	28.7824	28.7824	6.8000e-004	6.8000e-004	29.0029
Total	**0.0119**	**0.0828**	**0.1232**	**6.1000e-004**	**0.0476**	**5.6000e-004**	**0.0481**	**0.0129**	**5.4000e-004**	**0.0134**	**0.0000**	**60.8674**	**60.8674**	**4.5700e-003**	**5.6700e-003**	**62.6713**

3.6 Structure - 2025

Unmitigated Construction On-Site

UCSF NHPH Construction Run - San Francisco County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0327	0.2593	0.2820	6.1000e-004		0.0120	0.0120		0.0111	0.0111	0.0000	52.9955	52.9955	0.0160	0.0000	53.3951
Total	**0.0327**	**0.2593**	**0.2820**	**6.1000e-004**		**0.0120**	**0.0120**		**0.0111**	**0.0111**	**0.0000**	**52.9955**	**52.9955**	**0.0160**	**0.0000**	**53.3951**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0140	0.7073	0.2682	2.7300e-003	0.0888	3.2600e-003	0.0921	0.0257	3.1200e-003	0.0288	0.0000	295.6200	295.6200	0.0359	0.0460	310.2093
Worker	0.0471	0.0277	0.4288	1.4300e-003	0.1729	9.8000e-004	0.1738	0.0460	9.0000e-004	0.0469	0.0000	131.1696	131.1696	3.1200e-003	3.1100e-003	132.1744
Total	**0.0611**	**0.7350**	**0.6970**	**4.1600e-003**	**0.2617**	**4.2400e-003**	**0.2659**	**0.0717**	**4.0200e-003**	**0.0757**	**0.0000**	**426.7896**	**426.7896**	**0.0390**	**0.0491**	**442.3838**

Mitigated Construction On-Site

UCSF NHPH Construction Run - San Francisco County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	8.1500e-003	0.0525	0.1132	3.2000e-004		1.7800e-003	1.7800e-003		1.6600e-003	1.6600e-003	0.0000	28.0175	28.0175	8.6600e-003	0.0000	28.2340
Total	**8.1500e-003**	**0.0525**	**0.1132**	**3.2000e-004**		**1.7800e-003**	**1.7800e-003**		**1.6600e-003**	**1.6600e-003**	**0.0000**	**28.0175**	**28.0175**	**8.6600e-003**	**0.0000**	**28.2340**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0140	0.7073	0.2682	2.7300e-003	0.0888	3.2600e-003	0.0921	0.0257	3.1200e-003	0.0288	0.0000	295.6200	295.6200	0.0359	0.0460	310.2093
Worker	0.0471	0.0277	0.4288	1.4300e-003	0.1729	9.8000e-004	0.1738	0.0460	9.0000e-004	0.0469	0.0000	131.1696	131.1696	3.1200e-003	3.1100e-003	132.1744
Total	**0.0611**	**0.7350**	**0.6970**	**4.1600e-003**	**0.2617**	**4.2400e-003**	**0.2659**	**0.0717**	**4.0200e-003**	**0.0757**	**0.0000**	**426.7896**	**426.7896**	**0.0390**	**0.0491**	**442.3838**

3.6 Structure - 2026

Unmitigated Construction On-Site

UCSF NHPH Construction Run - San Francisco County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0364	0.2890	0.3142	6.8000e-004		0.0134	0.0134		0.0124	0.0124	0.0000	59.0521	59.0521	0.0178	0.0000	59.4974
Total	**0.0364**	**0.2890**	**0.3142**	**6.8000e-004**		**0.0134**	**0.0134**		**0.0124**	**0.0124**	**0.0000**	**59.0521**	**59.0521**	**0.0178**	**0.0000**	**59.4974**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0151	0.7701	0.2993	2.9700e-003	0.0990	3.5800e-003	0.1025	0.0286	3.4300e-003	0.0320	0.0000	321.9935	321.9935	0.0399	0.0501	337.9334
Worker	0.0500	0.0284	0.4544	1.5400e-003	0.1926	1.0400e-003	0.1936	0.0512	9.5000e-004	0.0522	0.0000	141.6354	141.6354	3.1900e-003	3.2900e-003	142.6962
Total	**0.0651**	**0.7985**	**0.7537**	**4.5100e-003**	**0.2916**	**4.6200e-003**	**0.2962**	**0.0799**	**4.3800e-003**	**0.0842**	**0.0000**	**463.6289**	**463.6289**	**0.0431**	**0.0534**	**480.6296**

Mitigated Construction On-Site

UCSF NHPH Construction Run - San Francisco County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	9.0800e-003	0.0585	0.1262	3.6000e-004		1.9900e-003	1.9900e-003		1.8500e-003	1.8500e-003	0.0000	31.2195	31.2195	9.6500e-003	0.0000	31.4607
Total	**9.0800e-003**	**0.0585**	**0.1262**	**3.6000e-004**		**1.9900e-003**	**1.9900e-003**		**1.8500e-003**	**1.8500e-003**	**0.0000**	**31.2195**	**31.2195**	**9.6500e-003**	**0.0000**	**31.4607**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0151	0.7701	0.2993	2.9700e-003	0.0990	3.5800e-003	0.1025	0.0286	3.4300e-003	0.0320	0.0000	321.9935	321.9935	0.0399	0.0501	337.9334
Worker	0.0500	0.0284	0.4544	1.5400e-003	0.1926	1.0400e-003	0.1936	0.0512	9.5000e-004	0.0522	0.0000	141.6354	141.6354	3.1900e-003	3.2900e-003	142.6962
Total	**0.0651**	**0.7985**	**0.7537**	**4.5100e-003**	**0.2916**	**4.6200e-003**	**0.2962**	**0.0799**	**4.3800e-003**	**0.0842**	**0.0000**	**463.6289**	**463.6289**	**0.0431**	**0.0534**	**480.6296**

3.7 Exteriors - 2026

Unmitigated Construction On-Site

UCSF NHPH Construction Run - San Francisco County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0285	0.2517	0.2480	5.3000e-004		0.0121	0.0121		0.0112	0.0112	0.0000	46.4974	46.4974	0.0150	0.0000	46.8733
Total	**0.0285**	**0.2517**	**0.2480**	**5.3000e-004**		**0.0121**	**0.0121**		**0.0112**	**0.0112**	**0.0000**	**46.4974**	**46.4974**	**0.0150**	**0.0000**	**46.8733**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0185	0.9439	0.3668	3.6400e-003	0.1213	4.3900e-003	0.1257	0.0351	4.2000e-003	0.0393	0.0000	394.6485	394.6485	0.0489	0.0615	414.1850
Worker	0.0613	0.0348	0.5569	1.8900e-003	0.2361	1.2700e-003	0.2373	0.0628	1.1700e-003	0.0640	0.0000	173.5942	173.5942	3.9100e-003	4.0400e-003	174.8944
Total	**0.0798**	**0.9787**	**0.9237**	**5.5300e-003**	**0.3574**	**5.6600e-003**	**0.3630**	**0.0979**	**5.3700e-003**	**0.1032**	**0.0000**	**568.2426**	**568.2426**	**0.0529**	**0.0655**	**589.0794**

Mitigated Construction On-Site

UCSF NHPH Construction Run - San Francisco County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0101	0.0779	0.0645	2.6000e-004		2.9900e-003	2.9900e-003		2.7500e-003	2.7500e-003	0.0000	22.8059	22.8059	7.3800e-003	0.0000	22.9903
Total	**0.0101**	**0.0779**	**0.0645**	**2.6000e-004**		**2.9900e-003**	**2.9900e-003**		**2.7500e-003**	**2.7500e-003**	**0.0000**	**22.8059**	**22.8059**	**7.3800e-003**	**0.0000**	**22.9903**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0185	0.9439	0.3668	3.6400e-003	0.1213	4.3900e-003	0.1257	0.0351	4.2000e-003	0.0393	0.0000	394.6485	394.6485	0.0489	0.0615	414.1850
Worker	0.0613	0.0348	0.5569	1.8900e-003	0.2361	1.2700e-003	0.2373	0.0628	1.1700e-003	0.0640	0.0000	173.5942	173.5942	3.9100e-003	4.0400e-003	174.8944
Total	**0.0798**	**0.9787**	**0.9237**	**5.5300e-003**	**0.3574**	**5.6600e-003**	**0.3630**	**0.0979**	**5.3700e-003**	**0.1032**	**0.0000**	**568.2426**	**568.2426**	**0.0529**	**0.0655**	**589.0794**

3.7 Exteriors - 2027

Unmitigated Construction On-Site

UCSF NHPH Construction Run - San Francisco County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0311	0.2749	0.2708	5.8000e-004		0.0133	0.0133		0.0122	0.0122	0.0000	50.7775	50.7775	0.0164	0.0000	51.1880
Total	**0.0311**	**0.2749**	**0.2708**	**5.8000e-004**		**0.0133**	**0.0133**		**0.0122**	**0.0122**	**0.0000**	**50.7775**	**50.7775**	**0.0164**	**0.0000**	**51.1880**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0195	1.0086	0.4005	3.8800e-003	0.1324	4.7300e-003	0.1372	0.0383	4.5200e-003	0.0428	0.0000	420.7658	420.7658	0.0532	0.0656	441.6524
Worker	0.0639	0.0352	0.5814	2.0100e-003	0.2578	1.3000e-003	0.2591	0.0686	1.2000e-003	0.0698	0.0000	184.1355	184.1355	3.9400e-003	4.2100e-003	185.4893
Total	**0.0834**	**1.0438**	**0.9819**	**5.8900e-003**	**0.3902**	**6.0300e-003**	**0.3963**	**0.1069**	**5.7200e-003**	**0.1126**	**0.0000**	**604.9013**	**604.9013**	**0.0571**	**0.0698**	**627.1417**

Mitigated Construction On-Site

UCSF NHPH Construction Run - San Francisco County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0111	0.0850	0.0704	2.8000e-004		3.2600e-003	3.2600e-003		3.0000e-003	3.0000e-003	0.0000	24.9052	24.9052	8.0500e-003	0.0000	25.1066
Total	**0.0111**	**0.0850**	**0.0704**	**2.8000e-004**		**3.2600e-003**	**3.2600e-003**		**3.0000e-003**	**3.0000e-003**	**0.0000**	**24.9052**	**24.9052**	**8.0500e-003**	**0.0000**	**25.1066**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0195	1.0086	0.4005	3.8800e-003	0.1324	4.7300e-003	0.1372	0.0383	4.5200e-003	0.0428	0.0000	420.7658	420.7658	0.0532	0.0656	441.6524
Worker	0.0639	0.0352	0.5814	2.0100e-003	0.2578	1.3000e-003	0.2591	0.0686	1.2000e-003	0.0698	0.0000	184.1355	184.1355	3.9400e-003	4.2100e-003	185.4893
Total	**0.0834**	**1.0438**	**0.9819**	**5.8900e-003**	**0.3902**	**6.0300e-003**	**0.3963**	**0.1069**	**5.7200e-003**	**0.1126**	**0.0000**	**604.9013**	**604.9013**	**0.0571**	**0.0698**	**627.1417**

3.7 Exteriors - 2028

Unmitigated Construction On-Site

UCSF NHPH Construction Run - San Francisco County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.5000e-003	0.0221	0.0218	5.0000e-005		1.0700e-003	1.0700e-003		9.8000e-004	9.8000e-004	0.0000	4.0855	4.0855	1.3200e-003	0.0000	4.1186
Total	**2.5000e-003**	**0.0221**	**0.0218**	**5.0000e-005**		**1.0700e-003**	**1.0700e-003**		**9.8000e-004**	**9.8000e-004**	**0.0000**	**4.0855**	**4.0855**	**1.3200e-003**	**0.0000**	**4.1186**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.5300e-003	0.0796	0.0323	3.0000e-004	0.0107	3.8000e-004	0.0110	3.0800e-003	3.6000e-004	3.4400e-003	0.0000	33.0722	33.0722	4.2700e-003	5.1600e-003	34.7181
Worker	4.9000e-003	2.6400e-003	0.0450	1.6000e-004	0.0207	1.0000e-004	0.0208	5.5200e-003	9.0000e-005	5.6100e-003	0.0000	14.4264	14.4264	2.9000e-004	3.3000e-004	14.5308
Total	**6.4300e-003**	**0.0822**	**0.0772**	**4.6000e-004**	**0.0314**	**4.8000e-004**	**0.0319**	**8.6000e-003**	**4.5000e-004**	**9.0500e-003**	**0.0000**	**47.4985**	**47.4985**	**4.5600e-003**	**5.4900e-003**	**49.2489**

Mitigated Construction On-Site

UCSF NHPH Construction Run - San Francisco County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	8.9000e-004	6.8400e-003	5.6700e-003	2.0000e-005		2.6000e-004	2.6000e-004		2.4000e-004	2.4000e-004	0.0000	2.0039	2.0039	6.5000e-004	0.0000	2.0201
Total	**8.9000e-004**	**6.8400e-003**	**5.6700e-003**	**2.0000e-005**		**2.6000e-004**	**2.6000e-004**		**2.4000e-004**	**2.4000e-004**	**0.0000**	**2.0039**	**2.0039**	**6.5000e-004**	**0.0000**	**2.0201**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.5300e-003	0.0796	0.0323	3.0000e-004	0.0107	3.8000e-004	0.0110	3.0800e-003	3.6000e-004	3.4400e-003	0.0000	33.0722	33.0722	4.2700e-003	5.1600e-003	34.7181
Worker	4.9000e-003	2.6400e-003	0.0450	1.6000e-004	0.0207	1.0000e-004	0.0208	5.5200e-003	9.0000e-005	5.6100e-003	0.0000	14.4264	14.4264	2.9000e-004	3.3000e-004	14.5308
Total	**6.4300e-003**	**0.0822**	**0.0772**	**4.6000e-004**	**0.0314**	**4.8000e-004**	**0.0319**	**8.6000e-003**	**4.5000e-004**	**9.0500e-003**	**0.0000**	**47.4985**	**47.4985**	**4.5600e-003**	**5.4900e-003**	**49.2489**

3.8 Interiors - 2026

Unmitigated Construction On-Site

UCSF NHPH Construction Run - San Francisco County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.3700e-003	0.0260	0.0215	9.0000e-005		1.0000e-003	1.0000e-003		9.2000e-004	9.2000e-004	0.0000	7.6020	7.6020	2.4600e-003	0.0000	7.6635
Total	**3.3700e-003**	**0.0260**	**0.0215**	**9.0000e-005**		**1.0000e-003**	**1.0000e-003**		**9.2000e-004**	**9.2000e-004**	**0.0000**	**7.6020**	**7.6020**	**2.4600e-003**	**0.0000**	**7.6635**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0185	0.9439	0.3668	3.6400e-003	0.1213	4.3900e-003	0.1257	0.0351	4.2000e-003	0.0393	0.0000	394.6485	394.6485	0.0489	0.0615	414.1850
Worker	0.0613	0.0348	0.5569	1.8900e-003	0.2361	1.2700e-003	0.2373	0.0628	1.1700e-003	0.0640	0.0000	173.5942	173.5942	3.9100e-003	4.0400e-003	174.8944
Total	**0.0798**	**0.9787**	**0.9237**	**5.5300e-003**	**0.3574**	**5.6600e-003**	**0.3630**	**0.0979**	**5.3700e-003**	**0.1032**	**0.0000**	**568.2426**	**568.2426**	**0.0529**	**0.0655**	**589.0794**

Mitigated Construction On-Site

UCSF NHPH Construction Run - San Francisco County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.3700e-003	0.0260	0.0215	9.0000e-005		1.0000e-003	1.0000e-003		9.2000e-004	9.2000e-004	0.0000	7.6020	7.6020	2.4600e-003	0.0000	7.6634
Total	**3.3700e-003**	**0.0260**	**0.0215**	**9.0000e-005**		**1.0000e-003**	**1.0000e-003**		**9.2000e-004**	**9.2000e-004**	**0.0000**	**7.6020**	**7.6020**	**2.4600e-003**	**0.0000**	**7.6634**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0185	0.9439	0.3668	3.6400e-003	0.1213	4.3900e-003	0.1257	0.0351	4.2000e-003	0.0393	0.0000	394.6485	394.6485	0.0489	0.0615	414.1850
Worker	0.0613	0.0348	0.5569	1.8900e-003	0.2361	1.2700e-003	0.2373	0.0628	1.1700e-003	0.0640	0.0000	173.5942	173.5942	3.9100e-003	4.0400e-003	174.8944
Total	**0.0798**	**0.9787**	**0.9237**	**5.5300e-003**	**0.3574**	**5.6600e-003**	**0.3630**	**0.0979**	**5.3700e-003**	**0.1032**	**0.0000**	**568.2426**	**568.2426**	**0.0529**	**0.0655**	**589.0794**

3.8 Interiors - 2027

Unmitigated Construction On-Site

UCSF NHPH Construction Run - San Francisco County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.6800e-003	0.0284	0.0235	9.0000e-005		1.0900e-003	1.0900e-003		1.0000e-003	1.0000e-003	0.0000	8.3018	8.3018	2.6800e-003	0.0000	8.3689
Total	**3.6800e-003**	**0.0284**	**0.0235**	**9.0000e-005**		**1.0900e-003**	**1.0900e-003**		**1.0000e-003**	**1.0000e-003**	**0.0000**	**8.3018**	**8.3018**	**2.6800e-003**	**0.0000**	**8.3689**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0195	1.0086	0.4005	3.8800e-003	0.1324	4.7300e-003	0.1372	0.0383	4.5200e-003	0.0428	0.0000	420.7658	420.7658	0.0532	0.0656	441.6524
Worker	0.0639	0.0352	0.5814	2.0100e-003	0.2578	1.3000e-003	0.2591	0.0686	1.2000e-003	0.0698	0.0000	184.1355	184.1355	3.9400e-003	4.2100e-003	185.4893
Total	**0.0834**	**1.0438**	**0.9819**	**5.8900e-003**	**0.3902**	**6.0300e-003**	**0.3963**	**0.1069**	**5.7200e-003**	**0.1126**	**0.0000**	**604.9013**	**604.9013**	**0.0571**	**0.0698**	**627.1417**

Mitigated Construction On-Site

UCSF NHPH Construction Run - San Francisco County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.6800e-003	0.0284	0.0235	9.0000e-005		1.0900e-003	1.0900e-003		1.0000e-003	1.0000e-003	0.0000	8.3017	8.3017	2.6800e-003	0.0000	8.3689
Total	**3.6800e-003**	**0.0284**	**0.0235**	**9.0000e-005**		**1.0900e-003**	**1.0900e-003**		**1.0000e-003**	**1.0000e-003**	**0.0000**	**8.3017**	**8.3017**	**2.6800e-003**	**0.0000**	**8.3689**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0195	1.0086	0.4005	3.8800e-003	0.1324	4.7300e-003	0.1372	0.0383	4.5200e-003	0.0428	0.0000	420.7658	420.7658	0.0532	0.0656	441.6524
Worker	0.0639	0.0352	0.5814	2.0100e-003	0.2578	1.3000e-003	0.2591	0.0686	1.2000e-003	0.0698	0.0000	184.1355	184.1355	3.9400e-003	4.2100e-003	185.4893
Total	**0.0834**	**1.0438**	**0.9819**	**5.8900e-003**	**0.3902**	**6.0300e-003**	**0.3963**	**0.1069**	**5.7200e-003**	**0.1126**	**0.0000**	**604.9013**	**604.9013**	**0.0571**	**0.0698**	**627.1417**

3.8 Interiors - 2028

Unmitigated Construction On-Site

UCSF NHPH Construction Run - San Francisco County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.0600e-003	0.0236	0.0195	8.0000e-005		9.0000e-004	9.0000e-004		8.3000e-004	8.3000e-004	0.0000	6.9022	6.9022	2.2300e-003	0.0000	6.9580
Total	**3.0600e-003**	**0.0236**	**0.0195**	**8.0000e-005**		**9.0000e-004**	**9.0000e-004**		**8.3000e-004**	**8.3000e-004**	**0.0000**	**6.9022**	**6.9022**	**2.2300e-003**	**0.0000**	**6.9580**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0158	0.8220	0.3334	3.1400e-003	0.1101	3.8800e-003	0.1140	0.0318	3.7100e-003	0.0355	0.0000	341.7459	341.7459	0.0441	0.0534	358.7535
Worker	0.0507	0.0273	0.4645	1.6300e-003	0.2143	1.0100e-003	0.2154	0.0570	9.3000e-004	0.0580	0.0000	149.0723	149.0723	3.0300e-003	3.3700e-003	150.1520
Total	**0.0665**	**0.8493**	**0.7979**	**4.7700e-003**	**0.3245**	**4.8900e-003**	**0.3293**	**0.0889**	**4.6400e-003**	**0.0935**	**0.0000**	**490.8183**	**490.8183**	**0.0472**	**0.0567**	**508.9055**

Mitigated Construction On-Site

UCSF NHPH Construction Run - San Francisco County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.0600e-003	0.0236	0.0195	8.0000e-005		9.0000e-004	9.0000e-004		8.3000e-004	8.3000e-004	0.0000	6.9022	6.9022	2.2300e-003	0.0000	6.9580
Total	**3.0600e-003**	**0.0236**	**0.0195**	**8.0000e-005**		**9.0000e-004**	**9.0000e-004**		**8.3000e-004**	**8.3000e-004**	**0.0000**	**6.9022**	**6.9022**	**2.2300e-003**	**0.0000**	**6.9580**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0158	0.8220	0.3334	3.1400e-003	0.1101	3.8800e-003	0.1140	0.0318	3.7100e-003	0.0355	0.0000	341.7459	341.7459	0.0441	0.0534	358.7535
Worker	0.0507	0.0273	0.4645	1.6300e-003	0.2143	1.0100e-003	0.2154	0.0570	9.3000e-004	0.0580	0.0000	149.0723	149.0723	3.0300e-003	3.3700e-003	150.1520
Total	**0.0665**	**0.8493**	**0.7979**	**4.7700e-003**	**0.3245**	**4.8900e-003**	**0.3293**	**0.0889**	**4.6400e-003**	**0.0935**	**0.0000**	**490.8183**	**490.8183**	**0.0472**	**0.0567**	**508.9055**

3.9 Finishing - 2026

Unmitigated Construction On-Site

UCSF NHPH Construction Run - San Francisco County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.5153					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0160	0.0823	0.1908	3.6000e-004		3.8700e-003	3.8700e-003		3.8700e-003	3.8700e-003	0.0000	30.6882	30.6882	1.3000e-003	0.0000	30.7206
Total	**0.5313**	**0.0823**	**0.1908**	**3.6000e-004**		**3.8700e-003**	**3.8700e-003**		**3.8700e-003**	**3.8700e-003**	**0.0000**	**30.6882**	**30.6882**	**1.3000e-003**	**0.0000**	**30.7206**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.8200e-003	4.4400e-003	0.0711	2.4000e-004	0.0301	1.6000e-004	0.0303	8.0100e-003	1.5000e-004	8.1600e-003	0.0000	22.1532	22.1532	5.0000e-004	5.1000e-004	22.3192
Total	**7.8200e-003**	**4.4400e-003**	**0.0711**	**2.4000e-004**	**0.0301**	**1.6000e-004**	**0.0303**	**8.0100e-003**	**1.5000e-004**	**8.1600e-003**	**0.0000**	**22.1532**	**22.1532**	**5.0000e-004**	**5.1000e-004**	**22.3192**

UCSF NHPH Construction Run - San Francisco County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.5153					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.5700e-003	0.0155	0.2202	3.6000e-004		4.8000e-004	4.8000e-004		4.8000e-004	4.8000e-004	0.0000	30.6881	30.6881	1.3000e-003	0.0000	30.7205
Total	**0.5189**	**0.0155**	**0.2202**	**3.6000e-004**		**4.8000e-004**	**4.8000e-004**		**4.8000e-004**	**4.8000e-004**	**0.0000**	**30.6881**	**30.6881**	**1.3000e-003**	**0.0000**	**30.7205**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.8200e-003	4.4400e-003	0.0711	2.4000e-004	0.0301	1.6000e-004	0.0303	8.0100e-003	1.5000e-004	8.1600e-003	0.0000	22.1532	22.1532	5.0000e-004	5.1000e-004	22.3192
Total	**7.8200e-003**	**4.4400e-003**	**0.0711**	**2.4000e-004**	**0.0301**	**1.6000e-004**	**0.0303**	**8.0100e-003**	**1.5000e-004**	**8.1600e-003**	**0.0000**	**22.1532**	**22.1532**	**5.0000e-004**	**5.1000e-004**	**22.3192**

UCSF NHPH Construction Run - San Francisco County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.9 Finishing - 2027

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.0760					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0334	0.1719	0.3983	7.5000e-004		8.0800e-003	8.0800e-003		8.0800e-003	8.0800e-003	0.0000	64.0769	64.0769	2.7100e-003	0.0000	64.1445
Total	**1.1094**	**0.1719**	**0.3983**	**7.5000e-004**		**8.0800e-003**	**8.0800e-003**		**8.0800e-003**	**8.0800e-003**	**0.0000**	**64.0769**	**64.0769**	**2.7100e-003**	**0.0000**	**64.1445**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0156	8.5800e-003	0.1419	4.9000e-004	0.0629	3.2000e-004	0.0632	0.0167	2.9000e-004	0.0170	0.0000	44.9291	44.9291	9.6000e-004	1.0300e-003	45.2594
Total	**0.0156**	**8.5800e-003**	**0.1419**	**4.9000e-004**	**0.0629**	**3.2000e-004**	**0.0632**	**0.0167**	**2.9000e-004**	**0.0170**	**0.0000**	**44.9291**	**44.9291**	**9.6000e-004**	**1.0300e-003**	**45.2594**

UCSF NHPH Construction Run - San Francisco County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.0760					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.4600e-003	0.0323	0.4599	7.5000e-004		9.9000e-004	9.9000e-004		9.9000e-004	9.9000e-004	0.0000	64.0768	64.0768	2.7100e-003	0.0000	64.1444
Total	**1.0834**	**0.0323**	**0.4599**	**7.5000e-004**		**9.9000e-004**	**9.9000e-004**		**9.9000e-004**	**9.9000e-004**	**0.0000**	**64.0768**	**64.0768**	**2.7100e-003**	**0.0000**	**64.1444**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0156	8.5800e-003	0.1419	4.9000e-004	0.0629	3.2000e-004	0.0632	0.0167	2.9000e-004	0.0170	0.0000	44.9291	44.9291	9.6000e-004	1.0300e-003	45.2594
Total	**0.0156**	**8.5800e-003**	**0.1419**	**4.9000e-004**	**0.0629**	**3.2000e-004**	**0.0632**	**0.0167**	**2.9000e-004**	**0.0170**	**0.0000**	**44.9291**	**44.9291**	**9.6000e-004**	**1.0300e-003**	**45.2594**

UCSF NHPH Construction Run - San Francisco County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.9 Finishing - 2028

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.7833					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0243	0.1251	0.2900	5.4000e-004		5.8800e-003	5.8800e-003		5.8800e-003	5.8800e-003	0.0000	46.6460	46.6460	1.9700e-003	0.0000	46.6952
Total	**0.8076**	**0.1251**	**0.2900**	**5.4000e-004**		**5.8800e-003**	**5.8800e-003**		**5.8800e-003**	**5.8800e-003**	**0.0000**	**46.6460**	**46.6460**	**1.9700e-003**	**0.0000**	**46.6952**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0108	5.8300e-003	0.0992	3.5000e-004	0.0458	2.2000e-004	0.0460	0.0122	2.0000e-004	0.0124	0.0000	31.8479	31.8479	6.5000e-004	7.2000e-004	32.0786

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Total	**0.0108**	**5.8300e-003**	**0.0992**	**3.5000e-004**	**0.0458**	**2.2000e-004**	**0.0460**	**0.0122**	**2.0000e-004**	**0.0124**	**0.0000**	**31.8479**	**31.8479**	**6.5000e-004**	**7.2000e-004**	**32.0786**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.7833					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.4300e-003	0.0235	0.3348	5.4000e-004		7.2000e-004	7.2000e-004		7.2000e-004	7.2000e-004	0.0000	46.6459	46.6459	1.9700e-003	0.0000	46.6952
Total	**0.7887**	**0.0235**	**0.3348**	**5.4000e-004**		**7.2000e-004**	**7.2000e-004**		**7.2000e-004**	**7.2000e-004**	**0.0000**	**46.6459**	**46.6459**	**1.9700e-003**	**0.0000**	**46.6952**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Worker	0.0108	5.8300e-003	0.0992	3.5000e-004	0.0458	2.2000e-004	0.0460	0.0122	2.0000e-004	0.0124	0.0000	31.8479	31.8479	6.5000e-004	7.2000e-004	32.0786
Total	**0.0108**	**5.8300e-003**	**0.0992**	**3.5000e-004**	**0.0458**	**2.2000e-004**	**0.0460**	**0.0122**	**2.0000e-004**	**0.0124**	**0.0000**	**31.8479**	**31.8479**	**6.5000e-004**	**7.2000e-004**	**32.0786**

3.10 Final Site Improvements - 2029

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	8.8500e-003	0.0747	0.1026	2.4000e-004		3.5300e-003	3.5300e-003		3.2600e-003	3.2600e-003	0.0000	20.7543	20.7543	6.6700e-003	0.0000	20.9210
Total	**8.8500e-003**	**0.0747**	**0.1026**	**2.4000e-004**		**3.5300e-003**	**3.5300e-003**		**3.2600e-003**	**3.2600e-003**	**0.0000**	**20.7543**	**20.7543**	**6.6700e-003**	**0.0000**	**20.9210**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Worker	0.0214	0.0114	0.1982	7.0000e-004	0.0948	4.2000e-004	0.0952	0.0252	3.8000e-004	0.0256	0.0000	64.3659	64.3659	1.2500e-003	1.4400e-003	64.8263
Total	**0.0214**	**0.0114**	**0.1982**	**7.0000e-004**	**0.0948**	**4.2000e-004**	**0.0952**	**0.0252**	**3.8000e-004**	**0.0256**	**0.0000**	**64.3659**	**64.3659**	**1.2500e-003**	**1.4400e-003**	**64.8263**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.5300e-003	0.0390	0.1370	2.4000e-004		3.9000e-004	3.9000e-004		3.9000e-004	3.9000e-004	0.0000	20.7542	20.7542	6.6700e-003	0.0000	20.9210
Total	**3.5300e-003**	**0.0390**	**0.1370**	**2.4000e-004**		**3.9000e-004**	**3.9000e-004**		**3.9000e-004**	**3.9000e-004**	**0.0000**	**20.7542**	**20.7542**	**6.6700e-003**	**0.0000**	**20.9210**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Worker	0.0214	0.0114	0.1982	7.0000e-004	0.0948	4.2000e-004	0.0952	0.0252	3.8000e-004	0.0256	0.0000	64.3659	64.3659	1.2500e-003	1.4400e-003	64.8263
Total	**0.0214**	**0.0114**	**0.1982**	**7.0000e-004**	**0.0948**	**4.2000e-004**	**0.0952**	**0.0252**	**3.8000e-004**	**0.0256**	**0.0000**	**64.3659**	**64.3659**	**1.2500e-003**	**1.4400e-003**	**64.8263**

3.11 Moffitt/Long Demo - 2030

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					9.2000e-004	0.0000	9.2000e-004	1.4000e-004	0.0000	1.4000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**9.2000e-004**	**0.0000**	**9.2000e-004**	**1.4000e-004**	**0.0000**	**1.4000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	5.7000e-004	0.0367	0.0187	1.3000e-004	4.1500e-003	2.2000e-004	4.3700e-003	1.1400e-003	2.1000e-004	1.3500e-003	0.0000	15.8998	15.8998	3.4200e-003	2.6400e-003	16.7722

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.5000e-004	1.3000e-004	2.4000e-003	1.0000e-005	1.1900e-003	0.0000	1.1900e-003	3.2000e-004	0.0000	3.2000e-004	0.0000	0.7871	0.7871	1.0000e-005	2.0000e-005	0.7926
Total	**8.2000e-004**	**0.0368**	**0.0211**	**1.4000e-004**	**5.3400e-003**	**2.2000e-004**	**5.5600e-003**	**1.4600e-003**	**2.1000e-004**	**1.6700e-003**	**0.0000**	**16.6869**	**16.6869**	**3.4300e-003**	**2.6600e-003**	**17.5648**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					9.2000e-004	0.0000	9.2000e-004	1.4000e-004	0.0000	1.4000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**9.2000e-004**	**0.0000**	**9.2000e-004**	**1.4000e-004**	**0.0000**	**1.4000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Hauling	5.7000e-004	0.0367	0.0187	1.3000e-004	4.1500e-003	2.2000e-004	4.3700e-003	1.1400e-003	2.1000e-004	1.3500e-003	0.0000	15.8998	15.8998	3.4200e-003	2.6400e-003	16.7722
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.5000e-004	1.3000e-004	2.4000e-003	1.0000e-005	1.1900e-003	0.0000	1.1900e-003	3.2000e-004	0.0000	3.2000e-004	0.0000	0.7871	0.7871	1.0000e-005	2.0000e-005	0.7926
Total	**8.2000e-004**	**0.0368**	**0.0211**	**1.4000e-004**	**5.3400e-003**	**2.2000e-004**	**5.5600e-003**	**1.4600e-003**	**2.1000e-004**	**1.6700e-003**	**0.0000**	**16.6869**	**16.6869**	**3.4300e-003**	**2.6600e-003**	**17.5648**

3.12 Diesel Fuel Tank/Bridge & Tunnel - 2030

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0260	0.0672	0.1661	7.6000e-004		2.1200e-003	2.1200e-003		2.1200e-003	2.1200e-003	0.0000	68.0449	68.0449	2.0800e-003	0.0000	68.0969
Total	**0.0260**	**0.0672**	**0.1661**	**7.6000e-004**		**2.1200e-003**	**2.1200e-003**		**2.1200e-003**	**2.1200e-003**	**0.0000**	**68.0449**	**68.0449**	**2.0800e-003**	**0.0000**	**68.0969**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Hauling	6.0000e-005	4.1700e-003	2.1300e-003	2.0000e-005	4.7000e-004	3.0000e-005	5.0000e-004	1.3000e-004	2.0000e-005	1.5000e-004	0.0000	1.8070	1.8070	3.9000e-004	3.0000e-004	1.9061
Vendor	0.0324	1.7056	0.7184	6.4500e-003	0.2373	8.0700e-003	0.2453	0.0686	7.7200e-003	0.0763	0.0000	703.3005	703.3005	0.0941	0.1100	738.4466
Worker	4.3600e-003	2.3000e-003	0.0411	1.5000e-004	0.0203	8.0000e-005	0.0204	5.4000e-003	8.0000e-005	5.4800e-003	0.0000	13.4851	13.4851	2.5000e-004	3.0000e-004	13.5806
Total	**0.0368**	**1.7121**	**0.7617**	**6.6200e-003**	**0.2580**	**8.1800e-003**	**0.2662**	**0.0741**	**7.8200e-003**	**0.0819**	**0.0000**	**718.5926**	**718.5926**	**0.0948**	**0.1106**	**753.9334**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0116	0.0546	0.2859	7.6000e-004		1.3100e-003	1.3100e-003		1.3100e-003	1.3100e-003	0.0000	68.0448	68.0448	2.0800e-003	0.0000	68.0968
Total	**0.0116**	**0.0546**	**0.2859**	**7.6000e-004**		**1.3100e-003**	**1.3100e-003**		**1.3100e-003**	**1.3100e-003**	**0.0000**	**68.0448**	**68.0448**	**2.0800e-003**	**0.0000**	**68.0968**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Hauling	6.0000e-005	4.1700e-003	2.1300e-003	2.0000e-005	4.7000e-004	3.0000e-005	5.0000e-004	1.3000e-004	2.0000e-005	1.5000e-004	0.0000	1.8070	1.8070	3.9000e-004	3.0000e-004	1.9061
Vendor	0.0324	1.7056	0.7184	6.4500e-003	0.2373	8.0700e-003	0.2453	0.0686	7.7200e-003	0.0763	0.0000	703.3005	703.3005	0.0941	0.1100	738.4466
Worker	4.3600e-003	2.3000e-003	0.0411	1.5000e-004	0.0203	8.0000e-005	0.0204	5.4000e-003	8.0000e-005	5.4800e-003	0.0000	13.4851	13.4851	2.5000e-004	3.0000e-004	13.5806
Total	**0.0368**	**1.7121**	**0.7617**	**6.6200e-003**	**0.2580**	**8.1800e-003**	**0.2662**	**0.0741**	**7.8200e-003**	**0.0819**	**0.0000**	**718.5926**	**718.5926**	**0.0948**	**0.1106**	**753.9334**

3.12 Diesel Fuel Tank/Bridge & Tunnel - 2031

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0265	0.0682	0.1687	7.7000e-004		2.1600e-003	2.1600e-003		2.1600e-003	2.1600e-003	0.0000	69.1039	69.1039	2.1100e-003	0.0000	69.1567
Total	**0.0265**	**0.0682**	**0.1687**	**7.7000e-004**		**2.1600e-003**	**2.1600e-003**		**2.1600e-003**	**2.1600e-003**	**0.0000**	**69.1039**	**69.1039**	**2.1100e-003**	**0.0000**	**69.1567**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Hauling	6.0000e-005	4.1400e-003	2.1700e-003	2.0000e-005	4.8000e-004	3.0000e-005	5.0000e-004	1.3000e-004	2.0000e-005	1.6000e-004	0.0000	1.7925	1.7925	3.9000e-004	3.0000e-004	1.8910
Vendor	0.0322	1.7086	0.7298	6.4100e-003	0.2409	8.1000e-003	0.2490	0.0697	7.7500e-003	0.0774	0.0000	700.0385	700.0385	0.0951	0.1096	735.0757
Worker	4.2100e-003	2.2200e-003	0.0406	1.5000e-004	0.0206	8.0000e-005	0.0207	5.4900e-003	7.0000e-005	5.5600e-003	0.0000	13.4262	13.4262	2.4000e-004	3.0000e-004	13.5205
Total	**0.0365**	**1.7150**	**0.7725**	**6.5800e-003**	**0.2620**	**8.2100e-003**	**0.2702**	**0.0753**	**7.8400e-003**	**0.0831**	**0.0000**	**715.2571**	**715.2571**	**0.0957**	**0.1102**	**750.4873**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0118	0.0554	0.2904	7.7000e-004		1.3300e-003	1.3300e-003		1.3300e-003	1.3300e-003	0.0000	69.1038	69.1038	2.1100e-003	0.0000	69.1567
Total	**0.0118**	**0.0554**	**0.2904**	**7.7000e-004**		**1.3300e-003**	**1.3300e-003**		**1.3300e-003**	**1.3300e-003**	**0.0000**	**69.1038**	**69.1038**	**2.1100e-003**	**0.0000**	**69.1567**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Hauling	6.0000e-005	4.1400e-003	2.1700e-003	2.0000e-005	4.8000e-004	3.0000e-005	5.0000e-004	1.3000e-004	2.0000e-005	1.6000e-004	0.0000	1.7925	1.7925	3.9000e-004	3.0000e-004	1.8910
Vendor	0.0322	1.7086	0.7298	6.4100e-003	0.2409	8.1000e-003	0.2490	0.0697	7.7500e-003	0.0774	0.0000	700.0385	700.0385	0.0951	0.1096	735.0757
Worker	4.2100e-003	2.2200e-003	0.0406	1.5000e-004	0.0206	8.0000e-005	0.0207	5.4900e-003	7.0000e-005	5.5600e-003	0.0000	13.4262	13.4262	2.4000e-004	3.0000e-004	13.5205
Total	**0.0365**	**1.7150**	**0.7725**	**6.5800e-003**	**0.2620**	**8.2100e-003**	**0.2702**	**0.0753**	**7.8400e-003**	**0.0831**	**0.0000**	**715.2571**	**715.2571**	**0.0957**	**0.1102**	**750.4873**

3.12 Diesel Fuel Tank/Bridge & Tunnel - 2032

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0266	0.0685	0.1694	7.7000e-004		2.1600e-003	2.1600e-003		2.1600e-003	2.1600e-003	0.0000	69.3687	69.3687	2.1200e-003	0.0000	69.4217
Total	**0.0266**	**0.0685**	**0.1694**	**7.7000e-004**		**2.1600e-003**	**2.1600e-003**		**2.1600e-003**	**2.1600e-003**	**0.0000**	**69.3687**	**69.3687**	**2.1200e-003**	**0.0000**	**69.4217**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

UCSF NHPH Construction Run - San Francisco County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Hauling	6.0000e-005	4.0700e-003	2.1800e-003	1.0000e-005	4.8000e-004	2.0000e-005	5.1000e-004	1.3000e-004	2.0000e-005	1.6000e-004	0.0000	1.7599	1.7599	3.9000e-004	2.9000e-004	1.8568
Vendor	0.0318	1.6931	0.7334	6.3200e-003	0.2419	8.0400e-003	0.2499	0.0699	7.6900e-003	0.0776	0.0000	689.8049	689.8049	0.0950	0.1081	724.3770
Worker	4.0300e-003	2.1400e-003	0.0397	1.4000e-004	0.0207	7.0000e-005	0.0208	5.5100e-003	7.0000e-005	5.5800e-003	0.0000	13.2410	13.2410	2.2000e-004	2.9000e-004	13.3334
Total	**0.0359**	**1.6993**	**0.7752**	**6.4700e-003**	**0.2630**	**8.1300e-003**	**0.2712**	**0.0756**	**7.7800e-003**	**0.0834**	**0.0000**	**704.8057**	**704.8057**	**0.0956**	**0.1086**	**739.5673**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0118	0.0557	0.2915	7.7000e-004		1.3400e-003	1.3400e-003		1.3400e-003	1.3400e-003	0.0000	69.3686	69.3686	2.1200e-003	0.0000	69.4216
Total	**0.0118**	**0.0557**	**0.2915**	**7.7000e-004**		**1.3400e-003**	**1.3400e-003**		**1.3400e-003**	**1.3400e-003**	**0.0000**	**69.3686**	**69.3686**	**2.1200e-003**	**0.0000**	**69.4216**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

UCSF NHPH Construction Run - San Francisco County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Hauling	6.0000e-005	4.0700e-003	2.1800e-003	1.0000e-005	4.8000e-004	2.0000e-005	5.1000e-004	1.3000e-004	2.0000e-005	1.6000e-004	0.0000	1.7599	1.7599	3.9000e-004	2.9000e-004	1.8568
Vendor	0.0318	1.6931	0.7334	6.3200e-003	0.2419	8.0400e-003	0.2499	0.0699	7.6900e-003	0.0776	0.0000	689.8049	689.8049	0.0950	0.1081	724.3770
Worker	4.0300e-003	2.1400e-003	0.0397	1.4000e-004	0.0207	7.0000e-005	0.0208	5.5100e-003	7.0000e-005	5.5800e-003	0.0000	13.2410	13.2410	2.2000e-004	2.9000e-004	13.3334
Total	**0.0359**	**1.6993**	**0.7752**	**6.4700e-003**	**0.2630**	**8.1300e-003**	**0.2712**	**0.0756**	**7.7800e-003**	**0.0834**	**0.0000**	**704.8057**	**704.8057**	**0.0956**	**0.1086**	**739.5673**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Hospital	0.00	0.00	0.00		

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Parking Lot	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Hospital	9.50	7.30	7.30	64.90	16.10	19.00	73	25	2
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	
Hospital	0.542216	0.061691	0.189928	0.118396	0.021956	0.005775	0.019828	0.003552	0.001616	0.001933	0.029912	0.000985	0
Parking Lot	0.542216	0.061691	0.189928	0.118396	0.021956	0.005775	0.019828	0.003552	0.001616	0.001933	0.029912	0.000985	0

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.3055	0.3055	2.3000e-004	3.0000e-005	0.3194
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.3055	0.3055	2.3000e-004	3.0000e-005	0.3194

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2
Land Use	kBTU/yr	tons/yr										MT/yr					
Hospital	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.00
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.00
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.00**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2
Land Use	kBTU/yr	tons/yr										MT/yr					
Hospital	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.00

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.00
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.00**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Hospital	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	15246	0.3055	2.3000e-004	3.0000e-005	0.3194
Total		**0.3055**	**2.3000e-004**	**3.0000e-005**	**0.3194**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Hospital	0	0.0000	0.0000	0.0000	0.0000

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Parking Lot	15246	0.3055	2.3000e-004	3.0000e-005	0.3194
Total		**0.3055**	**2.3000e-004**	**3.0000e-005**	**0.3194**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

7.0 Water Detail

7.1 Mitigation Measures Water

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Hospital	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Hospital	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

8.2 Waste by Land Use

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Hospital	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Hospital	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

UCSF NHPH Construction Run - San Francisco County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Calculation of average daily emissions from annual emission output from CalEEMod - New Hospital

UNMITIGATED EMISSIONS

		Annual Emissions (TPY)				Average Daily Emissions (lb/day)			
Year	Work days	ROG	Nox	PM10	PM2.5	ROG	Nox	PM10	PM2.5
2022	87	0.0416	0.2345	9.6700e-003	8.9700e-003	0.96	5.39	0.22	0.21
2023	260	0.1627	0.7369	0.0294	0.0272	1.25	5.67	0.23	0.21
2024	260	0.2143	2.2892	0.0476	0.0441	1.65	17.61	0.37	0.34
2025	260	0.1318	1.2756	0.0248	0.0231	1.01	9.81	0.19	0.18
2026	260	0.8321	3.4093	0.0465	0.0436	6.40	26.23	0.36	0.34
2027	260	1.3266	2.5713	0.0348	0.0330	10.20	19.78	0.27	0.25
2028	260	0.8969	1.1082	0.0134	0.0130	6.90	8.52	0.10	0.10
2029	260	0.0302	0.0860	3.9500e-003	3.6400e-003	0.23	0.66	0.03	0.03
2030	260	0.0637	1.8161	0.0105	0.0102	0.49	13.97	0.08	0.08
2031	260	0.0630	1.7832	0.0104	0.0100	0.48	13.72	0.08	0.08
2032	260	0.0624	1.7678	0.0103	9.9500e-003	0.48	13.60	0.08	0.08

MITIGATED EMISSIONS

		Annual Emissions (TPY)				Average Daily Emissions (lb/day)			
Year	Work days	ROG	Nox	PM10	PM2.5	ROG	Nox	PM10	PM2.5
2022	87	0.0280	0.1021	2.6700e-003	2.5100e-003	0.64	2.35	0.06	0.06
2023	260	0.1229	0.3793	0.0103	9.6400e-003	0.95	2.92	0.08	0.07
2024	260	0.1631	1.7768	0.0229	0.0218	1.25	13.67	0.18	0.17
2025	260	0.0966	0.9516	9.0200e-003	8.5800e-003	0.74	7.32	0.07	0.07
2026	260	0.7739	2.9381	0.0225	0.0213	5.95	22.60	0.17	0.16
2027	260	1.2805	2.2418	0.0177	0.0167	9.85	17.24	0.14	0.13
2028	260	0.8764	0.9913	7.4600e-003	7.0800e-003	6.74	7.63	0.06	0.05
2029	260	0.0249	0.0504	8.0000e-004	7.7000e-004	0.19	0.39	0.01	0.01
2030	260	0.0492	1.8035	9.7100e-003	9.3500e-003	0.38	13.87	0.07	0.07
2031	260	0.0483	1.7704	9.5400e-003	9.1800e-003	0.37	13.62	0.07	0.07
2032	260	0.0477	1.7550	9.4800e-003	9.1200e-003	0.37	13.50	0.07	0.07

CalEEmod Output Project Operation

UCSF New Hospital Operatinal Run - San Francisco County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

UCSF New Hospital Operatinal Run

San Francisco County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Hospital	900.00	1000sqft	2.30	900,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	4.6	**Precipitation Freq (Days)**	64
Climate Zone	5			**Operational Year**	2030
Utility Company	User Defined				
CO2 Intensity (lb/MWhr)	0	**CH4 Intensity (lb/MWhr)**	0	**N2O Intensity (lb/MWhr)**	0

1.3 User Entered Comments & Non-Default Data

Project Characteristics - UCSF Net Zero GHG by 2025

Land Use - Acreage adjusted per RFI response.

Construction Phase - Operational run only. Separate runs for construction.

Off-road Equipment - Operational run only. separate runs for construction.

Vehicle Trips - Adjusted trip rates to match VMT estimated in transportation analysis.

Consumer Products - SF-specific ROG factor

Energy Use - UCSF Net zero electricity by 2025. No new Natural Gas hookups. Natural gas through CUP calculated separately.

Waste Mitigation - UCSF’s recycling and composting programs and other efforts to reduce the total amount of waste produced and/or requiring landfill disposal. UCSF has consistently increased its landfill diversion rate, rising to 78 percent in 2018

Stationary Sources - Emergency Generators and Fire Pumps -

Table Name	Column Name	Default Value	New Value

UCSF New Hospital Operatinal Run - San Francisco County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblConstructionPhase	NumDays	20.00	0.00
tblConstructionPhase	PhaseEndDate	1/27/2023	1/1/2023
tblEnergyUse	LightingElect	4.23	0.00
tblEnergyUse	NT24E	5.52	0.00
tblEnergyUse	NT24NG	15.80	0.00
tblEnergyUse	T24E	5.78	0.00
tblEnergyUse	T24NG	84.04	0.00
tblLandUse	LotAcreage	20.66	2.30
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblVehicleTrips	ST_TR	7.72	6.69
tblVehicleTrips	SU_TR	6.77	6.50
tblVehicleTrips	WD_TR	10.72	9.45

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
		Highest		

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

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Area	3.9850	7.0000e-005	8.2300e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.0161	0.0161	4.0000e-005	0.0000	0.0171
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	3.3409	3.0563	30.3757	0.0597	7.2257	0.0392	7.2649	1.9326	0.0364	1.9690	0.0000	5,550.2031	5,550.2031	0.4832	0.2731	5,643.6574
Waste						0.0000	0.0000		0.0000	0.0000	1,973.0722	0.0000	1,973.0722	116.6052	0.0000	4,888.2028
Water						0.0000	0.0000		0.0000	0.0000	35.8283	0.0000	35.8283	3.6799	0.0869	153.7193
Total	**7.3259**	**3.0563**	**30.3840**	**0.0597**	**7.2257**	**0.0392**	**7.2649**	**1.9326**	**0.0365**	**1.9691**	**2,008.9004**	**5,550.2192**	**7,559.1196**	**120.7684**	**0.3600**	**10,685.5966**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	3.9850	7.0000e-005	8.2300e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.0161	0.0161	4.0000e-005	0.0000	0.0171
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	3.3409	3.0563	30.3757	0.0597	7.2257	0.0392	7.2649	1.9326	0.0364	1.9690	0.0000	5,550.2031	5,550.2031	0.4832	0.2731	5,643.6574
Waste						0.0000	0.0000		0.0000	0.0000	434.0759	0.0000	434.0759	25.6532	0.0000	1,075.4046
Water						0.0000	0.0000		0.0000	0.0000	35.8283	0.0000	35.8283	3.6799	0.0869	153.7193
Total	**7.3259**	**3.0563**	**30.3840**	**0.0597**	**7.2257**	**0.0392**	**7.2649**	**1.9326**	**0.0365**	**1.9691**	**469.9041**	**5,550.2192**	**6,020.1233**	**29.8163**	**0.3600**	**6,872.7985**

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	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**76.61**	**0.00**	**20.36**	**75.31**	**0.00**	**35.68**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2023	1/1/2023	5	0	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating –

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	0	8.00	81	0.73
Demolition	Rubber Tired Dozers	0	8.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	0	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	0	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

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3.2 Demolition - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	3.3409	3.0563	30.3757	0.0597	7.2257	0.0392	7.2649	1.9326	0.0364	1.9690	0.0000	5,550.2031	5,550.2031	0.4832	0.2731	5,643.6574
Unmitigated	3.3409	3.0563	30.3757	0.0597	7.2257	0.0392	7.2649	1.9326	0.0364	1.9690	0.0000	5,550.2031	5,550.2031	0.4832	0.2731	5,643.6574

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Hospital	8,505.00	6,021.00	5851.47	19,570,938	19,570,938
Total	8,505.00	6,021.00	5,851.47	19,570,938	19,570,938

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Hospital	9.50	7.30	7.30	64.90	16.10	19.00	73	25	2

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	

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Hospital	0.546942	0.061217	0.189992	0.113513	0.021646	0.005494	0.019082	0.003832	0.001734	0.002056	0.031572	0.000932	0

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2

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Land Use	kBTU/yr	tons/yr										MT/yr					
Hospital	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.00
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.00**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2
Land Use	kBTU/yr	tons/yr										MT/yr					
Hospital	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.00
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.00**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Hospital	0	0.0000	0.0000	0.0000	0.0000

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Hospital	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

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Mitigated	3.9850	7.0000e-005	8.2300e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.0161	0.0161	4.0000e-005	0.0000	0.0171
Unmitigated	3.9850	7.0000e-005	8.2300e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.0161	0.0161	4.0000e-005	0.0000	0.0171

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.4693					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.5150					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	7.5000e-004	7.0000e-005	8.2300e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.0161	0.0161	4.0000e-005	0.0000	0.0171
Total	**3.9850**	**7.0000e-005**	**8.2300e-003**	**0.0000**		**3.0000e-005**	**3.0000e-005**		**3.0000e-005**	**3.0000e-005**	**0.0000**	**0.0161**	**0.0161**	**4.0000e-005**	**0.0000**	**0.0171**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					

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Architectural Coating	0.4693					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.5150					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	7.5000e-004	7.0000e-005	8.2300e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.0161	0.0161	4.0000e-005	0.0000	0.0171
Total	**3.9850**	**7.0000e-005**	**8.2300e-003**	**0.0000**		**3.0000e-005**	**3.0000e-005**		**3.0000e-005**	**3.0000e-005**	**0.0000**	**0.0161**	**0.0161**	**4.0000e-005**	**0.0000**	**0.0171**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	35.8283	3.6799	0.0869	153.7193
Unmitigated	35.8283	3.6799	0.0869	153.7193

7.2 Water by Land Use

Unmitigated

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Hospital	112.932 / 21.5109	35.8283	3.6799	0.0869	153.7193
Total		**35.8283**	**3.6799**	**0.0869**	**153.7193**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Hospital	112.932 / 21.5109	35.8283	3.6799	0.0869	153.7193
Total		**35.8283**	**3.6799**	**0.0869**	**153.7193**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

Category/Year

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	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	434.0759	25.6532	0.0000	1,075.4046
Unmitigated	1,973.0722	116.6052	0.0000	4,888.2028

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Hospital	9720	1,973.0722	116.6052	0.0000	4,888.2028
Total		**1,973.0722**	**116.6052**	**0.0000**	**4,888.2028**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e

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Land Use	tons	MT/yr			
Hospital	2138.4	434.0759	25.6532	0.0000	1,075.4046
Total		**434.0759**	**25.6532**	**0.0000**	**1,075.4046**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Approach and Methodology to Health Risk Assessment

Operational TAC Calculations

AERMOD Inputs

Construction HRA Calculations (Unmitigated)

Construction HRA Calculations (Mitigated)

Operational HRA Calculations

APPROACH AND METHODOLOGY TO HEALTH RISK ASSESSMENT

A Health Risk Assessment (HRA) was prepared to analyze the estimate cancer risks, chronic health hazards, and acute health hazards from TAC exposure as well as exposure to fine particulates presented as the annual average $PM_{2.5}$ concentration. A three-step process was used to calculated the health risk associated to construction activities and also the health risk from new operations of the initial phase building out. The first steps involve calculating TAC emissions from all new sources. Emissions from construction were calculated using CARB's CalEEMod software program to estimate average annual diesel exhaust emissions (as reported as exhaust of PM_{10}) during project construction. Idling emissions associated with heavy-duty trucks (haul trucks, concrete trucks, material delivery trucks, etc.) were estimated based on the anticipated number of truck trips and idling emission factors for heavy-duty vehicles from EMFAC2021 for on-road emissions. These emissions were modeled outside of CalEEMod because the model does not accurately account for the anticipated idling activity at the project site, which is needed for the HRA.

Operational emissions associated to the initial phase build out that are anticipated to increase or relocate TAC sources include: fume hoods, three emergency diesel generators, delivery truck idling, including TRUs, a cooling tower, and increased power generation from the CUP to accommodate additional building square footage. The emergency diesel generator emissions were calculated using Tier 4 emission factors to estimate the annual average DPM (as reported as exhaust PM_{10}) based on an anticipated permit limit of 50 hours per year for engine reliability.[i] Fume hood TAC emissions were calculated using methodologies documented in a memorandum to UCSF dated December 3, 2018 that was commissioned for the approach to analysis in the UCSF Mission Bay HRA[ii],[iii]. CUP calculations were based on UCSF's BAAQMD emissions report from their most recent reporting cycle and supplemented with emission calculation methodologies utilized for UCSF Mission Bay HRA , [iv] . Detailed calculations, including all assumptions and discussion of approach to analysis, can be found in this appendix.

The second step involved using the AERMOD (version 19191) dispersion model to convert emissions to maximum annual TAC concentrations for the cancer risk, chronic risk and $PM_{2.5}$ exposures, and also maximum 1-hour TAC concentrations for the acute risk analysis. Modeled sensitive receptor locations include residential areas, daycares, and schools (for children under 16 years of age). A 20-meter receptor grid co-located with the Citywide-HRA grid was modeled using a receptor height of 1.8 meters (breathing height).

Emission rates from the various emission sources (e.g., construction activities, haul truck routes, CUP etc.) were based on the anticipated hours of activity for each source and other information. The following sources were included in each respective model.

Construction model:

- One Area Source for the main construction activates for the New Hospital.
- One Area Source for the idling emissions associated with haul truck import/export for the New Hospital.
- A Line Area source for the haul route along Parnassus Avenue

Operational model:

- Three Point Sources on top of the NHPH building to model fume hoods
- Three Point Source for the emergency generator for the NHPH
- Four Point Sources for each the Combustion Turbine/After Burner 1 and 2, and Boilers 1 and 2 at the central utility plant
- Three Area Sources to represent delivery truck idling exhaust at loading zones
- Three Volume Sources to represent TRUs on delivery trucks at loading zones
- One Volume Source on top of the NHPH building to model the cooling tower

The source parameters included in the modeling input are detailed in tables AIR-1, AIR-2, and AIR-3. Because each emission source was modeled separately within AERMOD, a unitized emission rate concept for each source, where each source is modeled with a unitized emission rate of 1 gram/second (g/s). The modeled concentration at each receptor (micrograms per cubic meter [μ/m^3]/[g/s]) represents a "dispersion factor," which was then multiplied by the actual emission rate of each source to determine actual concentrations.

In accordance with OEHHA *Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments* the last step was accomplished by applying the highest estimated concentrations of TAC at the receptors analyzed to the established cancer potency factors and acceptable reference concentrations for non-cancer health effects[v]. Increased cancer risks were calculated using the modeled TAC concentrations and OEHHA-recommended methodologies for both a child exposure (starting at 3rd trimester) as well as daycare and school exposure. The cancer risk calculations were based on applying the OEHHA-recommended age sensitivity factors and breathing rates, as well as fraction of time at home and an exposure duration of 30 years. Age-sensitivity factors reflect the greater sensitivity of infants and small children to cancer causing air pollutants. The full HRA calculations are presented in this appendix.

These conservative methodologies overestimate both non-carcinogenic and carcinogenic health risk, possibly by an order of magnitude or more. Therefore, for carcinogenic risks, the actual probabilities of cancer formation in the populations of concern due to exposure to carcinogenic pollutants are likely to be lower than the risks derived using the HRA methodology. The extrapolation of toxicity data in animals to humans, the estimation of concentration prediction methods within dispersion models; and the variability in lifestyles, fitness and other confounding factors of the human population also contribute to the overestimation of health impacts. Therefore, the results of the HRA are highly overstated.

[i] BAAQMD, 2018a. Bay Area Air Quality Management District Engineering Division Permit Handbook. October 2018. Available: http://www.baaqmd.gov/~/media/files/engineering/permit-handbook/baaqmd-permit-handbook.pdf

[ii] Atmospheric Dynamics, Inc., 2018. Memorandum Subject: Draft Fume Hood Emissions Quantification Methodology (Revised). December 3, 2018.

[iii] Atmospheric Dynamics, Inc., 2019. Health Risk Assessment Final Report Submittal UCSF Mission Bay Campus. May 2019.

[iv] BAAQMD, 2019a. Bay Area Air Quality Management District Detail Pollutants – Abated, Most Recent P/O Approved (2019), UCSF/Parnassus (P# 2478). Received via Stationary Source Inquiry Form, Available: http://www.baaqmd.gov/plans-and-climate/california-environmental-quality-act-ceqa/ceqa-tools

[v] OEHHA, 2019. Consolidated Table of OEHHA/ARB Approved Risk Assessment Health Values. September 2019. Available: https://ww3.arb.ca.gov/toxics/healthval/contable.pdf

Operational TAC Calculations

UCSF Parnassus Heights New Hospital

PCUP Emissions Estimates, change (increase) from existing only

Based on BAAQMD Annual Reporting

List of Assumptions/References/Notes

Assume increase in PCUP operations applied evenly to each unit i.e. the % increase is applied directly to each unit

PCUP (existing) Emission Factors are from 2019 BAAQMD Compliance Reporting

PCUP (existing) Therm throughput from 2018-2019 reporting year

Emissions considered are from NG combustion only. Diesel fuel is for emergency backup only.

Turbine emissions are turbine + DB

Calculations

Annual Summary, Gas Use (from P. Franke on 8/25/21)

Budget 2018-19	10,015,566	therms
	1,001,317	mmbtu
New Hospital	3,633,233	therms
	363,236	mmbtu
Total w/ NH	1,364,554	mmbtu
% increase	36%	

Permit Limits	Turbine 1	Turbine 2	DB 1	DB 2	Boiler 1	Boiler 2
therms/yr	12,000,000		4,400,000		1,000,000	1,000,000

Existing 2018-19 Reporting

Pollutant	Sources							UOM
	Turbine 1	Turbine 2	DB 1	DB 2	Boiler 1	Boiler 2	Total PCUP	
Benzene	2.27E-02	2.65E-02	2.70E-04	7.78E-04	5.63E-05	8.11E-05	5.04E-02	lb/day
Formaldehyde	3.30E+00	3.85E+00	3.18E-03	9.15E-03	2.79E-03	4.02E-03	7.17E+00	lb/day
Organics (other, including	1.58E+00	1.84E+00	4.32E-01	1.24E+00	9.21E-02	1.33E-01	5.32E+00	lb/day
Particulates (part not spe	6.47E+00	7.54E+00	2.85E-01	8.21E-01	2.29E-01	3.29E-01	1.57E+01	lb/day
Nitrous Oxide (N2O)	3.11E-02	3.62E-02	1.37E-03	3.94E-03	6.95E-03	1.00E-02	8.96E-02	lb/day
Nitrogen Oxides (part not	2.53E+00	2.95E+00	1.11E-01	3.21E-01	9.31E-01	1.34E+00	8.18E+00	lb/day
Sulfur Dioxide (SO2)	5.46E-01	6.37E-01	2.41E-02	6.93E-02	1.71E-02	2.46E-02	1.32E+00	lb/day
Carbon Monoxide (CO) pollu	5.05E+00	5.89E+00	9.68E-01	2.79E+00	1.13E+00	1.63E+00	1.75E+01	lb/day
Carbon Dioxide, non-biogen	1.18E+05	1.37E+05	5.19E+03	1.49E+04	3.69E+03	5.31E+03	2.84E+05	lb/day
Methane (CH4)	4.34E+00	5.06E+00	8.04E-02	2.32E-01	5.72E-02	8.24E-02	9.85E+00	lb/day
Toluene	0.00E+00	0.00E+00	1.44E-04	4.15E-04	0.00E+00	0.00E+00	5.59E-04	lb/day
PM10	6.43E+00	7.49E+00	0.00E+00	0.00E+00	2.29E-01	3.29E-01	14.48	lb/day
PM2.5	6.02E+00	7.01E+00	0.00E+00	0.00E+00	2.29E-01	3.29E-01	13.59	lb/day

Estimated Increase

Pollutant	Sources					UOM	Sources					UOM
	Turbine 1	Turbine 2	Boiler 1	Boiler 2	Total PCUP		Turbine 1	Turbine 2	Boiler 1	Boiler 2	Total PCUP	
Benzene	8.33E-03	9.90E-03	2.04E-05	2.94E-05	1.83E-02	lb/day	1.52E-03	1.81E-03	3.73E-06	5.37E-06	3.34E-03	ton/yr
Formaldehyde	1.20E+00	1.40E+00	1.01E-03	1.46E-03	2.60E+00	lb/day	2.19E-01	2.55E-01	1.85E-04	2.66E-04	4.75E-01	ton/yr
Organics (other, including	7.30E-01	1.12E+00	3.34E-02	4.82E-02	1.93E+00	lb/day	1.33E-01	2.04E-01	6.10E-03	8.81E-03	3.52E-01	ton/yr
Particulates (part not spe	2.45E+00	3.03E+00	8.31E-02	1.19E-01	5.69E+00	lb/day	4.47E-01	5.54E-01	1.52E-02	2.18E-02	1.04E+00	ton/yr
Nitrous Oxide (N2O)	1.18E-02	1.46E-02	2.52E-03	3.63E-03	3.25E-02	lb/day	2.15E-03	2.66E-03	4.60E-04	6.62E-04	5.93E-03	ton/yr
Nitrogen Oxides (part not	9.58E-01	1.19E+00	3.38E-01	4.86E-01	2.97E+00	lb/day	1.75E-01	2.17E-01	6.16E-02	8.87E-02	5.42E-01	ton/yr
Sulfur Dioxide (SO2)	2.07E-01	2.56E-01	6.20E-03	8.92E-03	4.78E-01	lb/day	3.77E-02	4.68E-02	1.13E-03	1.63E-03	8.73E-02	ton/yr
Carbon Monoxide (CO) pollu	2.18E+00	3.15E+00	4.10E-01	5.91E-01	6.33E+00	lb/day	3.98E-01	5.75E-01	7.48E-02	1.08E-01	1.16E+00	ton/yr
Carbon Dioxide, non-biogen	4.47E+04	5.51E+04	1.34E+03	1.93E+03	1.03E+05	lb/day	8.16E+03	1.01E+04	2.44E+02	3.52E+02	1.88E+04	ton/yr
Methane (CH4)	1.60E+00	1.92E+00	2.07E-02	2.99E-02	3.57E+00	lb/day	2.93E-01	3.50E-01	3.79E-03	5.46E-03	6.52E-01	ton/yr
Toluene	5.22E-05	1.51E-04	0.00E+00	0.00E+00	2.03E-04	lb/day	9.53E-06	2.75E-05	0.00E+00	0.00E+00	3.70E-05	ton/yr
PM10	2.33E+00	2.72E+00	8.31E-02	1.19E-01	5.25E+00	lb/day	4.26E-01	4.96E-01	1.52E-02	2.18E-02	9.59E-01	ton/yr
PM2.5	2.18E+00	2.54E+00	8.31E-02	1.19E-01	4.93E+00	lb/day	3.98E-01	4.64E-01	1.52E-02	2.18E-02	9.00E-01	ton/yr

UCSF Parnassus Heights New Hospital

Initial Phase of New Hospital (2030)

PCUP Emissions Estimates, change (increase) from existing only

Based on methods certified in Mission Bay EIR (SCAQMD AB2588 Reporting Procedures for AB2588 Facilities, 12/2016.)

List of Assumptions/References/Notes

Assume increase in PCUP operations applied evenly to each unit i.e. the % increase is applied directly to each unit

Emissions calculated with SCAQMD AB2588 emission calculation methods

Emissions considered are from NG combustion only. Diesel fuel is for emergency backup only.

Turbine emissions are turbine + DB

Calculations

Annual Summary, Gas Use (from P. Franke on 8/25/21)

New Hospital	3,633,233	therms/yr	
	363,236	mmbtu/yr	*from UCSF data request*
	356	mmscf/yr	

CO Catalyst HAP Control %	80%	see Mission Bay EIR + EPA 2015 reference

Permit Limits	Turbine 1	Turbine 2	DB 1	DB 2	Boiler 1	Boiler 2	Total
therms/yr	12,000,000		4,400,000		1,000,000	1,000,000	18,400,000

Unit	Rating (mmbtu/hr)	Controls	Capacity Fraction
Turbine 1	76	SCR + CO Cat.	45%
Duct Burner 1	46		
Turbine 2	62	SCR + CO Cat.	45%
Duct Burner 2	46		
Boiler 1	120	none	5%
Boiler 2	120	none	5%

Emission Factors from Table B-1

Pollutant	Sources				UOM
	Turbine 1	Turbine 2	Boiler 1	Boiler 2	
1,3-Butadiene	4.39E-04	4.39E-04	0.00E+00	0.00E+00	lb/mmscf
Total PAH (excluding Napthalene)	9.18E-04	9.18E-04	1.00E-04	1.00E-04	lb/mmscf
Naphthalene	1.33E-03	1.33E-03	3.00E-04	3.00E-04	lb/mmscf
Acetaldehyde	4.08E-02	4.08E-02	9.00E-04	9.00E-04	lb/mmscf
Acrolein	6.53E-03	6.53E-03	8.00E-04	8.00E-04	lb/mmscf
Ammonia	9.10E+00	9.10E+00	3.20E+00	3.20E+00	lb/mmscf
Ethyl benzene	3.26E-02	3.26E-02	2.00E-03	2.00E-03	lb/mmscf
Propylene oxide	2.96E-02	2.96E-02	0.00E+00	0.00E+00	lb/mmscf
Hexane	0.00E+00	0.00E+00	1.30E-03	1.30E-03	lb/mmscf
Xylene	6.53E-02	6.53E-02	5.80E-03	5.80E-03	lb/mmscf

Controlled Emission Factors

Pollutant	Sources				UOM
	Turbine 1	Turbine 2	Boiler 1	Boiler 2	
1,3-Butadiene	8.78E-05	8.78E-05	0.00E+00	0.00E+00	lb/mmscf
Total PAH (excluding	1.84E-04	1.84E-04	1.00E-04	1.00E-04	lb/mmscf
Naphthalene	2.66E-04	2.66E-04	3.00E-04	3.00E-04	lb/mmscf
Acetaldehyde	8.16E-03	8.16E-03	9.00E-04	9.00E-04	lb/mmscf
Acrolein	1.31E-03	1.31E-03	8.00E-04	8.00E-04	lb/mmscf
Ammonia	9.10E+00	9.10E+00	3.20E+00	3.20E+00	lb/mmscf
Ethyl benzene	6.52E-03	6.52E-03	2.00E-03	2.00E-03	lb/mmscf
Propylene oxide	5.92E-03	5.92E-03	0.00E+00	0.00E+00	lb/mmscf
Hexane	0.00E+00	0.00E+00	1.30E-03	1.30E-03	lb/mmscf
Xylene	1.31E-02	1.31E-02	5.80E-03	5.80E-03	lb/mmscf

CO catalysts on gas turbines result in approximately 90 percent reduction of CO and 85 to 90 percent control of formaldehyde (similar reductions can be expected on other HAPs).
US EPA 2015. Catalog of CHP Technologies Section 3. Technology Characterization - Combustion Turbines. March 2015
https://www.epa.gov/sites/production/files/2015-07/documents/catalog_of_chp_technologies_section_3._technology_characterization_-_combustion_turbines.pdf

Estimated Increase

Pollutant	Sources					UOM	Sources					UOM
	Turbine 1	Turbine 2	Boiler 1	Boiler 2	Total PCUP		Turbine 1	Turbine 2	Boiler 1	Boiler 2	Total PCUP	
1,3-Butadiene	3.82E-05	3.82E-05	0.00E+00	0.00E+00	7.64E-05	lb/day	6.97E-06	6.97E-06	0.00E+00	0.00E+00	1.39E-05	ton/yr
Total PAH (excluding Napthalene)	7.98E-05	7.98E-05	5.30E-06	5.30E-06	1.70E-04	lb/day	1.46E-05	1.46E-05	9.68E-07	9.68E-07	3.11E-05	ton/yr
Naphthalene	1.16E-04	1.16E-04	1.59E-05	1.59E-05	2.63E-04	lb/day	2.11E-05	2.11E-05	2.90E-06	2.90E-06	4.80E-05	ton/yr
Acetaldehyde	3.55E-03	3.55E-03	4.77E-05	4.77E-05	7.19E-03	lb/day	6.48E-04	6.48E-04	8.71E-06	8.71E-06	1.31E-03	ton/yr
Acrolein	5.68E-04	5.68E-04	4.24E-05	4.24E-05	1.22E-03	lb/day	1.04E-04	1.04E-04	7.74E-06	7.74E-06	2.23E-04	ton/yr
Ammonia	3.96E+00	3.96E+00	1.70E-01	1.70E-01	8.25E+00	lb/day	7.22E-01	7.22E-01	3.10E-02	3.10E-02	1.51E+00	ton/yr
Ethyl benzene	2.83E-03	2.83E-03	1.06E-04	1.06E-04	5.88E-03	lb/day	5.17E-04	5.17E-04	1.94E-05	1.94E-05	1.07E-03	ton/yr
Propylene oxide	2.57E-03	2.57E-03	0.00E+00	0.00E+00	5.15E-03	lb/day	4.70E-04	4.70E-04	0.00E+00	0.00E+00	9.40E-04	ton/yr
Hexane	0.00E+00	0.00E+00	6.89E-05	6.89E-05	1.38E-04	lb/day	0.00E+00	0.00E+00	1.26E-05	1.26E-05	2.52E-05	ton/yr
Xylene	5.68E-03	5.68E-03	3.08E-04	3.08E-04	1.20E-02	lb/day	1.04E-03	1.04E-03	5.61E-05	5.61E-05	2.18E-03	ton/yr

UCSF Parnassus Heights New Hospital

PCUP Emissions Estimates, change (increase) from existing only

Summary of Emissions to be used for criteria reporting and HRA calculations

List of Assumptions/References/Notes

See PCUP Calcuations Part 1 and Part 2 for specific assumptions

Emissions from BAAQMD 2018-19 Reporting were used as default, SCAQMD AB2588 emission calculation methods were used to suppliment

From BAAQMD 2018-19 Reporting: Benzene
Formaldehyde
Toluene
PM10
PM2.5
Particulates (part notspec elsewhere)
Organics (other, including CH4)
Nitrous Oxide (N2O)
Nitrogen Oxides (part not spec elsewhere) (2990)
Sulfur Dioxide (SO2)
Carbon Monoxide (CO) pollutant
Carbon Dioxide, non-biogenic CO2
Methane (CH4)

Calculations

Estimated Increase

Pollutant	Sources					UOM	Sources					UOM	CPF[2]	Chronic REL[2]
	Turbine 1	Turbine 2	Boiler 1	Boiler 2	Total PCUP		Turbine 1	Turbine 2	Boiler 1	Boiler 2	Total PCUP		(mg/kg-day)$^{-1}$	(ug/m^3)
Acetaldehyde	3.55E-03	3.55E-03	4.77E-05	4.77E-05	7.19E-03	lb/day	6.48E-04	6.48E-04	8.71E-06	8.71E-06	1.31E-03	ton/yr	1.00E-02	1.40E+02
Acrolein	5.68E-04	5.68E-04	4.24E-05	4.24E-05	1.22E-03	lb/day	1.04E-04	1.04E-04	7.74E-06	7.74E-06	2.23E-04	ton/yr	--	3.50E-01
Ammonia	3.96E+00	3.96E+00	1.70E-01	1.70E-01	8.25E+00	lb/day	7.22E-01	7.22E-01	3.10E-02	3.10E-02	1.51E+00	ton/yr	--	2.00E+02
Benzene	8.33E-03	9.90E-03	2.04E-05	2.94E-05	1.83E-02	lb/day	1.52E-03	1.81E-03	3.73E-06	5.37E-06	3.34E-03	ton/yr	1.00E-01	3.00E+00
1,3-Butadiene	3.82E-05	3.82E-05	0.00E+00	0.00E+00	7.64E-05	lb/day	6.97E-06	6.97E-06	0.00E+00	0.00E+00	1.39E-05	ton/yr	6.00E-01	2.00E+00
Ethyl benzene	2.83E-03	2.83E-03	1.06E-04	1.06E-04	5.88E-03	lb/day	5.17E-04	5.17E-04	1.94E-05	1.94E-05	1.07E-03	ton/yr	8.70E-03	2.00E+03
Formaldehyde	1.20E+00	1.40E+00	1.01E-03	1.46E-03	2.60E+00	lb/day	2.19E-01	2.55E-01	1.85E-04	2.66E-04	4.75E-01	ton/yr	2.10E-02	9.00E+00
Hexane	0.00E+00	0.00E+00	6.89E-05	6.89E-05	1.38E-04	lb/day	0.00E+00	0.00E+00	1.26E-05	1.26E-05	2.52E-05	ton/yr	--	7.00E+03
Naphthalene	1.16E-04	1.16E-04	1.59E-05	1.59E-05	2.63E-04	lb/day	2.11E-05	2.11E-05	2.90E-06	2.90E-06	4.80E-05	ton/yr	1.20E-01	9.00E+00
Propylene oxide	2.57E-03	2.57E-03	0.00E+00	0.00E+00	5.15E-03	lb/day	4.70E-04	4.70E-04	0.00E+00	0.00E+00	9.40E-04	ton/yr	1.30E-02	3.00E+01
Toluene	5.22E-05	1.51E-04	0.00E+00	0.00E+00	2.03E-04	lb/day	9.53E-06	2.75E-05	0.00E+00	0.00E+00	3.70E-05	ton/yr	--	3.00E+02
Total PAH (excluding Napthalene)[2]	7.98E-05	7.98E-05	5.30E-06	5.30E-06	1.70E-04	lb/day	1.46E-05	1.46E-05	9.68E-07	9.68E-07	3.11E-05	ton/yr	3.90E+00	--
Xylene	5.68E-03	5.68E-03	3.08E-04	3.08E-04	1.20E-02	lb/day	1.04E-03	1.04E-03	5.61E-05	5.61E-05	2.18E-03	ton/yr	--	7.00E+02
PM10	2.33E+00	2.72E+00	8.31E-02	1.19E-01	5.25	lb/day	4.26E-01	4.96E-01	1.52E-02	2.18E-02	9.59E-01	ton/yr	--	--
PM2.5	2.18E+00	2.54E+00	8.31E-02	1.19E-01	4.93	lb/day	3.98E-01	4.64E-01	1.52E-02	2.18E-02	9.00E-01	ton/yr	--	--
Particulates (part notspec elsewhere)	2.45E+00	3.03E+00	8.31E-02	1.19E-01	5.69	lb/day	4.47E-01	5.54E-01	1.52E-02	2.18E-02	1.04E+00	ton/yr	--	--
Organics (other, including CH4)	7.30E-01	1.12E+00	3.34E-02	4.82E-02	1.93	lb/day	1.33E-01	2.04E-01	6.10E-03	8.81E-03	3.52E-01	ton/yr	--	--
Nitrous Oxide (N2O)	1.18E-02	1.46E-02	2.52E-03	3.63E-03	0.03	lb/day	2.15E-03	2.66E-03	4.60E-04	6.62E-04	5.93E-03	ton/yr	--	--
Nitrogen Oxides (part not spec elsewher	9.58E-01	1.19E+00	3.38E-01	4.86E-01	2.97	lb/day	1.75E-01	2.17E-01	6.16E-02	8.87E-02	5.42E-01	ton/yr	--	--
Sulfur Dioxide (SO2)	2.07E-01	2.56E-01	6.20E-03	8.92E-03	4.78E-01	lb/day	3.77E-02	4.68E-02	1.13E-03	1.63E-03	8.73E-02	ton/yr	--	--
Carbon Monoxide (CO) pollutant	2.18E+00	3.15E+00	4.10E-01	5.91E-01	6.33E+00	lb/day	3.98E-01	5.75E-01	7.48E-02	1.08E-01	1.16E+00	ton/yr	--	--
Carbon Dioxide, non-biogenic CO2	4.47E+04	5.51E+04	1.34E+03	1.93E+03	1.03E+05	lb/day	8.16E+03	1.01E+04	2.44E+02	3.52E+02	1.88E+04	ton/yr	--	--
Methane (CH4)	1.60E+00	1.92E+00	2.07E-02	2.99E-02	3.57E+00	lb/day	2.93E-01	3.50E-01	3.79E-03	5.46E-03	6.52E-01	ton/yr	--	--

3.00

Pollutant (HRA ONLY)	Sources				UOM
	Turbine 1	Turbine 2	Boiler 1	Boiler 2	
Acetaldehyde	1.86E-05	1.86E-05	2.51E-07	2.51E-07	g/s
Benzene	4.37E-05	5.19E-05	1.07E-07	1.54E-07	g/s
1,3-Butadiene	2.00E-07	2.00E-07	0.00E+00	0.00E+00	g/s
Ethyl benzene	1.49E-05	1.49E-05	5.57E-07	5.57E-07	g/s
Formaldehyde	6.29E-03	7.35E-03	5.31E-06	7.66E-06	g/s
Naphthalene	6.07E-07	6.07E-07	8.35E-08	8.35E-08	g/s
Propylene oxide	1.35E-05	1.35E-05	0.00E+00	0.00E+00	g/s
Total PAH (excluding Napthalene)	4.19E-07	4.19E-07	2.78E-08	2.78E-08	g/s
Acrolein	2.98E-06	2.98E-06	2.23E-07	2.23E-07	g/s
Ammonia	2.08E-02	2.08E-02	8.91E-04	8.91E-04	g/s
Hexane	0.00E+00	0.00E+00	3.62E-07	3.62E-07	g/s
Toluene	2.74E-07	7.90E-07	0.00E+00	0.00E+00	g/s
Xylene	2.98E-05	2.98E-05	1.61E-06	1.61E-06	g/s
Nitrogen Oxides (part not spec elsewher	5.03E-03	6.23E-03	1.77E-03	2.55E-03	g/s
PM2.5	1.15E-02	1.34E-02	4.36E-04	6.27E-04	g/s

1. There are two PAHs detected in gas turbines: benzo(a)anthracene and benzo(a)pyrene. Only benzo(a)pyrene is detected in boiler exhaust. Inhalation Potency Factor for benzo(a)pyrene is greater than benzo(a)anthracene, therefore the IPF for benzo(a)pyrene was used for Total PAHs.

2. From Consolidated Table of OEHHA/ARB Approved Risk Assessment Health Values, last updated October 2, 2020

UCSF Parnassus Heights New Hospital

Fume Emissions Estimates

Based on methods certified in Mission Bay EIR (SCAQMD AB2588 Reporting Procedures for AB2588 Facilities, 12/2016.)

List of Assumptions/References/Notes

Estimate of count of fume hoods provided by UCSF
Fume hoods at LPPI decommissioned prior to NOP
LPPI demolition was previously approved under 2014 New Hospital
Only one active fume hood exist in the Nursing Building and is conservatively considered negligible
Assume new fume hoods have controls
Fume hood chemical inventory not implemented at Parnassus Camps, assume comparable to Mission Bay

Calculations

Potential Fume Hoods	8
Maximum Potential Fume Hoods	15
Number of Stacks Modeled	3

Chemical	CAS #	CPF $(mg/kg\text{-}day)^{-1}$	Chronic REL (ug/m^3)	Physical State	Vapor Pressure (mm Hg)	Liquids Specific Gravity	Total Amount Used $(lbs/yr)^1$	Constant Value[2]	Estimated Fraction Emitted	Estimated Emissions (lbs/yr)	Total # Fume Hoods[1]	Lbs/Yr per Fume Hood	Emission Factor to apply to AERMOD Outputs: Annual Fume Hood Source (g/s)	Emission Factor to apply to AERMOD Outputs: Hourly Fume Hood Source $(g/s)^3$
Arsenic and compounds	7440382	12	0.015	solid	0.001		0.055	NA	0.00001	0.00	14	3.93E-08	2.83E-12	1.06E-11
Benzene	71432	0.1	3	liquid	69.35	0.882	11.8	0.0001	0.006935	0.08	14	5.85E-03	4.20E-07	1.57E-06
Benzidine	92875	500	0	solid	0.1		0	NA	0.00001	0.00	14	0.00E+00	0.00E+00	0.00E+00
Benzyl chloride	100447	1.70E-01	0	liquid/solid	0.75	1.104	2.5	0.0001	0.000075	0.00	14	1.34E-05	9.63E-10	3.61E-09
Cadmium and compounds	7440439	15	0.02	solid	0		8.2	NA	0.00001	0.00	14	5.86E-06	4.21E-10	1.58E-09
Carbon tetrachloride	56235	0.15	40	liquid	85.4	1.59	29.5	0.0001	0.00854	0.25	14	1.80E-02	1.29E-06	4.84E-06
Chloroform	67663	1.90E-02	300	liquid	143.8	0.966	828.9	0.0001438	0.0206784	17.14	14	1.22E+00	8.80E-05	3.30E-04
Chromium (VI)	18540299	5.10E+02	0.2	solid	0.001		0.1	NA	0.00001	0.00	14	7.14E-08	5.14E-12	1.92E-11
Dichloroethylene, 1,1-	75354	0	70	liquid	470.6	1.25	0	0.0004706	0.2214644	0.00	14	0.00E+00	0.00E+00	0.00E+00
Dioxane, 1,4-	123911	2.70E-02	3000	liquid	26.4	1.04	45.7	0.0001	0.00264	0.12	14	8.62E-03	6.20E-07	2.32E-06
Ethylene dibromide	106934	2.50E-01	0.8	liquid	11.3	2.18	59.9	0.0001	0.00113	0.07	14	4.83E-03	3.48E-07	1.30E-06
Ethylene dichloride	107062	7.20E-02	400	liquid	54	1.25	1.4	0.0001	0.0054	0.01	14	5.40E-04	3.88E-08	1.45E-07
Formaldehyde	50000	2.10E-02	9	liquid	1	1.46	4036.8	0.0001	0.0001	0.40	14	2.88E-02	2.07E-06	7.76E-06
Hydrazine	302012	0.0049	0.2	liquid/solid	14.4	1.01	2.6	0.0001	0.00144	0.00	14	2.67E-04	1.92E-08	7.20E-08
Manganese and compounds	7439965	0	0.09	solid	0.001		1.4	NA	0.00001	0.00	14	1.00E-06	7.19E-11	2.69E-10
Mercury and compounds	7439947	0	0.03	liquid	1	13.546	0	NA	0.00001	0.00	14	0.00E+00	0.00E+00	0.00E+00
Mercuric chloride	7487947	0	0.03	solid	0.0004		1.4	0.0001	4E-08	0.00	14	4.00E-09	2.88E-13	1.08E-12
Methyl ethyl ketone	78933	0	0	liquid	65	0.805	2.8	0.0001	0.0065	0.02	14	1.30E-03	9.35E-08	3.50E-07
Methylene bis (2-chloroaniline), 4,4'-	101144	1.5	0	liquid	0.1	1.213	0	0.0001	0.00001	0.00	14	0.00E+00	0.00E+00	0.00E+00
Methylene chloride	75092	3.50E-03	400	liquid	328	1.332	203.6	0.000328	0.107584	21.90	14	1.56E+00	1.13E-04	4.21E-04
Nickel and compounds	7440020	0.91	0.014	solid	0.001		0	NA	0.00001	0.00	14	0.00E+00	0.00E+00	0.00E+00
Phosgene	75445	0	0	liquid	1130	1.43	0.6	0.00113	1.2769	0.77	14	5.47E-02	3.94E-06	1.47E-05
PAH (as benzo(a)pyrene)	50328	3.90E+00	0	liquid	0.001	1.351	0.011	0.0001	0.0000001	0.00	14	7.86E-11	5.65E-15	2.12E-14
Sulfates	14808798	0	0	solid	0.001		0	NA	0.00001	0.00	14	0.00E+00	0.00E+00	0.00E+00
Sulfuric acid/Oleum	8014957	0	1	liquid	0.001	1.97	626.3	NA	0.00001	0.01	14	4.47E-04	3.22E-08	1.20E-07
Vinyl chloride	75014	0.27	0	liquid/solid	2660	1.406	0	0.00266	7.0756	0.00	14	0.00E+00	0.00E+00	0.00E+00
Ethyl Benzene	100414	8.70E-03	2000	liquid	7.51	0.867	69.9	0.0001	0.000751	0.05	14	3.75E-03	2.70E-07	1.01E-06
Nitric Acid	7697372	0	0	liquid	48	1.5	239.3	0.0001	0.0048	1.15	14	8.20E-02	5.90E-06	2.21E-05
Sodium Hydroxide	1310732	0	0	liquid	0.001	1.5	8881.7	NA	0.00001	0.09	14	6.34E-03	4.56E-07	1.71E-06
Copper	7440508	0	0	solid	0.001		0.8	NA	0.00001	0.00	14	5.71E-07	4.11E-11	1.54E-10

1. Chemical Inventory and fume hood count from Mission Bay 2018 (Atmospheric Dynamics, Inc, 2019. Health Risk Assessment Final Report Submittal - UCSF Mission Bay Campus. May 2019)

2. Constant value used in equation to determine the fraction emitted. The methodology and subsequent equation are as follows: (Atmospheric Dynamics, Inc, 2018. Memorandum to Paul Franke, UCSF. Subject: Draft Fume Hood Emissions Quantification Methodology (Revised). December 3, 2018)

Fraction emitted = (substance VP)*(constant value)

Where,

VP = Vapor pressure at 25°C

Constant Value =

VP <= 100 mmHg, then use 0.0001

VP > 100 mmHg, then use VP/100 * 0.0001

-or-

if chemical listed below, then Fraction emitted = 0.00001

Determined list from memo
Arsenic and compounds
Benzidine
Cadmium and compounds
Chromium (VI)
Manganese and compounds
Mercury and compounds
Nickel and compounds
Sulfates
Sulfuric acid/Oleum
Sodium Hydroxide
Copper

3. Hours of operation were based on Mission Bay HRA assumption of 2340 hour/year

UCSF Parnassus Heights New Hospital
Emergency Generator Emissions

Emergency Generator Emissions - Tier 4

Conversion Factors

HP/kW	1.3410	
KW/HP	0.7457	
g/lb	453.59	
lb/MT	2,204.62	
PM10 Fraction of Total PM	0.960	Table A - Updated CEIDARS Table with PM2.5 Fractions, INTERNAL COMBUSTION - DISTILLATE AND DIESEL-ELECTRIC GENERATION
PM2.5 Fraction of Total PM	0.937	Table A - Updated CEIDARS Table with PM2.5 Fractions, INTERNAL COMBUSTION - DISTILLATE AND DIESEL-ELECTRIC GENERATION
CO2 g/gal	10.21	Climate Registry, Table 13.1: https://www.theclimateregistry.org/wp-content/uploads/2014/11/2016-Climate-Registry-Default-Emission-Factors.pdf
CH4 g/gal	0.58	Climate Registry, Table 13.7: https://www.theclimateregistry.org/wp-content/uploads/2014/11/2016-Climate-Registry-Default-Emission-Factors.pdf
N2O g/gal	0.26	Climate Registry, Table 13.7: https://www.theclimateregistry.org/wp-content/uploads/2014/11/2016-Climate-Registry-Default-Emission-Factors.pdf
GWP CH4	25	IPCC AR4
GWP N2O	298	IPCC AR4
CO2e g/gal	10,302	
CO2 g/gal	10,210	
CO2/CO2e	0.9911	

Emergency Generator Inputs

Ratings:	3,000	kW	*(Source: Project Description)*	kW
	4,023	HP	*(based on conservative engineering assumptions; conversion from kW to hp)*	HP
Number of Generators:	3			
Load Factor:	0.74		*(based on CalEEMod Generator Set Load Factor)*	
Engine Emissions Tier:	Tier 4 final		*(compliance with CARB diesel regulations)*	
Operating Hours per Unit:	2	hours/day	*(testing/maintenance -max daily. Number of hours permitted for testing and maintenance consistent with BAAQMD Regulation 9-8-*	hours/day
	50	hours/year		hours/year

Generator Emission Factors (g/bhp-hr) for engines greater than 560 kW [1]

CO	2.60	
NMHC	0.14	
NOx	0.50	
PM	0.022	
CO2 [2]	1.160	lb/hp-hr

Emergency Generator Emissions

	Units	Criteria Pollutants [1]					Greenhouse Gases	
		VOC	NO_x	CO	PM10	PM2.5	CO_2	CO_2e
emission factor	g/HP-hr	0.14	0.50	2.60	0.0211	0.0206	526.16	530.90
emission factor	lbs/hr	1.24	4.43	23.06	0.19	0.18	4666.68	4708.72
	lbs/day (max daily)	1.84	6.56	34.13	0.28	0.27	6906.69	6968.91
emissions for CAP	**lbs/day (average daily)**	**0.38**	**1.35**	**7.01**	**0.06**	**0.06**	**1419.18**	**1431.97**
	lbs/yr	137.83	492.24	2559.66	20.79	20.29	518001.48	522668.06
emissions for HRA	**tons/yr**	**0.07**	**0.25**	**1.28**	**0.01**	**0.01**	**259.00**	**261.33**
							CO2e (MT)	**237.08**

Notes:

1. Emission factors for VOC, NOx, and PM: United States: Nonroad Diesel Engines, https://dieselnet.com/standards/us/nonroad.php#tier4, Accessed March 2021.; Policy: CARB Emission Factors for CI Diesel Engines – Percent HC in Relation to NMHC + Nox:
2. Emission factor for CO2: U.S. Environmental Protection Agency, AP-42 Compilation of Air Pollutant Emission Factors, Fifth Edition, Section 3.4, Table 3.4-1. Emissions of GHGs assume 99.11% of the CO2e emissions occur as CO2, based on Climate Registry emission factors as referenced above.

Source: ESA 2021.

UCSF Parnassus Heights New Hospital

Emergency Generator Emissions

List of Assumptions/References/Notes

Assume new engine to be limited to 50 hours of O&M per year.

Engines will be Tier 4 compliant per UCSF

Three generators at 3MW each

Annual Emissions, see *Generator_pt1* tab

Total annual emissons

Pollutant	Source	UOM	
Diesel Engine Exhaust Particulate	1.04E-02	tpy	*as PM10*
$PM_{2.5}$	1.01E-02	tpy	

For AERMOD results

Pollutant	Source	UOM
Diesel Engine Exhaust Particulate	2.99E-04	g/s
$PM_{2.5}$	2.92E-04	g/s

For AERMOD results, 1 generator

Pollutant	Source	UOM
Diesel Engine Exhaust Particulate	9.97E-05	g/s
$PM_{2.5}$	9.73E-05	g/s

UCSF Parnassus Heights New Hospital
Cooling Tower Emissions

Conversion Factors

PM2.5 Fraction of PM10	0.6	Table A - Updated CEIDARS Table with PM2.5 Fractions, COOLING TOWER
Density of Water	8.34	lb/gal

Data Received

Additionally, cooling tower cutsheet has been provided from the manufacturer. Cooling towers are anticipated to operate for:

- Tower capacity is 15,000 gpm
- 1,480 equivalent full load hours (though operation is anticipated in all hours of the year at partial load)
- The TDS of circulating water in ppm by weight is 76; this is from the 2019 San Francisco Water Quality Report.
- Drift loss can be assumed to be 0.005%

Calculation Method

https://www.baaqmd.gov/~/media/files/engineering/permit-handbook/baaqmd-permit-handbook.pdf

Method 1: Total Dissolved Solids (TDS) of the circulating water is provided.

Information obtained from the applicant for a cooling tower (usually this is supplied by the cooling tower vendor to the applicant):

Capacity of the cooling tower, gallons/minute
Operating time
Total dissolved solids (TDS) of the circulating water, ppm by wt.
Drift loss (percentage of liquid water emitted to the air), %
Density of water = 8.34 lb/gallon

A conservatively high PM10 emission factor can be obtained by multiplying the drift loss by the TDS fraction in the circulating water and by assuming that, once the water evaporates, all remaining solid particles are within the PM10 size range.

PM10 Emissions = (capacity) x (TDS) x (drift loss) x (density of water) x (operating hours)

Cooling Tower Inputs

Capacity:	15,000	gpm
Operating time:	1480	hour/year
TDS:	76	ppm
Drift loss:	0.005%	

Cooling Tower Emissions

	Units	Criteria Pollutants	
		PM10	PM2.5
emission factor	lbs/min	0.00	0.00
emission factor	lbs/hour	0.03	0.02
emissions for CAP	**lbs/day (average daily)**	**0.12**	**0.07**
	lbs/yr	42.21	25.33
emissions for HRA	**tons/yr**	**0.02**	**0.01**

Emissions Calculations as Applied to AERMOD Sources

Source	$PM_{2.5}$ (g/s)
COOL	3.64E-04

UCSF Parnassus Heights New Hospital

Truck Delivery Emissions Estimates

Emissions for the New Hospital only

List of Assumptions/References/Notes

Current Parnassus Heights delivery vehicle fleet mix is assumed to be the same for NHPH

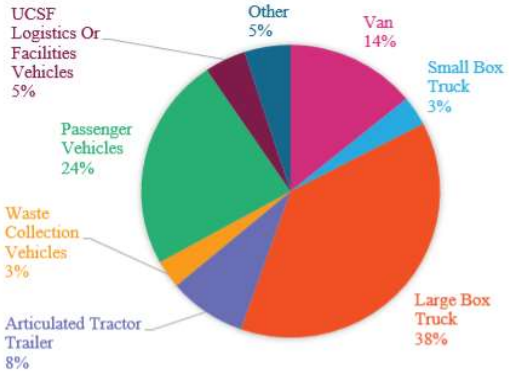
Based on interviews with the UCSF Nutrition staff, it is assumed that 5% of trucks will have TRUs.

It is unknown if deliveries would occur at a smaller loadering dock adjacent to the New Hospital Kitchen. The loading dock was considered in the analysis but may not be required.

Only diesel and natural gas fueled vehicles were considered in the HRA. Fuel fleet % are based on the EMFAC2021 for San Francisco County in 2031

Assume all vehicle types excluding passenger vehicles make deliveries

Emissions Calculation Inputs



UCSF Vehicle Type	UCSF Fleet Mix	Truck Fleet Mix	EMFAC Vehicle Class	Fuel Percentage		PM10 Idling EF		PM2.5 Idling EF		
				Diesel	Nat. Gas	Diesel	Nat. Gas	Diesel	Nat. Gas	
UCSF Logistics/Facility Vehicles	5%	7%	LHDT2	60%	0%	0.807	0.000	0.772	0.000	g/hr
Passenger Vehicles	24%	0%	LDA	0.11%	0%	0.000	0.000	0.000	0.000	g/hr
Waste Collection Vehicles	3%	4%	HHDT	75%	17%	0.021	0.012	0.020	0.011	g/hr
Articulated Tractor Trailer	8%	11%	HHDT	75%	17%	0.021	0.012	0.020	0.011	g/hr
Van	14%	18%	LHDT1	29%	0%	0.796	0.000	0.761	0.000	g/hr
Small Box Truck	3%	4%	MHDT	75%	1%	0.024	0.056	0.023	0.051	g/hr
Large Box Truck	38%	50%	MHDT	75%	1%	0.024	0.056	0.023	0.051	g/hr
Other	5%	7%	LHDT1	29%	0%	0.796	0.000	0.761	0.000	g/hr

Total Vehicles	176	per day	Idling Time:	Truck	10	min/trip	*assume 5 min @arrival + 5 min @departure*
Percent TRU	5%	of all delivery vehicles		TRU	60	min/trip	*conservative assumption*

UCSF Vehicle Type	OFFROAD TRU Type	TRU %	PM10 EF	PM2.5 EF	
UCSF Logistics/Facility Vehicles	n/a	0%	n/a	n/a	g/hr
Passenger Vehicles	n/a	0%	n/a	n/a	g/hr
Waste Collection Vehicles	n/a	0%	n/a	n/a	g/hr
Articulated Tractor Trailer	TRU - Instate Trailer TRU	0.6%	0.358	0.329	g/hr
Van	TRU - Instate Van TRU	1.1%	0.816	0.751	g/hr
Small Box Truck	TRU - Instate Truck TRU	0.2%	1.278	1.176	g/hr
Large Box Truck	TRU - Instate Truck TRU	3.0%	1.278	1.176	g/hr
Other	n/a	0%	n/a	n/a	g/hr

Emissions Calculation

Truck Idling Annual Emissions

Pollutant	Estimated Emissions (lbs/yr)
Diesel Engine Exhaust Particulate	2.40
$PM_{2.5}$	2.31

TRU Idling Annual Emissions

Pollutant	Estimated Emissions (lbs/yr)
Diesel Engine Exhaust Particulate	7.50
$PM_{2.5}$	6.90

Emissions Calculations as Applied to AERMOD Sources

AERMOD Source	Size (sq. m)	Description
TRUCK1/TRU1	1006.2	Existing main loading dock, portion along medical center way
TRUCK2/TRU2	750	Existing main loading dock, portion at the end of medical center way
TRUCK3/TRU3	665.5	Potential new loading dock by New Hospital Kitchen

Emissions Allocation

To conservatively represent the sources, 100% of the emissions will come from the main loading dock sources. The potential new loading dock will assume a percent of the emissions based on the size.

Main Loading Dock Emissions	100%
Potential New Loading Dock Emissions	38%

Truck Idling Annual Emissions

Source	DPM (g/s)	$PM_{2.5}$ (g/s)
TRUCK1	1.98E-05	1.90E-05
TRUCK2	1.47E-05	1.42E-05
TRUCK3	1.31E-05	1.26E-05

TRU Idling Annual Emissions

Source	DPM (g/s)	$PM_{2.5}$ (g/s)
TRU1	6.18E-05	5.68E-05
TRU2	4.60E-05	4.24E-05
TRU3	4.09E-05	3.76E-05

AERMOD Inputs

Table AIR-1

Overall AERMOD Modeling Parameters

Pathway	Description	Parameter
Control	Averaging Time	Period average, 1-Hour Maximum
	Urban Population	4,749,008 [a]
	Model Version	AERMOD v19191
Source	Spacing	*See Table AIR-2 and Table AIR-3*
	Release Height	*See Table AIR-2 and Table AIR-3*
	Initial Vertical Dimension	*See Table AIR-2 and Table AIR-3*
	Initial Lateral Dimension	*See Table AIR-2 and Table AIR-3*
	Variable Emission Factor	*See Table AIR-2 and Table AIR-3*
Buildings	Building Downwash Included?	Construction Model: No Operational Model: Yes
Terrain	Horizontal Datum	NAD 83
	National Elevation Dataset	1/3 arc-second
Receptor	Receptor Height, all	1.8m [b]
	Grid	20m x 20m [b]
Meteorology	Surface Data	San Francisco International Airport (Site # 23234) [c]
	On-Site Station	Mission Bay (Site #5803) [c]
	Upper Air	Oakland (Site #23230) [c]
	Station Elevation	2.0 m
	MET Data Years	2008-2012

NOTES:

[a] San Francisco-Oakland-Berkeley, CA MSA 2020 Census

[b] from the Citywide-HRA (SF DPH & SF Planning, 2020)

[c] from BAAQMD, stations consistent with the CRRP-HRA (BAAQMD, SF DPH & SF Planning, 2012)

SOURCES:

1. San Francisco Department of Public Health, and San Francisco Planning Department. 2020. San Francisco Citywide Health Risk
2. California Air Resources Board. 2015. Meteorological Files. Available at https://www.arb.ca.gov/toxics/harp/metfiles2.htm. Accessed May 2019.

ABBREVIATIONS:

AERMOD = American Meteorological Society/Environmental Protection Agency regulatory air dispersion model
NAD = North American Datum
m = meters

Table AIR-2
Source Modeling Parameters

Period	Source	Source Type [a]	Variable Emissions	Number of Sources [b]	Release Height [c] [m]	Initial Vertical Dimension [d] [m]	Initial Lateral Dimension [m]	Source Area [e] [m^2]	Source Length [f] [m]	Source Width [g] [m]
Construction	Off-Road Construction Equipment	Area	Factor of 1.6 applied to MET hours [08-22] Factor of 0 for all other hours	1	5	1.4	n/a	6,506.9	n/a	n/a
	Haul Truck Idling	Area	Factor of 1.6 applied to MET hours [08-22] Factor of 0 for all other hours	1	2.55	2.37	n/a	6,506.9	n/a	n/a
	On-Road Trucks -	Line Area	Factor of 1.6 applied to MET hours [08-22] Factor of 0 for all other hours	—	2.55	2.37	n/a	n/a	595	16
Operations	Delivery Truck Idling	Area	No variable emissions	3	2.55	2.37		665.5 (NH Kitchen) 1,006.2 (Existing Pt1) 750 (Existing Pt2)	n/a	n/a
	Delivery Truck TRU Idling	Volume	No variable emissions	3	5	1.4	4.65	400 (NH Kitchen) 1,006.5 (Existing Pt1) 400 (Existing Pt2)	n/a	n/a
	Cooling Tower	Volume	No variable emissions	1	99.2	42.6	5.81	625	n/a	n/a
	Emergency Diesel Generators	Stack	No variable emissions	3	99.2	n/a	n/a	*see Table AIR-3 for additional source parameters*		
	Fume Hood	Stack	No variable emissions	3	41.5	n/a	n/a	*see Table AIR-3 for additional source parameters*		
	CUP - Boiler 1 and Boiler 2	Stack	No variable emissions	2	24.7	n/a	n/a	*see Table AIR-3 for additional source parameters*		
	CUP - CT1+DB1 and CT2+DB2	Stack	No variable emissions	2	24.7	n/a	n/a	*see Table AIR-3 for additional source parameters*		

NOTES:

[a] Construction is modeled as an area source covering the project site

[b] The number of on-road mobile sources is based on the geometry of the truck or traffic routes.

[c] For on-road construction trucks and operational delivery truck idling at street-level, the release height is equal to 0.5 * top of plume height, which is equal to 1.7 * the vehicle height, which is equal to 3 meters; equation = 0.5 * 1.7 * 3 = 2.55 (USEPA 2012).

[d] Initial vertical dimension for off-road construction equipment and on-road operational mobile sources from the Citywide-HRA (BAAQMD, SF DPH & SF Planning, 2012). Initial vertical dimension for on-road construction trucks and truck idling is equal to the top of the plume height ÷ 2.15 = 1.7 * 3 / 2.15 = 2.37.

[e] Area value generated by AERMOD.

[f] Length value generated by AERMOD.

[g] Roadway side length includes road lane widths plus mixing zone.

SOURCES:

1. United States Environmental Protection Agency. 2012. Haul Road Workgroup Final Report Submission to EPA-OAQPS. March. Available at: https://www3.epa.gov/scram001/reports/Haul_Road_Workgroup-Final_Report_Package-
2. United States Environmental Protection Agency. 2016a. User's Guide for the AMS/EPA Regulatory Model – AERMOD. December. Available at https://www3.epa.gov/ttn/scram/models/aermod/aermod_userguide.pdf. Accessed November 2019.

ABBREVIATIONS:

NH =New Hospital
m = meters

Table AIR-3

Stack Source Modeling Parameters

Period	Source	Source Type	Variable Emissions	Number of Sources	Release Height [a] [m]	Gas Exit Temperature [b] [K]	Stack Inside Diameter [c] [m]	Gas Exit Velocity [d] [m/s]	Gas Exit Flow Rate [e] [m^3/s]
Operations	Emergency Diesel Generators	Stack	No variable emissions	3	99.2	726.2	0.3	192	9.7
	Fume Hood	Stack	No variable emissions	3	97.7	*ambient*	0.2	513.9	16.7
	CUP - Boiler 1 and Boiler 2	Stack	No variable emissions	2	24.7	409.3	1.2	6.9	8.0
	CUP - CT1+DB1 and CT2+DB2	Stack	No variable emissions	2	24.7	411.5	1.2	23.9	28.7

NOTES:

[a] Release height for emergency generators and fume hood stack are 20 ft + Building height per P. Franke (UCSF). Release heights for CUP are from P-Forms submitted with permit application #10962 (BAAQMD, 1993)

[b] Gas exit temperatures for CUP are from P-Forms submitted with permit application #10962 (BAAQMD, 1993). Emergency diesel parameters obtain from specification sheet for a 3 MW EDG (Kohler, 2017).

[c] Stack diameter for CUP are from P-Forms submitted with permit application #10962 (BAAQMD, 1993). Fume hood parameters provided by UCSF *Attachment C_UCSF-NHPH_OperationalDataNeeds_Health Risk_20210514.doc* . Emergency diesel parameters obtain from specification sheet for a 3 MW EDG (Kohler, 2017).

[d] Fume hood parameters provided by UCSF *Attachment C_UCSF-NHPH_OperationalDataNeeds_Health Risk_20210514.doc* . Emergency diesel parameters obtain from specification sheet for a 3 MW EDG (Kohler, 2017).

[e] Stack flow rate for CUP are from P-Forms submitted with permit application #10962 (BAAQMD, 1993). Emergency diesel parameters obtain from specification sheet for a 3 MW EDG Kohler, 2017).

SOURCES:

1. Kohler, 2017. G5589 Spec Sheet. Available: http://resources.kohler.com/power/kohler/industrial/pdf/g5589.pdf

2. BAAQMD, 1993. New/Modified Industrial Permit Application (Application #10962). Received via public records requested, available: http://www.baaqmd.gov/contact-us/request-public-records

ABBREVIATIONS:

K = degrees Kelvin

m = meters

s = seconds

Construction HRA Calculations (Unmitigated)

UCSF Parnassus Heights New Hospital
New Hospital (2031)
Unmitigated New Hospital Construction Cancer Risk Calculations for Residential Child Receptor

Haul Truck Trip Adjustment Factor to Model

	One Way (miles)	
	NHPH	
CalEEMod, Haul	20	*haul truck trip distance as modeled in CalEEMod*
CalEEMod, Vend	7.3	*vendor trip distance as modeled in CalEEMod*
AERMOD	0.37	
% in Dispersion Model, Haul	2%	
% in Dispersion Model, Vend	5%	

Construction Emissions, *as applied to AERMOD results*

				Days				Total Unmitigated DPM (tons)				Total Unmitigated DPM (g/s)			
	Year	Start Date	Stop Date	3rd Trimester	0<2	2<16	Duration	Offroad	Hauling	Vendor	Idle	Offroad	Hauling	Vendor	Idle
New Hospital	2022	9/1/2022	12/31/2022	90.00	32.00	0.00	122	9.23E-03	6.00E-05	0.00E+00	1.42E-06	7.94E-04	9.54E-08	0.00E+00	1.22E-07
	2023	1/1/2023	12/31/2023	0.00	365.00	0.00	365	2.85E-02	1.20E-04	0.00E+00	3.24E-06	8.18E-04	6.38E-08	0.00E+00	9.32E-08
	2024	1/1/2024	12/31/2024	0.00	333.00	33.00	366	2.39E-02	6.20E-03	1.84E-02	2.12E-03	6.87E-04	3.29E-06	2.67E-05	6.07E-05
	2025	1/1/2025	12/31/2025	0.00	0.00	365.00	365	1.70E-02	0.00E+00	1.08E-02	1.06E-03	4.88E-04	0.00E+00	1.57E-05	3.05E-05
	2026	1/1/2026	12/31/2026	0.00	0.00	365.00	365	2.97E-02	0.00E+00	1.17E-02	1.06E-03	8.55E-04	0.00E+00	1.71E-05	3.06E-05
	2027	1/1/2027	12/31/2027	0.00	0.00	365.00	365	2.11E-02	0.00E+00	8.96E-03	7.53E-04	6.07E-04	0.00E+00	1.31E-05	2.17E-05
	2028	1/1/2028	12/31/2028	0.00	0.00	366.00	366	6.86E-03	0.00E+00	4.04E-03	3.02E-04	1.97E-04	0.00E+00	5.87E-06	8.65E-06
	2029	1/1/2029	12/31/2029	0.00	0.00	365.00	365	3.17E-03	0.00E+00	0.00E+00	0.00E+00	9.12E-05	0.00E+00	0.00E+00	0.00E+00
	2030	1/1/2030	12/31/2030	0.00	0.00	365.00	365	2.12E-03	0.00E+00	0.00E+00	1.91E-08	6.10E-05	0.00E+00	0.00E+00	5.50E-10
	2031	1/1/2031	12/31/2031	0.00	0.00	365.00	365	2.16E-03	0.00E+00	0.00E+00	1.77E-08	6.21E-05	0.00E+00	0.00E+00	5.09E-10
	2032	1/1/2032	12/31/2032	0.00	0.00	366.00	366	2.16E-03	0.00E+00	0.00E+00	1.65E-08	6.20E-05	0.00E+00	0.00E+00	4.74E-10

Risk Factors

	Abbreviation	UOM	3rd Trimester	0<2	2<16
Daily Breathing Rate (95th %'ile)	DBR	L/kg-day	361	1090	572
Fraction Of Time At Home	FAH	unitless	0.85	0.85	0.72
Exposure Frequency	EF	days/year	0.96	0.96	0.96
Age Sensitivity Factor	ASF	unitless	10	10	3
Inhalation Absorption Factor	A	unitless	1	1	1
Conversion Factor	CF_1	m^3/L	0.001	0.001	0.001
Conversion Factor	CF_2	$\mu g/m^3$	0.001	0.001	0.001
Cancer Potency Factor (diesel exhaust)	CPF	mg/kg-day^{-1}	1.1	1.1	1.1
Averaging Time (for residential exposure)	AT	years	70.00	70.00	70.00

Intake Factor for Inhalation, IF (m^3/kg-day)

	Year	Equation	3rd Trimester	0<2	2<16
New Hospital					
	2022		0.010	0.011	0.000
	2023		0.000	0.127	0.000
	2024		0.000	0.116	0.002
	2025	DBR*FAH*EF	0.000	0.000	0.017
	2026	*ED*ASF*A*	0.000	0.000	0.017
	2027	CF/AT	0.000	0.000	0.017
	2028		0.000	0.000	0.017
	2029		0.000	0.000	0.017
	2030		0.000	0.000	0.017
	2031		0.000	0.000	0.017
	2032		0.000	0.000	0.017

Risk Calculation Part 1, R1

	3rd Trimester	0<2	2<16
	1.14E-05	1.22E-05	0.00E+00
	0.00E+00	1.40E-04	0.00E+00
	0.00E+00	1.27E-04	1.69E-06
	0.00E+00	0.00E+00	1.86E-05
IF*CPF*CF	0.00E+00	0.00E+00	1.86E-05
	0.00E+00	0.00E+00	1.86E-05
	0.00E+00	0.00E+00	1.87E-05
	0.00E+00	0.00E+00	1.86E-05
	0.00E+00	0.00E+00	1.86E-05
	0.00E+00	0.00E+00	1.86E-05
	0.00E+00	0.00E+00	1.87E-05

Diesel Particulate Matter concentration, C_{DPM} (ug/m^3)

		HDMC										
X (UTM)	Y (UTM	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
547980	4179760	4.85E-02	4.99E-02	4.80E-02	3.29E-02	5.54E-02	3.94E-02	1.30E-02	5.56E-03	3.72E-03	3.79E-03	3.78E-03
547980	4179780	3.97E-02	4.09E-02	4.19E-02	2.83E-02	4.68E-02	3.34E-02	1.12E-02	4.56E-03	3.05E-03	3.11E-03	3.10E-03
548000	4179760	3.98E-02	4.10E-02	3.95E-02	2.71E-02	4.55E-02	3.24E-02	1.07E-02	4.57E-03	3.06E-03	3.11E-03	3.10E-03
547980	4179740	3.89E-02	4.00E-02	3.82E-02	2.62E-02	4.42E-02	3.14E-02	1.04E-02	4.46E-03	2.98E-03	3.04E-03	3.03E-03
547980	4179720	3.88E-02	4.00E-02	3.79E-02	2.60E-02	4.40E-02	3.13E-02	1.03E-02	4.45E-03	2.98E-03	3.03E-03	3.03E-03
547940	4179800	3.74E-02	3.86E-02	3.83E-02	2.60E-02	4.35E-02	3.10E-02	1.03E-02	4.30E-03	2.87E-03	2.93E-03	2.92E-03
547980	4179700	3.74E-02	3.85E-02	3.64E-02	2.50E-02	4.24E-02	3.01E-02	9.89E-03	4.29E-03	2.87E-03	2.92E-03	2.92E-03
547860	4179780	3.74E-02	3.86E-02	3.60E-02	2.48E-02	4.22E-02	3.00E-02	9.82E-03	4.30E-03	2.87E-03	2.93E-03	2.92E-03
548000	4179780	3.35E-02	3.45E-02	3.54E-02	2.39E-02	3.95E-02	2.82E-02	9.41E-03	3.84E-03	2.57E-03	2.62E-03	2.61E-03
548000	4179740	3.43E-02	3.53E-02	3.36E-02	2.31E-02	3.90E-02	2.77E-02	9.13E-03	3.94E-03	2.63E-03	2.68E-03	2.68E-03
547980	4179680	3.42E-02	3.53E-02	3.33E-02	2.29E-02	3.87E-02	2.75E-02	9.04E-03	3.93E-03	2.63E-03	2.68E-03	2.67E-03
548000	4179720	3.38E-02	3.48E-02	3.30E-02	2.27E-02	3.83E-02	2.73E-02	8.96E-03	3.88E-03	2.59E-03	2.64E-03	2.64E-03
548020	4179760	3.33E-02	3.43E-02	3.32E-02	2.27E-02	3.81E-02	2.71E-02	8.96E-03	3.82E-03	2.55E-03	2.60E-03	2.59E-03
548000	4179700	3.32E-02	3.42E-02	3.23E-02	2.22E-02	3.76E-02	2.67E-02	8.78E-03	3.81E-03	2.55E-03	2.60E-03	2.59E-03
548040	4179720	3.19E-02	3.29E-02	3.10E-02	2.14E-02	3.61E-02	2.57E-02	8.44E-03	3.66E-03	2.45E-03	2.50E-03	2.49E-03
548040	4179740	3.17E-02	3.27E-02	3.10E-02	2.13E-02	3.60E-02	2.56E-02	8.42E-03	3.64E-03	2.43E-03	2.48E-03	2.47E-03
548020	4179740	3.09E-02	3.18E-02	3.03E-02	2.08E-02	3.51E-02	2.50E-02	8.21E-03	3.55E-03	2.37E-03	2.42E-03	2.41E-03
548000	4179680	3.05E-02	3.14E-02	2.97E-02	2.04E-02	3.46E-02	2.46E-02	8.07E-03	3.50E-03	2.34E-03	2.39E-03	2.38E-03
548020	4179720	3.01E-02	3.10E-02	2.94E-02	2.02E-02	3.42E-02	2.43E-02	7.99E-03	3.46E-03	2.31E-03	2.36E-03	2.35E-03
548060	4179720	2.98E-02	3.07E-02	2.90E-02	1.99E-02	3.37E-02	2.40E-02	7.88E-03	3.42E-03	2.29E-03	2.33E-03	2.32E-03
548020	4179780	2.84E-02	2.93E-02	3.00E-02	2.03E-02	3.35E-02	2.39E-02	7.99E-03	3.26E-03	2.18E-03	2.22E-03	2.22E-03
548040	4179700	2.94E-02	3.03E-02	2.85E-02	1.96E-02	3.33E-02	2.36E-02	7.77E-03	3.37E-03	2.26E-03	2.30E-03	2.29E-03
548060	4179700	2.93E-02	3.02E-02	2.84E-02	1.95E-02	3.31E-02	2.35E-02	7.72E-03	3.36E-03	2.25E-03	2.29E-03	2.28E-03
548020	4179700	2.90E-02	2.98E-02	2.82E-02	1.94E-02	3.28E-02	2.33E-02	7.66E-03	3.32E-03	2.22E-03	2.27E-03	2.26E-03
548040	4179760	2.81E-02	2.90E-02	2.83E-02	1.93E-02	3.24E-02	2.31E-02	7.64E-03	3.23E-03	2.16E-03	2.20E-03	2.19E-03
547980	4179660	2.82E-02	2.91E-02	2.74E-02	1.89E-02	3.19E-02	2.27E-02	7.45E-03	3.24E-03	2.16E-03	2.21E-03	2.20E-03
548020	4179680	2.66E-02	2.74E-02	2.59E-02	1.78E-02	3.01E-02	2.14E-02	7.03E-03	3.05E-03	2.04E-03	2.08E-03	2.07E-03
548060	4179740	2.58E-02	2.66E-02	2.56E-02	1.75E-02	2.95E-02	2.10E-02	6.93E-03	2.97E-03	1.98E-03	2.02E-03	2.02E-03
548080	4179700	2.61E-02	2.69E-02	2.53E-02	1.74E-02	2.95E-02	2.10E-02	6.88E-03	3.00E-03	2.00E-03	2.04E-03	2.04E-03
548060	4179680	2.60E-02	2.68E-02	2.52E-02	1.74E-02	2.94E-02	2.09E-02	6.87E-03	2.99E-03	2.00E-03	2.04E-03	2.03E-03
548000	4179660	2.59E-02	2.67E-02	2.52E-02	1.73E-02	2.93E-02	2.09E-02	6.85E-03	2.97E-03	1.99E-03	2.03E-03	2.02E-03
547940	4179820	2.56E-02	2.64E-02	2.53E-02	1.73E-02	2.92E-02	2.08E-02	6.85E-03	2.94E-03	1.96E-03	2.00E-03	2.00E-03
547960	4179820	2.51E-02	2.59E-02	2.53E-02	1.73E-02	2.90E-02	2.06E-02	6.83E-03	2.89E-03	1.93E-03	1.97E-03	1.96E-03
548040	4179780	2.44E-02	2.51E-02	2.58E-02	1.74E-02	2.88E-02	2.05E-02	6.86E-03	2.80E-03	1.87E-03	1.90E-03	1.90E-03
548040	4179680	2.52E-02	2.60E-02	2.45E-02	1.69E-02	2.85E-02	2.03E-02	6.66E-03	2.89E-03	1.94E-03	1.97E-03	1.97E-03
548080	4179680	2.51E-02	2.58E-02	2.42E-02	1.67E-02	2.83E-02	2.01E-02	6.60E-03	2.87E-03	1.92E-03	1.96E-03	1.95E-03
547920	4179820	2.43E-02	2.51E-02	2.37E-02	1.63E-02	2.76E-02	1.96E-02	6.45E-03	2.79E-03	1.87E-03	1.90E-03	1.90E-03
548060	4179760	2.38E-02	2.45E-02	2.42E-02	1.65E-02	2.75E-02	1.96E-02	6.50E-03	2.73E-03	1.83E-03	1.86E-03	1.86E-03
547980	4179820	2.35E-02	2.42E-02	2.42E-02	1.64E-02	2.74E-02	1.95E-02	6.49E-03	2.70E-03	1.81E-03	1.84E-03	1.84E-03
548020	4179660	2.32E-02	2.39E-02	2.25E-02	1.55E-02	2.62E-02	1.86E-02	6.12E-03	2.66E-03	1.78E-03	1.81E-03	1.81E-03
548080	4179720	2.30E-02	2.36E-02	2.25E-02	1.55E-02	2.61E-02	1.86E-02	6.11E-03	2.63E-03	1.76E-03	1.80E-03	1.79E-03
548000	4179820	2.16E-02	2.23E-02	2.27E-02	1.54E-02	2.55E-02	1.82E-02	6.06E-03	2.48E-03	1.66E-03	1.69E-03	1.69E-03
548080	4179740	2.20E-02	2.27E-02	2.19E-02	1.50E-02	2.52E-02	1.80E-02	5.93E-03	2.53E-03	1.69E-03	1.72E-03	1.72E-03
548100	4179680	2.22E-02	2.29E-02	2.15E-02	1.48E-02	2.51E-02	1.78E-02	5.85E-03	2.55E-03	1.70E-03	1.74E-03	1.73E-03
548060	4179780	2.11E-02	2.17E-02	2.24E-02	1.51E-02	2.49E-02	1.78E-02	5.95E-03	2.42E-03	1.62E-03	1.65E-03	1.64E-03
548040	4179660	2.19E-02	2.26E-02	2.13E-02	1.46E-02	2.48E-02	1.76E-02	5.79E-03	2.52E-03	1.68E-03	1.71E-03	1.71E-03
548080	4179660	2.20E-02	2.26E-02	2.12E-02	1.46E-02	2.48E-02	1.76E-02	5.78E-03	2.52E-03	1.69E-03	1.72E-03	1.71E-03
547860	4179800	2.19E-02	2.26E-02	2.11E-02	1.46E-02	2.47E-02	1.76E-02	5.76E-03	2.51E-03	1.68E-03	1.71E-03	1.71E-03
548060	4179660	2.15E-02	2.22E-02	2.09E-02	1.44E-02	2.43E-02	1.73E-02	5.68E-03	2.47E-03	1.65E-03	1.68E-03	1.68E-03
547900	4179820	2.13E-02	2.20E-02	2.07E-02	1.42E-02	2.41E-02	1.71E-02	5.63E-03	2.45E-03	1.64E-03	1.67E-03	1.66E-03
547980	4179640	2.10E-02	2.16E-02	2.04E-02	1.40E-02	2.37E-02	1.69E-02	5.54E-03	2.41E-03	1.61E-03	1.64E-03	1.64E-03
548080	4179760	2.05E-02	2.11E-02	2.09E-02	1.42E-02	2.37E-02	1.69E-02	5.61E-03	2.35E-03	1.57E-03	1.60E-03	1.60E-03
548020	4179820	1.97E-02	2.03E-02	2.12E-02	1.43E-02	2.35E-02	1.68E-02	5.62E-03	2.26E-03	1.51E-03	1.54E-03	1.54E-03
548100	4179700	2.00E-02	2.06E-02	1.95E-02	1.34E-02	2.27E-02	1.61E-02	5.30E-03	2.29E-03	1.53E-03	1.56E-03	1.56E-03
548100	4179660	2.00E-02	2.06E-02	1.94E-02	1.33E-02	2.26E-02	1.61E-02	5.28E-03	2.30E-03	1.54E-03	1.57E-03	1.56E-03
548000	4179640	1.99E-02	2.05E-02	1.94E-02	1.33E-02	2.25E-02	1.60E-02	5.26E-03	2.28E-03	1.53E-03	1.56E-03	1.55E-03
548100	4179720	1.97E-02	2.03E-02	1.95E-02	1.33E-02	2.25E-02	1.60E-02	5.27E-03	2.26E-03	1.51E-03	1.54E-03	1.54E-03
548080	4179780	1.85E-02	1.91E-02	1.99E-02	1.34E-02	2.20E-02	1.57E-02	5.27E-03	2.13E-03	1.42E-03	1.45E-03	1.44E-03
548100	4179740	1.90E-02	1.96E-02	1.90E-02	1.30E-02	2.18E-02	1.55E-02	5.13E-03	2.18E-03	1.46E-03	1.48E-03	1.48E-03
548040	4179820	1.77E-02	1.82E-02	1.97E-02	1.31E-02	2.14E-02	1.53E-02	5.17E-03	2.03E-03	1.36E-03	1.38E-03	1.38E-03
548120	4179660	1.88E-02	1.94E-02	1.82E-02	1.25E-02	2.12E-02	1.51E-02	4.95E-03	2.16E-03	1.44E-03	1.47E-03	1.47E-03
548060	4179640	1.86E-02	1.91E-02	1.80E-02	1.24E-02	2.10E-02	1.49E-02	4.90E-03	2.13E-03	1.43E-03	1.45E-03	1.45E-03
548020	4179640	1.84E-02	1.89E-02	1.78E-02	1.23E-02	2.08E-02	1.48E-02	4.85E-03	2.11E-03	1.41E-03	1.44E-03	1.43E-03
548080	4179640	1.84E-02	1.89E-02	1.78E-02	1.22E-02	2.07E-02	1.47E-02	4.84E-03	2.11E-03	1.41E-03	1.44E-03	1.43E-03
548100	4179760	1.78E-02	1.83E-02	1.82E-02	1.24E-02	2.07E-02	1.47E-02	4.89E-03	2.04E-03	1.37E-03	1.39E-03	1.39E-03
547960	4179840	1.78E-02	1.83E-02	1.75E-02	1.20E-02	2.03E-02	1.44E-02	4.76E-03	2.04E-03	1.36E-03	1.39E-03	1.39E-03
547940	4179840	1.78E-02	1.84E-02	1.74E-02	1.20E-02	2.03E-02	1.44E-02	4.74E-03	2.05E-03	1.37E-03	1.40E-03	1.39E-03
548040	4179640	1.79E-02	1.84E-02	1.73E-02	1.19E-02	2.02E-02	1.44E-02	4.72E-03	2.05E-03	1.37E-03	1.40E-03	1.39E-03

Risk Calculation Part 2

	$\sum R1*C_{DPM}$				Cancer Risk	
	3rd Trimester	0<2	2<16	Total	per million	Receptor Determination
	5.53E-07	1.37E-05	3.02E-06	1.73E-05	17.26	pot. res.
	4.53E-07	1.15E-05	2.56E-06	1.45E-05	14.55	pot. res.
	4.54E-07	1.12E-05	2.48E-06	1.42E-05	14.18	pot. res.
	4.43E-07	1.09E-05	2.41E-06	1.38E-05	13.78	pot. res.
	4.42E-07	1.09E-05	2.40E-06	1.37E-05	13.72	pot. res.
	4.27E-07	1.07E-05	2.37E-06	1.35E-05	13.52	pot. res.
	4.26E-07	1.05E-05	2.31E-06	1.32E-05	13.21	pot. res.
	4.27E-07	1.04E-05	2.29E-06	1.31E-05	13.15	pot. res.
	3.82E-07	9.73E-06	2.16E-06	1.23E-05	12.27	pot. res.
	3.91E-07	9.64E-06	2.12E-06	1.22E-05	12.16	pot. res.
	3.90E-07	9.58E-06	2.11E-06	1.21E-05	12.08	pot. res.
	3.85E-07	9.48E-06	2.09E-06	1.19E-05	11.95	pot. res.
	3.79E-07	9.42E-06	2.08E-06	1.19E-05	11.88	pot. res.
	3.79E-07	9.30E-06	2.05E-06	1.17E-05	11.72	pot. res.
	3.64E-07	8.94E-06	1.97E-06	1.13E-05	11.27	pot. res.
	3.61E-07	8.89E-06	1.96E-06	1.12E-05	11.21	pot. res.
	3.52E-07	8.68E-06	1.91E-06	1.09E-05	10.94	pot. res.
	3.48E-07	8.55E-06	1.88E-06	1.08E-05	10.77	pot. res.
	3.44E-07	8.45E-06	1.86E-06	1.07E-05	10.65	pot. res.
	3.40E-07	8.34E-06	1.84E-06	1.05E-05	10.52	pot. res.
	3.24E-07	8.26E-06	1.83E-06	1.04E-05	10.41	pot. res.
	3.35E-07	8.22E-06	1.81E-06	1.04E-05	10.37	pot. res.
	3.34E-07	8.18E-06	1.80E-06	1.03E-05	10.32	pot. res.
	3.30E-07	8.11E-06	1.79E-06	1.02E-05	10.23	pot. res.
	3.21E-07	8.00E-06	1.77E-06	1.01E-05	10.09	pot. res.
	3.22E-07	7.90E-06	1.74E-06	9.96E-06	9.96	pot. res.
	3.03E-07	7.45E-06	1.64E-06	9.39E-06	9.39	pot. res.
	2.95E-07	7.29E-06	1.61E-06	9.20E-06	9.20	pot. res.
	2.98E-07	7.29E-06	1.61E-06	9.19E-06	9.19	pot. res.
	2.97E-07	7.28E-06	1.60E-06	9.18E-06	9.18	pot. res.
	2.95E-07	7.25E-06	1.60E-06	9.15E-06	9.15	pot. res.
	2.92E-07	7.21E-06	1.59E-06	9.10E-06	9.10	pot. res.
	2.87E-07	7.15E-06	1.58E-06	9.01E-06	9.01	pot. res.
	2.78E-07	7.09E-06	1.57E-06	8.94E-06	8.94	pot. res.
	2.88E-07	7.06E-06	1.55E-06	8.90E-06	8.90	pot. res.
	2.86E-07	6.99E-06	1.54E-06	8.82E-06	8.82	pot. res.
	2.77E-07	6.82E-06	1.50E-06	8.59E-06	8.59	pot. res.
	2.72E-07	6.79E-06	1.50E-06	8.57E-06	8.57	pot. res.
	2.68E-07	6.76E-06	1.50E-06	8.52E-06	8.52	pot. res.
	2.64E-07	6.49E-06	1.43E-06	8.18E-06	8.18	pot. res.
	2.62E-07	6.45E-06	1.42E-06	8.13E-06	8.13	pot. res.
	2.47E-07	6.27E-06	1.39E-06	7.91E-06	7.91	pot. res.
	2.51E-07	6.23E-06	1.38E-06	7.86E-06	7.86	pot. res.
	2.53E-07	6.20E-06	1.36E-06	7.82E-06	7.82	pot. res.
	2.40E-07	6.14E-06	1.36E-06	7.75E-06	7.75	pot. res.
	2.50E-07	6.13E-06	1.35E-06	7.73E-06	7.73	pot. res.
	2.50E-07	6.13E-06	1.35E-06	7.73E-06	7.73	pot. res.
	2.50E-07	6.11E-06	1.34E-06	7.70E-06	7.70	pot. res.
	2.46E-07	6.02E-06	1.32E-06	7.59E-06	7.59	pot. res.
	2.43E-07	5.96E-06	1.31E-06	7.51E-06	7.51	pot. res.
	2.39E-07	5.87E-06	1.29E-06	7.40E-06	7.40	pot. res.
	2.34E-07	5.86E-06	1.30E-06	7.39E-06	7.39	pot. res.
	2.25E-07	5.78E-06	1.29E-06	7.29E-06	7.29	pot. res.
	2.28E-07	5.60E-06	1.23E-06	7.06E-06	7.06	pot. res.
	2.28E-07	5.59E-06	1.23E-06	7.05E-06	7.05	pot. res.
	2.27E-07	5.57E-06	1.23E-06	7.03E-06	7.03	pot. res.
	2.25E-07	5.56E-06	1.23E-06	7.01E-06	7.01	pot. res.
	2.11E-07	5.42E-06	1.21E-06	6.84E-06	6.84	pot. res.
	2.16E-07	5.38E-06	1.19E-06	6.79E-06	6.79	pot. res.
	2.02E-07	5.27E-06	1.17E-06	6.65E-06	6.65	pot. res.
	2.15E-07	5.25E-06	1.16E-06	6.62E-06	6.62	pot. res.
	2.12E-07	5.19E-06	1.14E-06	6.55E-06	6.55	pot. res.
	2.09E-07	5.13E-06	1.13E-06	6.47E-06	6.47	pot. res.
	2.09E-07	5.13E-06	1.13E-06	6.47E-06	6.47	pot. res.
	2.03E-07	5.10E-06	1.13E-06	6.43E-06	6.43	pot. res.
	2.03E-07	5.01E-06	1.10E-06	6.32E-06	6.32	pot. res.
	2.03E-07	5.00E-06	1.10E-06	6.31E-06	6.31	pot. res.
	2.04E-07	5.00E-06	1.10E-06	6.30E-06	6.30	pot. res.

UCSF Parnassus Heights New Hospital

New Hospital (2031)

Unmitigated Construction Cancer Risk Calculations for Daycare and School Receptors

		Daycare1		Daycare2		Daycare3		School1	School2	School3	School4
Name		Lucia Child Care Center		ABC Bay Area Child Care		Kirkham Child Care Center		Clarendon Alternative Elementary	Independence High	Stepping Stones Preschool	Haight Ashbury Community Nursery School
Max Exposure (years)		5		5		5		7	5	4	4
Exposure Duration	Year	0<2	2<9	0<2	2<9	0<2	2<9	2<16	2<16	2<16	2<16
New Hospital	2022	122.00	0.00	122.00	0.00	122.00	0.00	122.00	122.00	0.00	0.00
	2023	365.00	0.00	365.00	0.00	365.00	0.00	365.00	365.00	365.00	365.00
	2024	243.00	123.00	243.00	123.00	243.00	123.00	366.00	366.00	366.00	366.00
	2025	0.00	365.00	0.00	365.00	0.00	365.00	365.00	365.00	365.00	365.00
	2026	0.00	365.00	0.00	365.00	0.00	365.00	365.00	365.00	365.00	365.00
	2027	0.00	243.00	0.00	243.00	0.00	243.00	365.00	243.00	0.00	0.00
	2028	0.00	0.00	0.00	0.00	0.00	0.00	366.00	0.00	0.00	0.00
	2029	0.00	0.00	0.00	0.00	0.00	0.00	242.00	0.00	0.00	0.00
	2030	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2031	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2032	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		730.00	1096.0	730	1096	730	1096	2556.00	1826.00	1461	1461.00

Risk Factors			Daycare		School
	Abbreviation	UOM	0<2	2<9	2<16
BHR Breathing Rate (95th %'ile, moderate intensity)	BR	L/kg-day	1200	640	520
Fraction Of Time At Home	FAH	unitless	0.33	0.33	0.33
Exposure Frequency	EF	days/year	0.68	0.68	0.49
Age Sensitivity Factor	ASF	unitless	10	3	3
Inhalation Absorption Factor	A	unitless	1	1	1
Modeling Adjustment Factor	MAF	unitless	1.4	1.4	1.4
Conversion Factor	CF_1	m^3/L	0.001	0.001	0.001
Conversion Factor	CF_2	$\mu g/m^3$	0.001	0.001	0.001
Cancer Potency Factor (diesel exhaust)	CPF	$mg/kg\text{-}day^{-1}$	1.1	1.1	1.1
Averaging Time (for residential exposure)	AT	years	70.00	70.00	70.00

Intake Factor for Inhalation, IF (m^3/kg-day)			Daycare1		Daycare2		Daycare3		School1	School2	School3	School4
	Year	Equation	0<2	2<9	0<2	2<9	0<2	2<9	2<16	2<16	2<16	2<16
New Hospital												
	2022		0.018	0.000	0.018	0.000	0.018	0.000	0.002	0.002	0.000	0.000
	2023		0.054	0.000	0.054	0.000	0.054	0.000	0.005	0.005	0.005	0.005
	2024		0.036	0.003	0.036	0.003	0.036	0.003	0.005	0.005	0.005	0.005
	2025	BR*FAH*EF*	0.000	0.009	0.000	0.009	0.000	0.009	0.005	0.005	0.005	0.005
	2026	ED*ASF*A*	0.000	0.009	0.000	0.009	0.000	0.009	0.005	0.005	0.005	0.005
	2027	MAF*CF/AT	0.000	0.006	0.000	0.006	0.000	0.006	0.005	0.003	0.000	0.000
	2028		0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.000	0.000
	2029		0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.000	0.000	0.000
	2030		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	2031		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	2032		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Risk Calculation Part 1, R1			Daycare1		Daycare2		Daycare3		School1	School2	School3	School4
	Year	Equation	0<2	2<9	0<2	2<9	0<2	2<9	2<16	2<16	2<16	2<16
New Hospital	2022		1.99E-05	0.00E+00	1.99E-05	0.00E+00	1.99E-05	0.00E+00	1.87E-06	1.87E-06	0.00E+00	0.00E+00
	2023		5.97E-05	0.00E+00	5.97E-05	0.00E+00	5.97E-05	0.00E+00	5.59E-06	5.59E-06	5.59E-06	5.59E-06
	2024		3.97E-05	3.22E-06	3.97E-05	3.22E-06	3.97E-05	3.22E-06	5.60E-06	5.60E-06	5.60E-06	5.60E-06
	2025		0.00E+00	9.55E-06	0.00E+00	9.55E-06	0.00E+00	9.55E-06	5.59E-06	5.59E-06	5.59E-06	5.59E-06
	2026		0.00E+00	9.55E-06	0.00E+00	9.55E-06	0.00E+00	9.55E-06	5.59E-06	5.59E-06	5.59E-06	5.59E-06
	2027	IF*CPF*CF	0.00E+00	6.36E-06	0.00E+00	6.36E-06	0.00E+00	6.36E-06	5.59E-06	3.72E-06	0.00E+00	0.00E+00
	2028		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.60E-06	0.00E+00	0.00E+00	0.00E+00
	2029		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.70E-06	0.00E+00	0.00E+00	0.00E+00
	2030		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	2031		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	2032		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Diesel Particulate Matter concentration, C_{DPM} (ug/m^3)

		HDMC										
X (UTM)	Y (UTM	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
547880	4178580	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
547900	4178580	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
547920	4178580	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
547860	4178600	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
547880	4178600	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
547900	4178600	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
547920	4178600	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
547880	4178620	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
547900	4178620	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
547880	4178640	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
547900	4178640	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
547920	4178640	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
547880	4178660	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
547900	4178660	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
547920	4178660	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
547900	4178680	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
547920	4178680	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
547940	4178680	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
547220	4179660	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.000	0.000	0.000	0.000
547240	4179660	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.000	0.000	0.000	0.000
547220	4179680	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.000	0.000	0.000	0.000
547240	4179680	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.000	0.000	0.000	0.000
547160	4179700	0.001	0.001	0.001	0.000	0.001	0.001	0.000	0.000	0.000	0.000	0.000
547180	4179700	0.001	0.001	0.001	0.000	0.001	0.001	0.000	0.000	0.000	0.000	0.000
547160	4179720	0.001	0.001	0.001	0.000	0.001	0.001	0.000	0.000	0.000	0.000	0.000
547180	4179720	0.001	0.001	0.001	0.000	0.001	0.001	0.000	0.000	0.000	0.000	0.000
548260	4179620	0.007	0.007	0.011	0.006	0.009	0.006	0.002	0.001	0.001	0.001	0.001
548280	4179620	0.007	0.007	0.010	0.005	0.008	0.006	0.002	0.001	0.001	0.001	0.001
548260	4179640	0.008	0.008	0.011	0.006	0.009	0.007	0.002	0.001	0.001	0.001	0.001
548280	4179640	0.007	0.007	0.010	0.005	0.008	0.006	0.002	0.001	0.001	0.001	0.001
547540	4179680	0.003	0.003	0.004	0.002	0.003	0.003	0.001	0.000	0.000	0.000	0.000
547560	4179680	0.003	0.003	0.005	0.003	0.004	0.003	0.001	0.000	0.000	0.000	0.000
547540	4179660	0.003	0.003	0.004	0.002	0.004	0.003	0.001	0.000	0.000	0.000	0.000
547560	4179660	0.003	0.003	0.005	0.003	0.004	0.003	0.001	0.000	0.000	0.000	0.000
547200	4179140	0.001	0.001	0.001	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000
547220	4179140	0.001	0.001	0.001	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000
547460	4179400	0.002	0.002	0.002	0.001	0.002	0.001	0.000	0.000	0.000	0.000	0.000
547480	4179400	0.002	0.002	0.002	0.001	0.002	0.001	0.000	0.000	0.000	0.000	0.000

Risk Calculation Part 2

$R1*\Sigma C_{DPM}$	
HDMC	
4.08E-03	Clarendon Alternative Elementary
4.00E-03	Clarendon Alternative Elementary
4.03E-03	Clarendon Alternative Elementary
4.11E-03	Clarendon Alternative Elementary
4.04E-03	Clarendon Alternative Elementary
3.94E-03	Clarendon Alternative Elementary
3.98E-03	Clarendon Alternative Elementary
4.07E-03	Clarendon Alternative Elementary
4.03E-03	Clarendon Alternative Elementary
4.18E-03	Clarendon Alternative Elementary
4.14E-03	Clarendon Alternative Elementary
4.12E-03	Clarendon Alternative Elementary
4.23E-03	Clarendon Alternative Elementary
4.16E-03	Clarendon Alternative Elementary
4.11E-03	Clarendon Alternative Elementary
4.21E-03	Clarendon Alternative Elementary
4.17E-03	Clarendon Alternative Elementary
4.13E-03	Clarendon Alternative Elementary
2.29E-02	Independence High
2.42E-02	Independence High
2.25E-02	Independence High
2.38E-02	Independence High
1.55E-02	Stepping Stones Preschool
1.63E-02	Stepping Stones Preschool
1.52E-02	Stepping Stones Preschool
1.59E-02	Stepping Stones Preschool
1.80E-01	Haight Ashbury Community Nursery School
1.67E-01	Haight Ashbury Community Nursery School
1.85E-01	Haight Ashbury Community Nursery School
1.72E-01	Haight Ashbury Community Nursery School
4.86E-01	Lucia Child Care Center
5.57E-01	Lucia Child Care Center
5.03E-01	Lucia Child Care Center
5.73E-01	Lucia Child Care Center
9.33E-02	ABC Bay Area Child Care
9.48E-02	ABC Bay Area Child Care
2.54E-01	Kirkham Child Care Center
2.67E-01	Kirkham Child Care Center

UCSF Parnassus Heights New Hospital

New Hospital (2031)

Unmitigated Construction Hazard Index Calculations for Residential Child Receptor

Haul Truck Trip Adjustment Factor to Model

	One Way (miles)	
	HDMC	
CalEEMod, Haul	20	*haul truck trip distance as modeled in CalEEMod*
CalEEMod, Vend	7.3	*vendor trip distance as modeled in CalEEMod*
AERMOD	0.37	
% in Dispersion Model, Haul	2%	
% in Dispersion Model, Vend	5%	

HI DPM	
5	µg/m^3

Construction Emissions, *as applied to AERMOD results*

				Days				Total Unmitigated DPM (tons)				Total Unmitigated DPM (g/s)			
	Year	Start Date	Stop Date	3rd Trimester	0<2	2<16	Duration	Offroad	Hauling	Vendor	Idle	Offroad	Hauling	Vendor	Idle
New Hospital	2022	9/1/2022	12/31/2022	90.00	32.00	0.00	122	9.23E-03	1.00E-04	0.00E+00	2.27E-06	7.94E-04	1.59E-07	0.00E+00	1.95E-07
	2023	1/1/2023	12/31/2023	0.00	365.00	0.00	365	2.76E-02	1.80E-04	0.00E+00	5.18E-06	7.93E-04	9.57E-08	0.00E+00	1.49E-07
	2024	1/1/2024	12/31/2024	0.00	333.00	33.00	366	3.95E-02	5.85E-03	8.50E-04	2.42E-04	1.13E-03	3.10E-06	1.23E-06	6.93E-06
	2025	1/1/2025	12/31/2025	0.00	0.00	365.00	365	2.00E-02	0.00E+00	3.61E-03	3.55E-04	5.76E-04	0.00E+00	5.26E-06	1.02E-05
	2026	1/1/2026	12/31/2026	0.00	0.00	365.00	365	3.04E-02	0.00E+00	1.24E-02	1.12E-03	8.74E-04	0.00E+00	1.80E-05	3.22E-05
	2027	1/1/2027	12/31/2027	0.00	0.00	365.00	365	2.25E-02	0.00E+00	9.46E-03	7.94E-04	6.46E-04	0.00E+00	1.38E-05	2.28E-05
	2028	1/1/2028	12/31/2028	0.00	0.00	366.00	366	7.85E-03	0.00E+00	4.26E-03	3.18E-04	2.25E-04	0.00E+00	6.19E-06	9.12E-06
	2029	1/1/2029	12/31/2029	0.00	0.00	365.00	365	3.53E-03	0.00E+00	0.00E+00	0.00E+00	1.02E-04	0.00E+00	0.00E+00	0.00E+00
	2030	1/1/2030	12/31/2030	0.00	0.00	365.00	365	2.12E-03	2.50E-04	8.07E-03	4.65E-04	6.10E-05	1.33E-07	1.18E-05	1.34E-05
	2031	1/1/2031	12/31/2031	0.00	0.00	365.00	365	2.16E-03	3.00E-05	8.10E-03	4.36E-04	6.21E-05	1.60E-08	1.18E-05	1.25E-05
	2032	1/1/2032	12/31/2032	0.00	0.00	366.00	366	2.16E-03	2.00E-05	8.04E-03	4.06E-04	6.20E-05	1.06E-08	1.17E-05	1.16E-05

Diesel Particulate Matter concentration, C_{DPM} (ug/m^3)

		HDMC										Max	Max Year	HI		
X (UTM)	Y (UTM	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	µg/m^3		unitless	Receptor Determination	
547180	4179700	6.74E-04	6.72E-04	9.69E-04	5.00E-04	7.78E-04	5.75E-04	2.02E-04	8.61E-05	6.98E-05	7.00E-05	6.90E-05	9.69E-04	2024	1.94E-04	Stepping St School	1
547180	4179720	6.58E-04	6.57E-04	9.47E-04	4.89E-04	7.60E-04	5.62E-04	1.97E-04	8.41E-05	6.82E-05	6.84E-05	6.75E-05	9.47E-04	2024	1.89E-04	Stepping St School	2
547160	4179700	6.41E-04	6.39E-04	9.22E-04	4.76E-04	7.40E-04	5.47E-04	1.92E-04	8.19E-05	6.64E-05	6.67E-05	6.57E-05	9.22E-04	2024	1.84E-04	Stepping St School	3
547160	4179720	6.26E-04	6.25E-04	9.01E-04	4.65E-04	7.23E-04	5.35E-04	1.88E-04	8.00E-05	6.49E-05	6.52E-05	6.43E-05	9.01E-04	2024	1.80E-04	Stepping St School	4
547980	4179760	4.85E-02	4.84E-02	6.99E-02	3.62E-02	5.67E-02	4.19E-02	1.48E-02	6.19E-03	5.48E-03	5.49E-03	5.41E-03	6.99E-02	2024	1.40E-02	pot. res.	1
547980	4179780	3.97E-02	3.97E-02	5.77E-02	3.01E-02	4.80E-02	3.55E-02	1.26E-02	5.08E-03	5.50E-03	5.50E-03	5.43E-03	5.77E-02	2024	1.15E-02	pot. res.	2
548000	4179760	3.98E-02	3.97E-02	5.74E-02	2.97E-02	4.66E-02	3.45E-02	1.22E-02	5.09E-03	4.52E-03	4.53E-03	4.47E-03	5.74E-02	2024	1.15E-02	pot. res.	3
547980	4179740	3.89E-02	3.88E-02	5.60E-02	2.90E-02	4.53E-02	3.35E-02	1.18E-02	4.97E-03	4.23E-03	4.24E-03	4.17E-03	5.60E-02	2024	1.12E-02	pot. res.	4
547980	4179720	3.88E-02	3.87E-02	5.59E-02	2.89E-02	4.51E-02	3.33E-02	1.17E-02	4.96E-03	4.12E-03	4.13E-03	4.06E-03	5.59E-02	2024	1.12E-02	pot. res.	5
547940	4179800	3.74E-02	3.74E-02	5.42E-02	2.82E-02	4.45E-02	3.29E-02	1.17E-02	4.78E-03	4.72E-03	4.72E-03	4.66E-03	5.42E-02	2024	1.08E-02	pot. res.	6
547860	4179780	3.74E-02	3.74E-02	5.39E-02	2.78E-02	4.31E-02	3.19E-02	1.12E-02	4.79E-03	3.77E-03	3.78E-03	3.72E-03	5.39E-02	2024	1.08E-02	pot. res.	7
547980	4179700	3.74E-02	3.73E-02	5.39E-02	2.78E-02	4.34E-02	3.20E-02	1.13E-02	4.78E-03	3.91E-03	3.92E-03	3.86E-03	5.39E-02	2024	1.08E-02	pot. res.	8
548000	4179740	3.43E-02	3.42E-02	4.94E-02	2.56E-02	3.99E-02	2.95E-02	1.04E-02	4.38E-03	3.72E-03	3.72E-03	3.67E-03	4.94E-02	2024	9.89E-03	pot. res.	9
547980	4179680	3.42E-02	3.42E-02	4.93E-02	2.54E-02	3.97E-02	2.93E-02	1.03E-02	4.37E-03	3.57E-03	3.57E-03	3.52E-03	4.93E-02	2024	9.86E-03	pot. res.	10
547560	4179660	3.48E-03	3.47E-03	5.00E-03	2.58E-03	4.00E-03	2.96E-03	1.04E-03	4.45E-04	3.50E-04	3.51E-04	3.46E-04	5.00E-03	2024	1.00E-03	Lucia Child Day Care	1
547560	4179680	3.38E-03	3.37E-03	4.86E-03	2.51E-03	3.89E-03	2.87E-03	1.01E-03	4.32E-04	3.40E-04	3.41E-04	3.36E-04	4.86E-03	2024	9.73E-04	Lucia Child Day Care	2
547540	4179660	3.05E-03	3.04E-03	4.39E-03	2.26E-03	3.51E-03	2.59E-03	9.11E-04	3.90E-04	3.07E-04	3.09E-04	3.04E-04	4.39E-03	2024	8.77E-04	Lucia Child Day Care	3
547540	4179680	2.95E-03	2.95E-03	4.25E-03	2.19E-03	3.40E-03	2.51E-03	8.81E-04	3.77E-04	2.98E-04	2.99E-04	2.94E-04	4.25E-03	2024	8.49E-04	Lucia Child Day Care	4
547480	4179400	1.62E-03	1.62E-03	2.33E-03	1.20E-03	1.87E-03	1.38E-03	4.86E-04	2.07E-04	1.67E-04	1.67E-04	1.65E-04	2.33E-03	2024	4.66E-04	Kirkham Ch Day Care	1
547460	4179400	1.54E-03	1.54E-03	2.22E-03	1.14E-03	1.78E-03	1.31E-03	4.62E-04	1.97E-04	1.59E-04	1.59E-04	1.57E-04	2.22E-03	2024	4.43E-04	Kirkham Ch Day Care	2
547240	4179660	8.27E-04	8.25E-04	1.19E-03	6.14E-04	9.54E-04	7.05E-04	2.48E-04	1.06E-04	8.54E-05	8.57E-05	8.45E-05	1.19E-03	2024	2.38E-04	IndependenSchool	1
547240	4179680	8.12E-04	8.11E-04	1.17E-03	6.03E-04	9.37E-04	6.93E-04	2.44E-04	1.04E-04	8.39E-05	8.42E-05	8.30E-05	1.17E-03	2024	2.34E-04	IndependenSchool	2
547220	4179660	7.81E-04	7.79E-04	1.12E-03	5.80E-04	9.02E-04	6.66E-04	2.34E-04	9.98E-05	8.08E-05	8.10E-05	7.99E-05	1.12E-03	2024	2.25E-04	IndependenSchool	3
547220	4179680	7.68E-04	7.66E-04	1.10E-03	5.70E-04	8.86E-04	6.55E-04	2.30E-04	9.81E-05	7.94E-05	7.97E-05	7.86E-05	1.10E-03	2024	2.21E-04	IndependenSchool	4
548260	4179640	7.61E-03	7.59E-03	1.10E-02	5.67E-03	8.87E-03	6.56E-03	2.31E-03	9.72E-04	8.37E-04	8.38E-04	8.26E-04	1.10E-02	2024	2.19E-03	Haight AshbSchool	1
548260	4179620	7.39E-03	7.37E-03	1.06E-02	5.50E-03	8.60E-03	6.35E-03	2.24E-03	9.44E-04	8.01E-04	8.02E-04	7.91E-04	1.06E-02	2024	2.13E-03	Haight AshbSchool	2
548280	4179640	7.05E-03	7.03E-03	1.02E-02	5.26E-03	8.23E-03	6.08E-03	2.14E-03	9.01E-04	7.80E-04	7.81E-04	7.70E-04	1.02E-02	2024	2.03E-03	Haight AshbSchool	3
548280	4179620	6.87E-03	6.86E-03	9.90E-03	5.12E-03	8.00E-03	5.91E-03	2.08E-03	8.78E-04	7.49E-04	7.50E-04	7.39E-04	9.90E-03	2024	1.98E-03	Haight AshbSchool	4
547420	4179560	1.66E-03	1.66E-03	2.39E-03	1.23E-03	1.92E-03	1.42E-03	4.99E-04	2.13E-04	1.71E-04	1.71E-04	1.69E-04	2.39E-03	2024	4.79E-04	Fifth Ave HoRes Hall	1
547420	4179540	1.64E-03	1.64E-03	2.36E-03	1.22E-03	1.89E-03	1.40E-03	4.92E-04	2.10E-04	1.69E-04	1.69E-04	1.67E-04	2.36E-03	2024	4.72E-04	Fifth Ave HoRes Hall	2
547420	4179520	1.62E-03	1.62E-03	2.33E-03	1.20E-03	1.87E-03	1.38E-03	4.86E-04	2.07E-04	1.67E-04	1.67E-04	1.65E-04	2.33E-03	2024	4.67E-04	Fifth Ave HoRes Hall	3
547420	4179500	1.60E-03	1.59E-03	2.30E-03	1.19E-03	1.84E-03	1.36E-03	4.79E-04	2.04E-04	1.64E-04	1.65E-04	1.63E-04	2.30E-03	2024	4.60E-04	Fifth Ave HoRes Hall	4
547420	4179480	1.56E-03	1.55E-03	2.24E-03	1.16E-03	1.80E-03	1.33E-03	4.67E-04	1.99E-04	1.61E-04	1.61E-04	1.59E-04	2.24E-03	2024	4.48E-04	Fifth Ave HoRes Hall	5
547420	4179460	1.52E-03	1.51E-03	2.18E-03	1.13E-03	1.75E-03	1.29E-03	4.55E-04	1.94E-04	1.56E-04	1.57E-04	1.55E-04	2.18E-03	2024	4.36E-04	Fifth Ave HoRes Hall	6
547420	4179440	1.48E-03	1.48E-03	2.13E-03	1.10E-03	1.71E-03	1.26E-03	4.44E-04	1.89E-04	1.53E-04	1.53E-04	1.51E-04	2.13E-03	2024	4.26E-04	Fifth Ave HoRes Hall	7
547420	4179420	1.43E-03	1.42E-03	2.05E-03	1.06E-03	1.65E-03	1.22E-03	4.28E-04	1.82E-04	1.47E-04	1.48E-04	1.46E-04	2.05E-03	2024	4.11E-04	Fifth Ave HoRes Hall	8
547420	4179400	1.38E-03	1.37E-03	1.98E-03	1.02E-03	1.59E-03	1.17E-03	4.13E-04	1.76E-04	1.42E-04	1.43E-04	1.41E-04	1.98E-03	2024	3.96E-04	Fifth Ave HoRes Hall	9
547880	4178660	1.28E-04	1.27E-04	1.84E-04	9.51E-05	1.49E-04	1.10E-04	3.87E-05	1.63E-05	1.39E-05	1.40E-05	1.38E-05	1.84E-04	2024	3.68E-05	Clarendon ASchool	1
547900	4178680	1.27E-04	1.27E-04	1.83E-04	9.47E-05	1.48E-04	1.09E-04	3.85E-05	1.62E-05	1.39E-05	1.39E-05	1.37E-05	1.83E-04	2024	3.66E-05	Clarendon ASchool	2
547880	4178640	1.26E-04	1.26E-04	1.82E-04	9.40E-05	1.47E-04	1.09E-04	3.82E-05	1.61E-05	1.38E-05	1.38E-05	1.36E-05	1.82E-04	2024	3.64E-05	Clarendon ASchool	3
547920	4178680	1.26E-04	1.26E-04	1.81E-04	9.37E-05	1.46E-04	1.08E-04	3.81E-05	1.61E-05	1.37E-05	1.38E-05	1.36E-05	1.81E-04	2024	3.63E-05	Clarendon ASchool	4
547900	4178660	1.26E-04	1.25E-04	1.81E-04	9.35E-05	1.46E-04	1.08E-04	3.80E-05	1.60E-05	1.37E-05	1.37E-05	1.35E-05	1.81E-04	2024	3.62E-05	Clarendon ASchool	5
547900	4178640	1.25E-04	1.25E-04	1.80E-04	9.31E-05	1.45E-04	1.08E-04	3.79E-05	1.60E-05	1.36E-05	1.37E-05	1.35E-05	1.80E-04	2024	3.60E-05	Clarendon ASchool	6
547940	4178680	1.25E-04	1.24E-04	1.79E-04	9.28E-05	1.45E-04	1.07E-04	3.77E-05	1.59E-05	1.36E-05	1.36E-05	1.34E-05	1.79E-04	2024	3.59E-05	Clarendon ASchool	7
547920	4178640	1.24E-04	1.24E-04	1.79E-04	9.25E-05	1.45E-04	1.07E-04	3.76E-05	1.59E-05	1.35E-05	1.36E-05	1.34E-05	1.79E-04	2024	3.58E-05	Clarendon ASchool	8
547860	4178600	1.24E-04	1.24E-04	1.79E-04	9.24E-05	1.44E-04	1.07E-04	3.76E-05	1.59E-05	1.35E-05	1.36E-05	1.34E-05	1.79E-04	2024	3.58E-05	Clarendon ASchool	9
547920	4178660	1.24E-04	1.24E-04	1.79E-04	9.24E-05	1.44E-04	1.07E-04	3.76E-05	1.58E-05	1.35E-05	1.36E-05	1.34E-05	1.79E-04	2024	3.57E-05	Clarendon ASchool	10
548120	4179300	4.64E-04	4.63E-04	6.68E-04	3.45E-04	5.38E-04	3.98E-04	1.40E-04	5.93E-05	4.96E-05	4.97E-05	4.90E-05	6.68E-04	2024	1.34E-04	Aldea Hous Res Hall	1
548100	4179300	4.60E-04	4.59E-04	6.62E-04	3.42E-04	5.34E-04	3.94E-04	1.39E-04	5.88E-05	4.93E-05	4.94E-05	4.87E-05	6.62E-04	2024	1.32E-04	Aldea Hous Res Hall	2
548140	4179280	4.23E-04	4.22E-04	6.10E-04	3.15E-04	4.91E-04	3.63E-04	1.28E-04	5.41E-05	4.52E-05	4.53E-05	4.47E-05	6.10E-04	2024	1.22E-04	Aldea Hous Res Hall	3
548120	4179280	4.17E-04	4.16E-04	6.01E-04	3.10E-04	4.84E-04	3.58E-04	1.26E-04	5.33E-05	4.47E-05	4.48E-05	4.42E-05	6.01E-04	2024	1.20E-04	Aldea Hous Res Hall	4
548100	4179280	4.14E-04	4.13E-04	5.97E-04	3.08E-04	4.81E-04	3.56E-04	1.25E-04	5.29E-05	4.45E-05	4.46E-05	4.40E-05	5.97E-04	2024	1.19E-04	Aldea Hous Res Hall	5
548140	4179260	3.89E-04	3.89E-04	5.61E-04	2.90E-04	4.52E-04	3.34E-04	1.18E-04	4.98E-05	4.17E-05	4.18E-05	4.12E-05	5.61E-04	2024	1.12E-04	Aldea Hous Res Hall	6
548120	4179260	3.82E-04	3.81E-04	5.50E-04	2.84E-04	4.44E-04	3.28E-04	1.15E-04	4.88E-05	4.10E-05	4.11E-05	4.05E-05	5.50E-04	2024	1.10E-04	Aldea Hous Res Hall	7
548100	4179260	3.79E-04	3.78E-04	5.46E-04	2.82E-04	4.40E-04	3.25E-04	1.14E-04	4.84E-05	4.07E-05	4.08E-05	4.03E-05	5.46E-04	2024	1.09E-04	Aldea Hous Res Hall	8
548140	4179240	3.62E-04	3.61E-04	5.22E-04	2.69E-04	4.20E-04	3.11E-04	1.09E-04	4.63E-05	3.88E-05	3.89E-05	3.84E-05	5.22E-04	2024	1.04E-04	Aldea Hous Res Hall	9
548120	4179240	3.56E-04	3.55E-04	5.13E-04	2.65E-04	4.14E-04	3.06E-04	1.08E-04	4.55E-05	3.83E-05	3.84E-05	3.79E-05	5.13E-04	2024	1.03E-04	Aldea Hous Res Hall	10
547220	4179140	5.75E-04	5.74E-04	8.28E-04	4.27E-04	6.66E-04	4.92E-04	1.73E-04	7.35E-05	6.04E-05	6.06E-05	5.97E-05	8.28E-04	2024	1.66E-04	ABC Bay Ar Day Care	1
547200	4179140	5.66E-04	5.64E-04	8.14E-04	4.20E-04	6.55E-04	4.84E-04	1.70E-04	7.23E-05	5.94E-05	5.96E-05	5.88E-05	8.14E-04	2024	1.63E-04	ABC Bay Ar Day Care	2
547600	4179700	4.23E-03	4.22E-03	6.08E-03	3.13E-03	4.86E-03	3.59E-03	1.26E-03	5.41E-04	4.24E-04	4.25E-04	4.19E-04	6.08E-03	2024	1.22E-03	3rd Ave HouRes Hall	1
547600	4179720	3.96E-03	3.95E-03	5.69E-03	2.93E-03	4.55E-03	3.36E-03	1.18E-03	5.06E-04	3.97E-04	3.98E-04	3.93E-04	5.69E-03	2024	1.14E-03	3rd Ave HouRes Hall	2
547600	4179740	3.65E-03	3.64E-03	5.25E-03	2.71E-03	4.20E-03	3.10E-03	1.09E-03	4.67E-04	3.67E-04	3.68E-04	3.63E-04	5.25E-03	2024	1.05E-03	3rd Ave HouRes Hall	3
547600	4179760	3.34E-03	3.33E-03	4.80E-03	2.47E-03	3.84E-03	2.84E-03	9.97E-04	4.27E-04	3.36E-04	3.38E-04	3.33E-04	4.80E-03	2024	9.60E-04	3rd Ave HouRes Hall	4
547600	4179780	3.00E-03	2.99E-03	4.31E-03	2.22E-03	3.45E-03	2.55E-03	8.95E-04	3.83E-04	3.03E-04	3.04E-04	3.00E-04	4.31E-03	2024	8.62E-04	145 Irving S Res Hall	1
547580	4179780	2.66E-03	2.65E-03	3.82E-03	1.97E-03	3.06E-03	2.26E-03	7.95E-04	3.40E-04	2.70E-04	2.70E-04	2.67E-04	3.82E-03	2024	7.65E-04	145 Irving S Res Hall	2

UCSF Parnassus Heights New Hospital

New Hospital (2031)

Unmitigated Construction Annual PM2.5 Concentration by Construction Year

Haul Truck Trip Adjustment Factor to Model

	One Way (miles)	
	HDMC	
CalEEMod, Haul	20	*haul truck trip distance as modeled in CalEEMod*
CalEEMod, Vend	7.3	*vendor trip distance as modeled in CalEEMod*
AERMOD	0.37	
% in Dispersion Model, Haul	2%	
% in Dispersion Model, Vend	5%	

Construction Emissions, *as applied to AERMOD results*

				Days				Total Unmitigated PM2.5 (tons)				Total Unmitigated PM2.5 (g/s)			
	Year	Start Date	Stop Date	3rd Trimester	0<2	2<16	Duration	Offroad	Hauling	Vendor	Idle	Offroad	Hauling	Vendor	Idle
New Hospital	2022	9/1/2022	12/31/2022	90.00	32.00	0.00	122	8.56E-03	1.00E-04	0.00E+00	2.17E-06	7.37E-04	1.59E-07	0.00E+00	1.87E-07
	2023	1/1/2023	12/31/2023	0.00	365.00	0.00	365	2.56E-02	1.80E-04	0.00E+00	4.96E-06	7.35E-04	9.57E-08	0.00E+00	1.43E-07
	2024	1/1/2024	12/31/2024	0.00	333.00	33.00	366	3.64E-02	5.59E-03	8.10E-04	2.31E-04	1.04E-03	2.96E-06	1.18E-06	6.63E-06
	2025	1/1/2025	12/31/2025	0.00	0.00	365.00	365	1.85E-02	0.00E+00	3.46E-03	3.40E-04	5.32E-04	0.00E+00	5.04E-06	9.77E-06
	2026	1/1/2026	12/31/2026	0.00	0.00	365.00	365	2.84E-02	0.00E+00	1.18E-02	1.07E-03	8.17E-04	0.00E+00	1.72E-05	3.08E-05
	2027	1/1/2027	12/31/2027	0.00	0.00	365.00	365	2.13E-02	0.00E+00	9.04E-03	7.60E-04	6.12E-04	0.00E+00	1.32E-05	2.19E-05
	2028	1/1/2028	12/31/2028	0.00	0.00	366.00	366	7.69E-03	0.00E+00	4.07E-03	3.04E-04	2.21E-04	0.00E+00	5.91E-06	8.73E-06
	2029	1/1/2029	12/31/2029	0.00	0.00	365.00	365	3.26E-03	0.00E+00	0.00E+00	0.00E+00	9.38E-05	0.00E+00	0.00E+00	0.00E+00
	2030	1/1/2030	12/31/2030	0.00	0.00	365.00	365	2.12E-03	2.30E-04	7.72E-03	4.45E-04	6.10E-05	1.22E-07	1.12E-05	1.28E-05
	2031	1/1/2031	12/31/2031	0.00	0.00	365.00	365	2.16E-03	2.00E-05	7.75E-03	4.17E-04	6.21E-05	1.06E-08	1.13E-05	1.20E-05
	2032	1/1/2032	12/31/2032	0.00	0.00	366.00	366	2.16E-03	2.00E-05	7.69E-03	3.88E-04	6.20E-05	1.06E-08	1.12E-05	1.11E-05

Particulate Matter concentration, $C_{PM2.5}$ (ug/m^3)

		HDMC										Max µg/m^3	Max Year	Receptor Determination	
X (UTM)	Y (UTM	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032				
547180	4179700	6.25E-04	6.23E-04	8.92E-04	4.62E-04	7.28E-04	5.45E-04	1.98E-04	7.95E-05	6.90E-05	6.93E-05	6.83E-05	8.92E-04	2024	Stepping St School	1
547180	4179720	6.11E-04	6.09E-04	8.72E-04	4.52E-04	7.11E-04	5.32E-04	1.93E-04	7.77E-05	6.74E-05	6.77E-05	6.68E-05	8.72E-04	2024	Stepping St School	2
547160	4179700	5.94E-04	5.93E-04	8.49E-04	4.40E-04	6.93E-04	5.18E-04	1.88E-04	7.56E-05	6.57E-05	6.59E-05	6.51E-05	8.49E-04	2024	Stepping St School	3
547160	4179720	5.81E-04	5.79E-04	8.30E-04	4.30E-04	6.77E-04	5.07E-04	1.84E-04	7.39E-05	6.42E-05	6.45E-05	6.36E-05	8.30E-04	2024	Stepping St School	4
547980	4179760	4.50E-02	4.48E-02	6.44E-02	3.35E-02	5.31E-02	3.97E-02	1.45E-02	5.72E-03	5.40E-03	5.41E-03	5.34E-03	6.44E-02	2024	pot. res.	1
547980	4179780	3.69E-02	3.68E-02	5.31E-02	2.79E-02	4.50E-02	3.37E-02	1.24E-02	4.69E-03	5.39E-03	5.40E-03	5.33E-03	5.31E-02	2024	pot. res.	2
548000	4179760	3.69E-02	3.68E-02	5.29E-02	2.75E-02	4.36E-02	3.27E-02	1.19E-02	4.70E-03	4.46E-03	4.47E-03	4.41E-03	5.29E-02	2024	pot. res.	3
547980	4179740	3.60E-02	3.60E-02	5.16E-02	2.68E-02	4.24E-02	3.17E-02	1.15E-02	4.59E-03	4.18E-03	4.19E-03	4.12E-03	5.16E-02	2024	pot. res.	4
547980	4179720	3.60E-02	3.59E-02	5.14E-02	2.67E-02	4.22E-02	3.15E-02	1.15E-02	4.58E-03	4.07E-03	4.08E-03	4.02E-03	5.14E-02	2024	pot. res.	5
547940	4179800	3.47E-02	3.46E-02	4.99E-02	2.60E-02	4.17E-02	3.12E-02	1.14E-02	4.42E-03	4.64E-03	4.65E-03	4.58E-03	4.99E-02	2024	pot. res.	6
547860	4179780	3.47E-02	3.46E-02	4.96E-02	2.57E-02	4.04E-02	3.02E-02	1.09E-02	4.42E-03	3.73E-03	3.74E-03	3.69E-03	4.96E-02	2024	pot. res.	7
547980	4179700	3.47E-02	3.46E-02	4.96E-02	2.57E-02	4.06E-02	3.04E-02	1.10E-02	4.41E-03	3.87E-03	3.88E-03	3.82E-03	4.96E-02	2024	pot. res.	8
548000	4179740	3.18E-02	3.17E-02	4.55E-02	2.36E-02	3.74E-02	2.80E-02	1.02E-02	4.05E-03	3.67E-03	3.68E-03	3.63E-03	4.55E-02	2024	pot. res.	9
547980	4179680	3.17E-02	3.17E-02	4.54E-02	2.35E-02	3.71E-02	2.78E-02	1.01E-02	4.04E-03	3.53E-03	3.54E-03	3.48E-03	4.54E-02	2024	pot. res.	10
547560	4179660	3.23E-03	3.22E-03	4.61E-03	2.38E-03	3.75E-03	2.80E-03	1.02E-03	4.11E-04	3.46E-04	3.47E-04	3.43E-04	4.61E-03	2024	Lucia Child Day Care	1
547560	4179680	3.14E-03	3.13E-03	4.48E-03	2.32E-03	3.64E-03	2.72E-03	9.87E-04	3.99E-04	3.36E-04	3.38E-04	3.33E-04	4.48E-03	2024	Lucia Child Day Care	2
547540	4179660	2.83E-03	2.82E-03	4.04E-03	2.09E-03	3.29E-03	2.46E-03	8.91E-04	3.60E-04	3.04E-04	3.05E-04	3.01E-04	4.04E-03	2024	Lucia Child Day Care	3
547540	4179680	2.74E-03	2.73E-03	3.91E-03	2.02E-03	3.18E-03	2.38E-03	8.62E-04	3.48E-04	2.94E-04	2.96E-04	2.92E-04	3.91E-03	2024	Lucia Child Day Care	4
547480	4179400	1.50E-03	1.50E-03	2.15E-03	1.11E-03	1.75E-03	1.31E-03	4.75E-04	1.91E-04	1.65E-04	1.66E-04	1.63E-04	2.15E-03	2024	Kirkham Ch Day Care	1
547460	4179400	1.43E-03	1.42E-03	2.04E-03	1.06E-03	1.66E-03	1.25E-03	4.52E-04	1.82E-04	1.57E-04	1.58E-04	1.55E-04	2.04E-03	2024	Kirkham Ch Day Care	2
547240	4179660	7.67E-04	7.65E-04	1.09E-03	5.67E-04	8.93E-04	6.68E-04	2.43E-04	9.76E-05	8.45E-05	8.48E-05	8.36E-05	1.09E-03	2024	IndependenSchool	1
547240	4179680	7.53E-04	7.51E-04	1.08E-03	5.57E-04	8.77E-04	6.57E-04	2.38E-04	9.58E-05	8.29E-05	8.33E-05	8.22E-05	1.08E-03	2024	IndependenSchool	2
547220	4179660	7.24E-04	7.23E-04	1.03E-03	5.36E-04	8.44E-04	6.31E-04	2.29E-04	9.22E-05	7.99E-05	8.02E-05	7.91E-05	1.03E-03	2024	IndependenSchool	3
547220	4179680	7.12E-04	7.10E-04	1.02E-03	5.27E-04	8.30E-04	6.21E-04	2.25E-04	9.06E-05	7.85E-05	7.88E-05	7.77E-05	1.02E-03	2024	IndependenSchool	4
548260	4179640	7.05E-03	7.04E-03	1.01E-02	5.24E-03	8.30E-03	6.21E-03	2.26E-03	8.98E-04	8.26E-04	8.27E-04	8.16E-04	1.01E-02	2024	Haight AshbSchool	1
548260	4179620	6.85E-03	6.83E-03	9.80E-03	5.09E-03	8.05E-03	6.02E-03	2.19E-03	8.72E-04	7.91E-04	7.93E-04	7.81E-04	9.80E-03	2024	Haight AshbSchool	2
548280	4179640	6.54E-03	6.52E-03	9.35E-03	4.86E-03	7.70E-03	5.76E-03	2.10E-03	8.32E-04	7.69E-04	7.71E-04	7.60E-04	9.35E-03	2024	Haight AshbSchool	3
548280	4179620	6.37E-03	6.36E-03	9.11E-03	4.73E-03	7.49E-03	5.60E-03	2.04E-03	8.11E-04	7.39E-04	7.41E-04	7.30E-04	9.11E-03	2024	Haight AshbSchool	4
547420	4179560	1.54E-03	1.54E-03	2.20E-03	1.14E-03	1.80E-03	1.34E-03	4.88E-04	1.96E-04	1.69E-04	1.69E-04	1.67E-04	2.20E-03	2024	Fifth Ave HoRes Hall	1
547420	4179540	1.52E-03	1.52E-03	2.17E-03	1.13E-03	1.77E-03	1.33E-03	4.81E-04	1.94E-04	1.67E-04	1.67E-04	1.65E-04	2.17E-03	2024	Fifth Ave HoRes Hall	2
547420	4179520	1.50E-03	1.50E-03	2.15E-03	1.11E-03	1.75E-03	1.31E-03	4.76E-04	1.91E-04	1.65E-04	1.66E-04	1.63E-04	2.15E-03	2024	Fifth Ave HoRes Hall	3
547420	4179500	1.48E-03	1.48E-03	2.12E-03	1.10E-03	1.73E-03	1.29E-03	4.68E-04	1.88E-04	1.63E-04	1.63E-04	1.61E-04	2.12E-03	2024	Fifth Ave HoRes Hall	4
547420	4179480	1.44E-03	1.44E-03	2.06E-03	1.07E-03	1.68E-03	1.26E-03	4.57E-04	1.84E-04	1.59E-04	1.59E-04	1.57E-04	2.06E-03	2024	Fifth Ave HoRes Hall	5
547420	4179460	1.41E-03	1.40E-03	2.01E-03	1.04E-03	1.64E-03	1.23E-03	4.45E-04	1.79E-04	1.55E-04	1.55E-04	1.53E-04	2.01E-03	2024	Fifth Ave HoRes Hall	6
547420	4179440	1.37E-03	1.37E-03	1.96E-03	1.02E-03	1.60E-03	1.20E-03	4.34E-04	1.75E-04	1.51E-04	1.52E-04	1.49E-04	1.96E-03	2024	Fifth Ave HoRes Hall	7
547420	4179420	1.32E-03	1.32E-03	1.89E-03	9.79E-04	1.54E-03	1.15E-03	4.19E-04	1.68E-04	1.46E-04	1.46E-04	1.44E-04	1.89E-03	2024	Fifth Ave HoRes Hall	8
547420	4179400	1.28E-03	1.27E-03	1.82E-03	9.44E-04	1.49E-03	1.11E-03	4.04E-04	1.62E-04	1.41E-04	1.41E-04	1.39E-04	1.82E-03	2024	Fifth Ave HoRes Hall	9
547880	4178660	1.18E-04	1.18E-04	1.69E-04	8.79E-05	1.39E-04	1.04E-04	3.78E-05	1.51E-05	1.38E-05	1.38E-05	1.36E-05	1.69E-04	2024	Clarendon ASchool	1
547900	4178680	1.18E-04	1.18E-04	1.69E-04	8.75E-05	1.38E-04	1.04E-04	3.77E-05	1.50E-05	1.37E-05	1.37E-05	1.36E-05	1.69E-04	2024	Clarendon ASchool	2
547880	4178640	1.17E-04	1.17E-04	1.67E-04	8.69E-05	1.37E-04	1.03E-04	3.74E-05	1.49E-05	1.36E-05	1.36E-05	1.34E-05	1.67E-04	2024	Clarendon ASchool	3
547920	4178680	1.17E-04	1.16E-04	1.67E-04	8.67E-05	1.37E-04	1.03E-04	3.73E-05	1.49E-05	1.36E-05	1.36E-05	1.34E-05	1.67E-04	2024	Clarendon ASchool	4
547900	4178660	1.16E-04	1.16E-04	1.67E-04	8.65E-05	1.37E-04	1.02E-04	3.72E-05	1.48E-05	1.35E-05	1.36E-05	1.34E-05	1.67E-04	2024	Clarendon ASchool	5
547900	4178640	1.16E-04	1.16E-04	1.66E-04	8.61E-05	1.36E-04	1.02E-04	3.71E-05	1.48E-05	1.35E-05	1.35E-05	1.33E-05	1.66E-04	2024	Clarendon ASchool	6
547940	4178680	1.16E-04	1.15E-04	1.65E-04	8.58E-05	1.36E-04	1.02E-04	3.69E-05	1.47E-05	1.34E-05	1.35E-05	1.33E-05	1.65E-04	2024	Clarendon ASchool	7
547920	4178640	1.15E-04	1.15E-04	1.65E-04	8.56E-05	1.35E-04	1.01E-04	3.68E-05	1.47E-05	1.34E-05	1.34E-05	1.32E-05	1.65E-04	2024	Clarendon ASchool	8
547860	4178600	1.15E-04	1.15E-04	1.65E-04	8.55E-05	1.35E-04	1.01E-04	3.68E-05	1.46E-05	1.34E-05	1.34E-05	1.32E-05	1.65E-04	2024	Clarendon ASchool	9
547920	4178660	1.15E-04	1.15E-04	1.64E-04	8.54E-05	1.35E-04	1.01E-04	3.67E-05	1.46E-05	1.34E-05	1.34E-05	1.32E-05	1.64E-04	2024	Clarendon ASchool	10
548120	4179300	4.30E-04	4.29E-04	6.15E-04	3.19E-04	5.04E-04	3.77E-04	1.37E-04	5.48E-05	4.90E-05	4.91E-05	4.85E-05	6.15E-04	2024	Aldea Hous Res Hall	1
548100	4179300	4.26E-04	4.25E-04	6.10E-04	3.16E-04	4.99E-04	3.74E-04	1.36E-04	5.43E-05	4.87E-05	4.88E-05	4.82E-05	6.10E-04	2024	Aldea Hous Res Hall	2
548140	4179280	3.93E-04	3.92E-04	5.61E-04	2.91E-04	4.60E-04	3.44E-04	1.25E-04	5.00E-05	4.46E-05	4.48E-05	4.41E-05	5.61E-04	2024	Aldea Hous Res Hall	3
548120	4179280	3.87E-04	3.86E-04	5.53E-04	2.87E-04	4.53E-04	3.39E-04	1.23E-04	4.92E-05	4.41E-05	4.43E-05	4.37E-05	5.53E-04	2024	Aldea Hous Res Hall	4
548100	4179280	3.84E-04	3.83E-04	5.49E-04	2.85E-04	4.50E-04	3.37E-04	1.22E-04	4.89E-05	4.39E-05	4.41E-05	4.35E-05	5.49E-04	2024	Aldea Hous Res Hall	5
548140	4179260	3.61E-04	3.60E-04	5.16E-04	2.68E-04	4.23E-04	3.17E-04	1.15E-04	4.60E-05	4.12E-05	4.13E-05	4.07E-05	5.16E-04	2024	Aldea Hous Res Hall	6
548120	4179260	3.54E-04	3.54E-04	5.07E-04	2.63E-04	4.15E-04	3.11E-04	1.13E-04	4.51E-05	4.05E-05	4.06E-05	4.01E-05	5.07E-04	2024	Aldea Hous Res Hall	7
548100	4179260	3.51E-04	3.50E-04	5.02E-04	2.61E-04	4.12E-04	3.08E-04	1.12E-04	4.47E-05	4.02E-05	4.04E-05	3.98E-05	5.02E-04	2024	Aldea Hous Res Hall	8
548140	4179240	3.36E-04	3.35E-04	4.80E-04	2.49E-04	3.93E-04	2.94E-04	1.07E-04	4.27E-05	3.84E-05	3.85E-05	3.80E-05	4.80E-04	2024	Aldea Hous Res Hall	9
548120	4179240	3.30E-04	3.29E-04	4.72E-04	2.45E-04	3.87E-04	2.90E-04	1.05E-04	4.20E-05	3.78E-05	3.79E-05	3.74E-05	4.72E-04	2024	Aldea Hous Res Hall	10
547220	4179140	5.33E-04	5.32E-04	7.62E-04	3.95E-04	6.23E-04	4.66E-04	1.69E-04	6.79E-05	5.97E-05	5.99E-05	5.91E-05	7.62E-04	2024	ABC Bay Ar Day Care	1
547200	4179140	5.25E-04	5.23E-04	7.49E-04	3.89E-04	6.13E-04	4.58E-04	1.66E-04	6.67E-05	5.87E-05	5.89E-05	5.81E-05	7.49E-04	2024	ABC Bay Ar Day Care	2
547600	4179700	3.92E-03	3.91E-03	5.60E-03	2.90E-03	4.55E-03	3.41E-03	1.23E-03	4.99E-04	4.19E-04	4.21E-04	4.15E-04	5.60E-03	2024	3rd Ave HouRes Hall	1
547600	4179720	3.67E-03	3.66E-03	5.24E-03	2.71E-03	4.26E-03	3.19E-03	1.16E-03	4.67E-04	3.93E-04	3.94E-04	3.89E-04	5.24E-03	2024	3rd Ave HouRes Hall	2
547600	4179740	3.39E-03	3.38E-03	4.83E-03	2.50E-03	3.93E-03	2.94E-03	1.07E-03	4.31E-04	3.63E-04	3.65E-04	3.60E-04	4.83E-03	2024	3rd Ave HouRes Hall	3
547600	4179760	3.10E-03	3.09E-03	4.42E-03	2.29E-03	3.59E-03	2.69E-03	9.75E-04	3.94E-04	3.33E-04	3.34E-04	3.30E-04	4.42E-03	2024	3rd Ave HouRes Hall	4
547600	4179780	2.78E-03	2.77E-03	3.97E-03	2.05E-03	3.23E-03	2.42E-03	8.76E-04	3.54E-04	3.00E-04	3.01E-04	2.97E-04	3.97E-03	2024	145 Irving S Res Hall	1
547580	4179780	2.47E-03	2.46E-03	3.52E-03	1.82E-03	2.87E-03	2.14E-03	7.78E-04	3.14E-04	2.67E-04	2.68E-04	2.64E-04	3.52E-03	2024	145 Irving S Res Hall	2

Construction HRA Calculations (Mitigated)

UCSF Parnassus Heights New Hospital

New Hospital (2031)

Mitigated New Hospital Construction Cancer Risk Calculations for Residential Child Receptor

UCSF Parnassus Heights LRDP

Year	Offroad
2023	2.85E-03
2024	9.67E-03
2025	4.59E-03
2026	9.18E-03
2027	4.59E-03
2028	5.09E-03
2029	5.11E-03

total day	2405	0.041
total year	6.589041	0.01

Haul Truck Trip Adjustment Factor to Model

	One Way (miles)	
	HDMC	
CalEEMod, Haul	20	*haul truck trip distance as modeled in CalEEMod*
CalEEMod, Vend	7.3	*vendor trip distance as modeled in CalEEMod*
AERMOD	0.37	
% in Dispersion Model, Haul	2%	
% in Dispersion Model, Vend	5%	

Construction Emissions, *as applied to AERMOD results*

				Days				Total Mitigated DPM (tons)				Total Mitigated DPM (g/s)			
	Year	Start Date	Stop Date	3rd Trimester	0<2	2<16	Duration	Offroad	Hauling	Vendor	Idle	Offroad	Hauling	Vendor	Idle
New Hospital	2022	9/1/2022	12/31/2022	0.00	0.00	0.00	122	2.23E-03	1.00E-04	0.00E+00	2.27E-06	1.92E-04	1.59E-07	0.00E+00	1.95E-07
	2023	1/1/2023	12/31/2023	0.00	0.00	0.00	365	8.43E-03	1.80E-04	0.00E+00	5.18E-06	2.43E-04	9.57E-08	0.00E+00	1.49E-07
	2024	1/1/2024	12/31/2024	90.00	276.00	0.00	366	1.49E-02	5.85E-03	8.50E-04	2.42E-04	4.27E-04	3.10E-06	1.23E-06	6.93E-06
	2025	1/1/2025	12/31/2025	0.00	365.00	0.00	365	4.21E-03	0.00E+00	3.61E-03	3.55E-04	1.21E-04	0.00E+00	5.26E-06	1.02E-05
	2026	1/1/2026	12/31/2026	0.00	89.00	276.00	365	6.46E-03	0.00E+00	1.24E-02	1.12E-03	1.86E-04	0.00E+00	1.80E-05	3.22E-05
	2027	1/1/2027	12/31/2027	0.00	0.00	365.00	365	5.34E-03	0.00E+00	9.46E-03	7.94E-04	1.54E-04	0.00E+00	1.38E-05	2.28E-05
	2028	1/1/2028	12/31/2028	0.00	0.00	366.00	366	1.88E-03	0.00E+00	4.26E-03	3.18E-04	5.39E-05	0.00E+00	6.19E-06	9.12E-06
	2029	1/1/2029	12/31/2029	0.00	0.00	365.00	365	3.90E-04	0.00E+00	0.00E+00	0.00E+00	1.12E-05	0.00E+00	0.00E+00	0.00E+00
	2030	1/1/2030	12/31/2030	0.00	0.00	365.00	365	1.31E-03	2.50E-04	8.07E-03	4.65E-04	3.77E-05	1.33E-07	1.18E-05	1.34E-05
	2031	1/1/2031	12/31/2031	0.00	0.00	365.00	365	1.33E-03	3.00E-05	8.10E-03	4.36E-04	3.83E-05	1.60E-08	1.18E-05	1.25E-05
	2032	1/1/2032	12/31/2032	0.00	0.00	366.00	366	1.34E-03	2.00E-05	8.04E-03	4.06E-04	3.84E-05	1.06E-08	1.17E-05	1.16E-05

Risk Factors

	Abbreviation	UOM	3rd Trimester	0<2	2<16
Daily Breathing Rate (95th %'ile)	DBR	L/kg-day	361	1090	572
Fraction Of Time At Home	FAH	unitless	0.85	0.85	0.72
Exposure Frequency	EF	days/year	0.96	0.96	0.96
Age Sensitivity Factor	ASF	unitless	10	10	3
Inhalation Absorption Factor	A	unitless	1	1	1
Conversion Factor	CF_1	m^3/L	0.001	0.001	0.001
Conversion Factor	CF_2	$\mu g/m^3$	0.001	0.001	0.001
Cancer Potency Factor (diesel exhaust)	CPF	mg/kg-day^{-1}	1.1	1.1	1.1
Averaging Time (for residential exposure)	AT	years	70.00	70.00	70.00

Intake Factor for Inhalation, IF (m^3/kg-day)

	Year	Equation	3rd Trimester	0<2	2<16
New Hospital					
	2022		0.000	0.000	0.000
	2023		0.000	0.000	0.000
	2024		0.010	0.096	0.000
	2025	DBR*FAH*EF	0.000	0.127	0.000
	2026	*ED*ASF*A*	0.000	0.031	0.013
	2027	CF/AT	0.000	0.000	0.017
	2028		0.000	0.000	0.017
	2029		0.000	0.000	0.017
	2030		0.000	0.000	0.017
	2031		0.000	0.000	0.017
	2032		0.000	0.000	0.017

Risk Calculation Part 1, R1

	3rd Trimester	0<2	2<16
	0.00E+00	0.00E+00	0.00E+00
	0.00E+00	0.00E+00	0.00E+00
	1.14E-05	1.06E-04	0.00E+00
	0.00E+00	1.40E-04	0.00E+00
IF*CPF*CF	0.00E+00	3.40E-05	1.41E-05
	0.00E+00	0.00E+00	1.86E-05
	0.00E+00	0.00E+00	1.87E-05
	0.00E+00	0.00E+00	1.86E-05
	0.00E+00	0.00E+00	1.86E-05
	0.00E+00	0.00E+00	1.87E-05

Diesel Particulate Matter concentration, C_{DPM} (ug/m^3)

		HDMC										
X (UTM)	Y (UTM	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
547980	4179760	1.17E-02	1.48E-02	2.68E-02	8.44E-03	1.48E-02	1.19E-02	4.34E-03	6.84E-04	4.06E-03	4.03E-03	3.97E-03
547980	4179780	9.63E-03	1.21E-02	2.23E-02	7.36E-03	1.36E-02	1.09E-02	4.08E-03	5.61E-04	4.34E-03	4.31E-03	4.25E-03
548000	4179760	9.64E-03	1.22E-02	2.20E-02	6.94E-03	1.22E-02	9.79E-03	3.58E-03	5.62E-04	3.36E-03	3.34E-03	3.29E-03
547940	4179800	9.07E-03	1.14E-02	2.09E-02	6.73E-03	1.21E-02	9.72E-03	3.60E-03	5.28E-04	3.62E-03	3.60E-03	3.55E-03
547980	4179740	9.40E-03	1.19E-02	2.14E-02	6.71E-03	1.16E-02	9.36E-03	3.40E-03	5.49E-04	3.09E-03	3.07E-03	3.02E-03
547980	4179720	9.39E-03	1.19E-02	2.14E-02	6.66E-03	1.15E-02	9.23E-03	3.35E-03	5.48E-04	2.98E-03	2.96E-03	2.91E-03
547980	4179700	9.05E-03	1.14E-02	2.06E-02	6.40E-03	1.10E-02	8.84E-03	3.20E-03	5.28E-04	2.82E-03	2.80E-03	2.75E-03
547860	4179780	9.06E-03	1.14E-02	2.05E-02	6.32E-03	1.07E-02	8.65E-03	3.12E-03	5.29E-04	2.67E-03	2.65E-03	2.61E-03
548000	4179780	8.12E-03	1.02E-02	1.88E-02	6.21E-03	1.15E-02	9.21E-03	3.45E-03	4.73E-04	3.67E-03	3.65E-03	3.60E-03
548000	4179740	8.30E-03	1.05E-02	1.89E-02	5.91E-03	1.02E-02	8.23E-03	2.99E-03	4.84E-04	2.71E-03	2.69E-03	2.65E-03
547980	4179680	8.28E-03	1.05E-02	1.88E-02	5.85E-03	1.00E-02	8.08E-03	2.92E-03	4.83E-04	2.57E-03	2.55E-03	2.51E-03
548020	4179760	8.05E-03	1.02E-02	1.84E-02	5.83E-03	1.03E-02	8.24E-03	3.02E-03	4.70E-04	2.86E-03	2.84E-03	2.80E-03
548000	4179720	8.18E-03	1.03E-02	1.86E-02	5.80E-03	9.98E-03	8.04E-03	2.91E-03	4.77E-04	2.60E-03	2.58E-03	2.54E-03
548000	4179700	8.03E-03	1.01E-02	1.83E-02	5.68E-03	9.75E-03	7.85E-03	2.84E-03	4.69E-04	2.51E-03	2.50E-03	2.46E-03
548040	4179720	7.72E-03	9.75E-03	1.76E-02	5.45E-03	9.35E-03	7.53E-03	2.73E-03	4.51E-04	2.41E-03	2.40E-03	2.36E-03
548040	4179740	7.67E-03	9.68E-03	1.75E-02	5.44E-03	9.39E-03	7.56E-03	2.75E-03	4.48E-04	2.47E-03	2.46E-03	2.42E-03
548020	4179740	7.48E-03	9.44E-03	1.70E-02	5.32E-03	9.19E-03	7.40E-03	2.69E-03	4.36E-04	2.43E-03	2.42E-03	2.38E-03
548020	4179780	6.89E-03	8.69E-03	1.60E-02	5.27E-03	9.77E-03	7.82E-03	2.93E-03	4.01E-04	3.12E-03	3.10E-03	3.06E-03
548000	4179680	7.38E-03	9.32E-03	1.68E-02	5.22E-03	8.95E-03	7.20E-03	2.61E-03	4.31E-04	2.30E-03	2.28E-03	2.24E-03
548020	4179720	7.29E-03	9.21E-03	1.66E-02	5.16E-03	8.89E-03	7.16E-03	2.60E-03	4.25E-04	2.32E-03	2.30E-03	2.27E-03
548060	4179720	7.21E-03	9.11E-03	1.64E-02	5.09E-03	8.72E-03	7.03E-03	2.55E-03	4.21E-04	2.26E-03	2.24E-03	2.21E-03
548040	4179700	7.11E-03	8.98E-03	1.62E-02	5.01E-03	8.59E-03	6.92E-03	2.51E-03	4.15E-04	2.21E-03	2.20E-03	2.16E-03
548060	4179700	7.09E-03	8.95E-03	1.61E-02	4.98E-03	8.52E-03	6.86E-03	2.48E-03	4.14E-04	2.18E-03	2.16E-03	2.13E-03
548040	4179760	6.81E-03	8.60E-03	1.56E-02	4.98E-03	8.85E-03	7.10E-03	2.61E-03	3.97E-04	2.53E-03	2.52E-03	2.48E-03
548020	4179700	7.01E-03	8.85E-03	1.59E-02	4.95E-03	8.50E-03	6.85E-03	2.48E-03	4.09E-04	2.20E-03	2.18E-03	2.15E-03
547980	4179660	6.82E-03	8.62E-03	1.55E-02	4.82E-03	8.27E-03	6.66E-03	2.41E-03	3.98E-04	2.12E-03	2.10E-03	2.07E-03
548020	4179680	6.44E-03	8.13E-03	1.46E-02	4.54E-03	7.79E-03	6.27E-03	2.27E-03	3.76E-04	2.00E-03	1.99E-03	1.96E-03
548040	4179780	5.90E-03	7.45E-03	1.37E-02	4.53E-03	8.42E-03	6.74E-03	2.53E-03	3.44E-04	2.70E-03	2.68E-03	2.65E-03
548060	4179740	6.25E-03	7.90E-03	1.43E-02	4.50E-03	7.86E-03	6.32E-03	2.31E-03	3.65E-04	2.15E-03	2.13E-03	2.10E-03
548080	4179700	6.31E-03	7.97E-03	1.43E-02	4.44E-03	7.59E-03	6.12E-03	2.21E-03	3.69E-04	1.95E-03	1.93E-03	1.91E-03
547940	4179820	6.20E-03	7.82E-03	1.41E-02	4.44E-03	7.74E-03	6.23E-03	2.28E-03	3.61E-04	2.12E-03	2.11E-03	2.08E-03
547960	4179820	6.09E-03	7.68E-03	1.40E-02	4.45E-03	7.90E-03	6.35E-03	2.34E-03	3.55E-04	2.27E-03	2.26E-03	2.23E-03
548060	4179680	6.30E-03	7.96E-03	1.43E-02	4.43E-03	7.57E-03	6.10E-03	2.21E-03	3.68E-04	1.93E-03	1.92E-03	1.89E-03
548000	4179660	6.27E-03	7.92E-03	1.43E-02	4.43E-03	7.59E-03	6.12E-03	2.21E-03	3.66E-04	1.95E-03	1.94E-03	1.91E-03
548040	4179680	6.10E-03	7.70E-03	1.39E-02	4.30E-03	7.37E-03	5.94E-03	2.15E-03	3.56E-04	1.89E-03	1.88E-03	1.85E-03
548080	4179680	6.06E-03	7.65E-03	1.38E-02	4.25E-03	7.26E-03	5.85E-03	2.11E-03	3.54E-04	1.84E-03	1.83E-03	1.80E-03
547980	4179820	5.70E-03	7.19E-03	1.31E-02	4.25E-03	7.70E-03	6.17E-03	2.29E-03	3.32E-04	2.33E-03	2.31E-03	2.28E-03
548060	4179760	5.77E-03	7.28E-03	1.32E-02	4.24E-03	7.59E-03	6.09E-03	2.25E-03	3.36E-04	2.21E-03	2.20E-03	2.16E-03
547920	4179820	5.89E-03	7.43E-03	1.34E-02	4.17E-03	7.17E-03	5.78E-03	2.10E-03	3.43E-04	1.89E-03	1.88E-03	1.85E-03
548000	4179820	5.24E-03	6.61E-03	1.21E-02	3.99E-03	7.37E-03	5.90E-03	2.21E-03	3.05E-04	2.34E-03	2.32E-03	2.29E-03
548020	4179660	5.61E-03	7.08E-03	1.27E-02	3.96E-03	6.78E-03	5.46E-03	1.98E-03	3.27E-04	1.74E-03	1.73E-03	1.70E-03
548080	4179720	5.55E-03	7.01E-03	1.27E-02	3.96E-03	6.85E-03	5.52E-03	2.01E-03	3.24E-04	1.82E-03	1.81E-03	1.78E-03
548060	4179780	5.10E-03	6.44E-03	1.19E-02	3.94E-03	7.35E-03	5.88E-03	2.21E-03	2.97E-04	2.38E-03	2.37E-03	2.33E-03
548080	4179740	5.33E-03	6.73E-03	1.22E-02	3.85E-03	6.77E-03	5.44E-03	1.99E-03	3.11E-04	1.87E-03	1.86E-03	1.84E-03
548100	4179680	5.37E-03	6.78E-03	1.22E-02	3.77E-03	6.44E-03	5.19E-03	1.88E-03	3.14E-04	1.64E-03	1.63E-03	1.61E-03
548040	4179660	5.30E-03	6.70E-03	1.21E-02	3.74E-03	6.40E-03	5.16E-03	1.87E-03	3.10E-04	1.64E-03	1.63E-03	1.61E-03
548080	4179660	5.31E-03	6.71E-03	1.21E-02	3.73E-03	6.36E-03	5.13E-03	1.85E-03	3.10E-04	1.61E-03	1.60E-03	1.58E-03
547860	4179800	5.30E-03	6.69E-03	1.20E-02	3.71E-03	6.31E-03	5.09E-03	1.84E-03	3.09E-04	1.59E-03	1.59E-03	1.56E-03
548020	4179820	4.78E-03	6.02E-03	1.11E-02	3.73E-03	7.03E-03	5.62E-03	2.12E-03	2.78E-04	2.33E-03	2.32E-03	2.29E-03
548060	4179660	5.21E-03	6.58E-03	1.18E-02	3.66E-03	6.26E-03	5.05E-03	1.83E-03	3.04E-04	1.60E-03	1.59E-03	1.56E-03
548080	4179760	4.96E-03	6.26E-03	1.14E-02	3.67E-03	6.59E-03	5.28E-03	1.95E-03	2.89E-04	1.94E-03	1.93E-03	1.90E-03
547900	4179820	5.16E-03	6.52E-03	1.17E-02	3.63E-03	6.21E-03	5.01E-03	1.81E-03	3.01E-04	1.60E-03	1.59E-03	1.57E-03
547980	4179640	5.07E-03	6.41E-03	1.15E-02	3.59E-03	6.15E-03	4.95E-03	1.79E-03	2.96E-04	1.58E-03	1.57E-03	1.54E-03
548080	4179780	4.49E-03	5.66E-03	1.05E-02	3.49E-03	6.55E-03	5.24E-03	1.97E-03	2.62E-04	2.15E-03	2.14E-03	2.11E-03
548100	4179700	4.83E-03	6.10E-03	1.10E-02	3.43E-03	5.91E-03	4.76E-03	1.73E-03	2.82E-04	1.55E-03	1.54E-03	1.52E-03
548040	4179820	4.30E-03	5.41E-03	1.01E-02	3.46E-03	6.67E-03	5.32E-03	2.03E-03	2.50E-04	2.33E-03	2.32E-03	2.29E-03
548100	4179720	4.77E-03	6.03E-03	1.09E-02	3.42E-03	5.95E-03	4.79E-03	1.75E-03	2.79E-04	1.61E-03	1.60E-03	1.57E-03
548100	4179660	4.85E-03	6.12E-03	1.10E-02	3.40E-03	5.80E-03	4.68E-03	1.69E-03	2.83E-04	1.47E-03	1.46E-03	1.44E-03
548000	4179640	4.82E-03	6.08E-03	1.09E-02	3.40E-03	5.84E-03	4.70E-03	1.70E-03	2.81E-04	1.50E-03	1.49E-03	1.47E-03
548100	4179740	4.60E-03	5.80E-03	1.05E-02	3.34E-03	5.89E-03	4.73E-03	1.74E-03	2.68E-04	1.65E-03	1.64E-03	1.62E-03
548100	4179800	3.58E-03	4.51E-03	8.77E-03	3.35E-03	7.17E-03	5.66E-03	2.24E-03	2.08E-04	3.01E-03	2.99E-03	2.95E-03
548060	4179820	3.90E-03	4.91E-03	9.26E-03	3.27E-03	6.51E-03	5.18E-03	2.00E-03	2.26E-04	2.42E-03	2.41E-03	2.38E-03
548120	4179660	4.55E-03	5.75E-03	1.03E-02	3.19E-03	5.44E-03	4.39E-03	1.58E-03	2.66E-04	1.38E-03	1.37E-03	1.35E-03
548100	4179760	4.31E-03	5.44E-03	9.92E-03	3.20E-03	5.77E-03	4.63E-03	1.71E-03	2.51E-04	1.72E-03	1.71E-03	1.68E-03
548060	4179640	4.49E-03	5.67E-03	1.02E-02	3.16E-03	5.40E-03	4.36E-03	1.58E-03	2.62E-04	1.38E-03	1.37E-03	1.35E-03
548020	4179640	4.44E-03	5.61E-03	1.01E-02	3.13E-03	5.37E-03	4.32E-03	1.56E-03	2.59E-04	1.38E-03	1.37E-03	1.35E-03
548080	4179640	4.44E-03	5.61E-03	1.01E-02	3.12E-03	5.32E-03	4.29E-03	1.55E-03	2.59E-04	1.35E-03	1.34E-03	1.32E-03
547960	4179840	4.30E-03	5.43E-03	9.82E-03	3.08E-03	5.37E-03	4.33E-03	1.58E-03	2.51E-04	1.47E-03	1.46E-03	1.44E-03

Risk Calculation Part 2

		$\sum R1*C_{DPM}$				Cancer Risk	
X (UTM)	Y (UTM	3rd Trimeste	0<2	2<16	Total	per million	Receptor Determination
547980	4179760	3.05E-07	4.51E-06	7.48E-07	5.56E-06	5.56	pot. res.
547980	4179780	2.55E-07	3.85E-06	7.23E-07	4.83E-06	4.83	pot. res.
548000	4179760	2.51E-07	3.71E-06	6.17E-07	4.58E-06	4.58	pot. res.
547940	4179800	2.38E-07	3.55E-06	6.30E-07	4.42E-06	4.42	pot. res.
547980	4179740	2.44E-07	3.59E-06	5.83E-07	4.42E-06	4.42	pot. res.
547980	4179720	2.44E-07	3.57E-06	5.72E-07	4.39E-06	4.39	pot. res.
547980	4179700	2.35E-07	3.44E-06	5.45E-07	4.22E-06	4.22	pot. res.
547860	4179780	2.34E-07	3.42E-06	5.29E-07	4.18E-06	4.18	pot. res.
548000	4179780	2.15E-07	3.25E-06	6.11E-07	4.07E-06	4.07	pot. res.
548000	4179740	2.16E-07	3.17E-06	5.13E-07	3.90E-06	3.90	pot. res.
547980	4179680	2.15E-07	3.14E-06	4.98E-07	3.86E-06	3.86	pot. res.
548020	4179760	2.10E-07	3.11E-06	5.22E-07	3.84E-06	3.84	pot. res.
548000	4179720	2.12E-07	3.11E-06	4.98E-07	3.82E-06	3.82	pot. res.
548000	4179700	2.08E-07	3.05E-06	4.85E-07	3.75E-06	3.75	pot. res.
548040	4179720	2.00E-07	2.93E-06	4.66E-07	3.60E-06	3.60	pot. res.
548040	4179740	1.99E-07	2.92E-06	4.70E-07	3.59E-06	3.59	pot. res.
548020	4179740	1.94E-07	2.85E-06	4.61E-07	3.51E-06	3.51	pot. res.
548020	4179780	1.82E-07	2.76E-06	5.19E-07	3.46E-06	3.46	pot. res.
548000	4179680	1.91E-07	2.80E-06	4.44E-07	3.44E-06	3.44	pot. res.
548020	4179720	1.89E-07	2.77E-06	4.44E-07	3.41E-06	3.41	pot. res.
548060	4179720	1.87E-07	2.74E-06	4.35E-07	3.36E-06	3.36	pot. res.
548040	4179700	1.84E-07	2.70E-06	4.27E-07	3.31E-06	3.31	pot. res.
548060	4179700	1.83E-07	2.68E-06	4.23E-07	3.29E-06	3.29	pot. res.
548040	4179760	1.78E-07	2.65E-06	4.54E-07	3.28E-06	3.28	pot. res.
548020	4179700	1.82E-07	2.66E-06	4.23E-07	3.27E-06	3.27	pot. res.
547980	4179660	1.77E-07	2.59E-06	4.10E-07	3.18E-06	3.18	pot. res.
548020	4179680	1.67E-07	2.44E-06	3.87E-07	3.00E-06	3.00	pot. res.
548040	4179780	1.56E-07	2.37E-06	4.48E-07	2.97E-06	2.97	pot. res.
548060	4179740	1.63E-07	2.40E-06	3.97E-07	2.96E-06	2.96	pot. res.
548080	4179700	1.64E-07	2.39E-06	3.77E-07	2.93E-06	2.93	pot. res.
547940	4179820	1.61E-07	2.38E-06	3.92E-07	2.93E-06	2.93	pot. res.
547960	4179820	1.59E-07	2.36E-06	4.06E-07	2.93E-06	2.93	pot. res.
548060	4179680	1.63E-07	2.39E-06	3.76E-07	2.93E-06	2.93	pot. res.
548000	4179660	1.62E-07	2.38E-06	3.77E-07	2.92E-06	2.92	pot. res.
548040	4179680	1.58E-07	2.32E-06	3.67E-07	2.84E-06	2.84	pot. res.
548080	4179680	1.57E-07	2.29E-06	3.60E-07	2.81E-06	2.81	pot. res.
547980	4179820	1.50E-07	2.24E-06	4.02E-07	2.79E-06	2.79	pot. res.
548060	4179760	1.51E-07	2.25E-06	3.91E-07	2.79E-06	2.79	pot. res.
547920	4179820	1.53E-07	2.24E-06	3.59E-07	2.75E-06	2.75	pot. res.
548000	4179820	1.38E-07	2.09E-06	3.91E-07	2.62E-06	2.62	pot. res.
548020	4179660	1.45E-07	2.13E-06	3.37E-07	2.61E-06	2.61	pot. res.
548080	4179720	1.44E-07	2.12E-06	3.44E-07	2.61E-06	2.61	pot. res.
548060	4179780	1.35E-07	2.05E-06	3.92E-07	2.58E-06	2.58	pot. res.
548080	4179740	1.39E-07	2.06E-06	3.44E-07	2.54E-06	2.54	pot. res.
548100	4179680	1.39E-07	2.03E-06	3.19E-07	2.49E-06	2.49	pot. res.
548040	4179660	1.37E-07	2.01E-06	3.18E-07	2.47E-06	2.47	pot. res.
548080	4179660	1.38E-07	2.01E-06	3.15E-07	2.46E-06	2.46	pot. res.
547860	4179800	1.37E-07	2.00E-06	3.12E-07	2.45E-06	2.45	pot. res.
548020	4179820	1.27E-07	1.94E-06	3.78E-07	2.44E-06	2.44	pot. res.
548060	4179660	1.35E-07	1.97E-06	3.11E-07	2.42E-06	2.42	pot. res.
548080	4179760	1.30E-07	1.94E-06	3.41E-07	2.41E-06	2.41	pot. res.
547900	4179820	1.34E-07	1.96E-06	3.09E-07	2.40E-06	2.40	pot. res.
547980	4179640	1.31E-07	1.93E-06	3.06E-07	2.36E-06	2.36	pot. res.
548080	4179780	1.19E-07	1.81E-06	3.51E-07	2.29E-06	2.29	pot. res.
548100	4179700	1.25E-07	1.84E-06	2.95E-07	2.26E-06	2.26	pot. res.
548040	4179820	1.15E-07	1.78E-06	3.65E-07	2.26E-06	2.26	pot. res.
548100	4179720	1.24E-07	1.83E-06	3.00E-07	2.25E-06	2.25	pot. res.
548100	4179660	1.25E-07	1.83E-06	2.87E-07	2.25E-06	2.25	pot. res.
548000	4179640	1.25E-07	1.83E-06	2.90E-07	2.24E-06	2.24	pot. res.
548100	4179740	1.20E-07	1.78E-06	3.00E-07	2.20E-06	2.20	pot. res.
548100	4179800	1.00E-07	1.64E-06	4.19E-07	2.16E-06	2.16	pot. res.
548060	4179820	1.06E-07	1.66E-06	3.64E-07	2.13E-06	2.13	pot. res.
548120	4179660	1.18E-07	1.72E-06	2.70E-07	2.11E-06	2.11	pot. res.
548100	4179760	1.13E-07	1.69E-06	3.00E-07	2.10E-06	2.10	pot. res.
548060	4179640	1.16E-07	1.70E-06	2.68E-07	2.09E-06	2.09	pot. res.
548020	4179640	1.15E-07	1.68E-06	2.67E-07	2.07E-06	2.07	pot. res.
548080	4179640	1.15E-07	1.68E-06	2.64E-07	2.06E-06	2.06	pot. res.
547960	4179840	1.12E-07	1.65E-06	2.72E-07	2.03E-06	2.03	pot. res.

UCSF Parnassus Heights New Hospital

New Hospital (2031)

Mitigated Construction Cancer Risk Calculations for Daycare and School Receptors

		Daycare1		Daycare2		Daycare3		School1	School2	School3	School4
Name		Lucia Child Care Center		ABC Bay Area Child Care		Kirkham Child Care Center		Clarendon Alternative Elementary	Independence High	Stepping Stones Preschool	Haight Ashbury Community Nursery School
Max Exposure (years)		5		5		5		7	5	4	4
		0.11		0.02		0.05		0.001	0.01	0.00	0.05
Exposure Duration	Year	0<2	2<9	0<2	2<9	0<2	2<9	2<16	2<16	2<16	2<16
New Hospital	2022	0.00	0.00	0.00	0.00	0.00	0.00	122.00	0.00	0.00	0.00
	2023	0.00	0.00	0.00	0.00	0.00	0.00	365.00	365.00	0.00	0.00
	2024	0.00	0.00	0.00	0.00	0.00	0.00	366.00	366.00	366.00	366.00
	2025	0.00	0.00	0.00	0.00	0.00	0.00	365.00	365.00	365.00	365.00
	2026	365.00	0.00	365.00	0.00	365.00	0.00	365.00	365.00	365.00	365.00
	2027	365.00	0.00	365.00	0.00	365.00	0.00	365.00	365.00	365.00	365.00
	2028	0.00	366.00	0.00	366.00	0.00	366.00	366.00	0.00	0.00	0.00
	2029	0.00	365.00	0.00	365.00	0.00	365.00	242.00	0.00	0.00	0.00
	2030	0.00	365.00	0.00	365.00	0.00	365.00	0.00	0.00	0.00	0.00
	2031	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2032	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		730.00	1095.0	730	1096	730	1096	2556.00	1826.00	1461	1461.00

Risk Factors			Daycare		School
	Abbreviation	UOM	0<2	2<9	2<16
8HR Breathing Rate (95th %'ile, moderate intensity)	BR	L/kg-day	1200	640	520
Fraction Of Time At Home	FAH	unitless	0.33	0.33	0.33
Exposure Frequency	EF	days/year	0.68	0.68	0.49
Age Sensitivity Factor	ASF	unitless	10	3	3
Inhalation Absorption Factor	A	unitless	1	1	1
Modeling Adjustment Factor	MAF	unitless	1.4	1.4	1.4
Conversion Factor	CF_1	m^3/L	0.001	0.001	0.001
Conversion Factor	CF_2	$\mu g/m^3$	0.001	0.001	0.001
Cancer Potency Factor (diesel exhaust)	CPF	$mg/kg\text{-}day^{-1}$	1.1	1.1	1.1
Averaging Time (for residential exposure)	AT	years	70.00	70.00	70.00

Intake Factor for Inhalation, IF (m^3/kg-day)			Daycare1		Daycare2		Daycare3		School1	School2	School3	School4
	Year	Equation	0<2	2<9	0<2	2<9	0<2	2<9	2<16	2<16	2<16	2<16
New Hospital												
	2022		0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.000	0.000	0.000
	2023		0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.005	0.000	0.000
	2024		0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.005	0.005	0.005
	2025	BR*FAH*EF*	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.005	0.005	0.005
	2026	ED*ASF*A*M	0.054	0.000	0.054	0.000	0.054	0.000	0.005	0.005	0.005	0.005
	2027	AF*CF/AT	0.054	0.000	0.054	0.000	0.054	0.000	0.005	0.005	0.005	0.005
	2028		0.000	0.009	0.000	0.009	0.000	0.009	0.005	0.000	0.000	0.000
	2029		0.000	0.009	0.000	0.009	0.000	0.009	0.003	0.000	0.000	0.000
	2030		0.000	0.009	0.000	0.009	0.000	0.009	0.000	0.000	0.000	0.000
	2031		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	2032		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Risk Calculation Part 1, R1			Daycare1		Daycare2		Daycare3		School1	School2	School3	School4
	Year	Equation	0<2	2<9	0<2	2<9	0<2	2<9	2<16	2<16	2<16	2<16
New Hospital	2022		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.87E-06	0.00E+00	0.00E+00	0.00E+00
	2023		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.59E-06	5.59E-06	0.00E+00	0.00E+00
	2024		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.60E-06	5.60E-06	5.60E-06	5.60E-06
	2025		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.59E-06	5.59E-06	5.59E-06	5.59E-06
	2026		5.97E-05	0.00E+00	5.97E-05	0.00E+00	5.97E-05	0.00E+00	5.59E-06	5.59E-06	5.59E-06	5.59E-06
	2027	IF*CPF*CF	5.97E-05	0.00E+00	5.97E-05	0.00E+00	5.97E-05	0.00E+00	5.59E-06	5.59E-06	5.59E-06	5.59E-06
	2028		0.00E+00	9.57E-06	0.00E+00	9.57E-06	0.00E+00	9.57E-06	5.60E-06	0.00E+00	0.00E+00	0.00E+00
	2029		0.00E+00	9.55E-06	0.00E+00	9.55E-06	0.00E+00	9.55E-06	3.70E-06	0.00E+00	0.00E+00	0.00E+00
	2030		0.00E+00	9.55E-06	0.00E+00	9.55E-06	0.00E+00	9.55E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	2031		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	2032		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Diesel Particulate Matter concentration, C_{DPM} (ug/m^3)

		HDMC										
X (UTM)	Y (UTM	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
547880	4178580	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
547900	4178580	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
547920	4178580	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
547860	4178600	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
547880	4178600	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
547900	4178600	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
547920	4178600	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
547880	4178620	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
547900	4178620	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
547880	4178640	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
547900	4178640	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
547920	4178640	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
547880	4178660	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
547900	4178660	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
547920	4178660	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
547900	4178680	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
547920	4178680	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
547940	4178680	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
547220	4179660	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
547240	4179660	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
547220	4179680	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
547240	4179680	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
547160	4179700	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
547180	4179700	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
547160	4179720	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
547180	4179720	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
548260	4179620	0.002	0.002	0.004	0.001	0.002	0.002	0.001	0.000	0.001	0.001	0.001
548280	4179620	0.002	0.002	0.004	0.001	0.002	0.002	0.001	0.000	0.001	0.001	0.001
548260	4179640	0.002	0.002	0.004	0.001	0.002	0.002	0.001	0.000	0.001	0.001	0.001
548280	4179640	0.002	0.002	0.004	0.001	0.002	0.002	0.001	0.000	0.001	0.001	0.001
547540	4179680	0.001	0.001	0.002	0.000	0.001	0.001	0.000	0.000	0.000	0.000	0.000
547560	4179680	0.001	0.001	0.002	0.001	0.001	0.001	0.000	0.000	0.000	0.000	0.000
547540	4179660	0.001	0.001	0.002	0.001	0.001	0.001	0.000	0.000	0.000	0.000	0.000
547560	4179660	0.001	0.001	0.002	0.001	0.001	0.001	0.000	0.000	0.000	0.000	0.000
547200	4179140	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
547220	4179140	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
547460	4179400	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
547480	4179400	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Risk Calculation Part 2

$R1*\sum C_{DPM}$ HDMC	
1.20E-03	Clarendon Alternative Elementary
1.18E-03	Clarendon Alternative Elementary
1.19E-03	Clarendon Alternative Elementary
1.21E-03	Clarendon Alternative Elementary
1.19E-03	Clarendon Alternative Elementary
1.16E-03	Clarendon Alternative Elementary
1.17E-03	Clarendon Alternative Elementary
1.20E-03	Clarendon Alternative Elementary
1.19E-03	Clarendon Alternative Elementary
1.23E-03	Clarendon Alternative Elementary
1.22E-03	Clarendon Alternative Elementary
1.21E-03	Clarendon Alternative Elementary
1.25E-03	Clarendon Alternative Elementary
1.22E-03	Clarendon Alternative Elementary
1.21E-03	Clarendon Alternative Elementary
1.24E-03	Clarendon Alternative Elementary
1.23E-03	Clarendon Alternative Elementary
1.22E-03	Clarendon Alternative Elementary
6.75E-03	Independence High
7.15E-03	Independence High
6.64E-03	Independence High
7.02E-03	Independence High
4.45E-03	Stepping Stones Preschool
4.68E-03	Stepping Stones Preschool
4.35E-03	Stepping Stones Preschool
4.57E-03	Stepping Stones Preschool
5.21E-02	Haight Ashbury Community Nursery School
4.86E-02	Haight Ashbury Community Nursery School
5.39E-02	Haight Ashbury Community Nursery School
5.00E-02	Haight Ashbury Community Nursery School
9.56E-02	Lucia Child Care Center
1.09E-01	Lucia Child Care Center
9.88E-02	Lucia Child Care Center
1.13E-01	Lucia Child Care Center
1.87E-02	ABC Bay Area Child Care
1.91E-02	ABC Bay Area Child Care
5.05E-02	Kirkham Child Care Center
5.31E-02	Kirkham Child Care Center

UCSF Parnassus Heights New Hospital

New Hospital (2031)

Mitigated Construction Hazard Index Calculations for Residential Child Receptor

Haul Truck Trip Adjustment Factor to Model

	One Way (miles)	
	HDMC	
CalEEMod, Haul	20	*haul truck trip distance as modeled in CalEEMod*
CalEEMod, Vend	7.3	*vendor trip distance as modeled in CalEEMod*
AERMOD	0.37	
% in Dispersion Model, Haul	2%	
% in Dispersion Model, Vend	5%	

HI DPM	
5	µg/m^3

Construction Emissions, *as applied to AERMOD results*

				Days				Total Unmitigated DPM (tons)				Total Unmitigated DPM (g/s)			
	Year	Start Date	Stop Date	3rd Trimester	0<2	2<16	Duration	Offroad	Hauling	Vendor	Idle	Offroad	Hauling	Vendor	Idle
New Hospital	2022	9/1/2022	12/31/2022	90.00	32.00	0.00	122	2.23E-03	1.00E-04	0.00E+00	2.27E-06	1.92E-04	1.59E-07	0.00E+00	1.95E-07
	2023	1/1/2023	12/31/2023	0.00	365.00	0.00	365	8.43E-03	1.80E-04	0.00E+00	5.18E-06	2.43E-04	9.57E-08	0.00E+00	1.49E-07
	2024	1/1/2024	12/31/2024	0.00	333.00	33.00	366	1.49E-02	5.85E-03	8.50E-04	2.42E-04	4.27E-04	3.10E-06	1.23E-06	6.93E-06
	2025	1/1/2025	12/31/2025	0.00	0.00	365.00	365	4.21E-03	0.00E+00	3.61E-03	3.55E-04	1.21E-04	0.00E+00	5.26E-06	1.02E-05
	2026	1/1/2026	12/31/2026	0.00	0.00	365.00	365	6.46E-03	0.00E+00	1.24E-02	1.12E-03	1.86E-04	0.00E+00	1.80E-05	3.22E-05
	2027	1/1/2027	12/31/2027	0.00	0.00	365.00	365	5.34E-03	0.00E+00	9.46E-03	7.94E-04	1.54E-04	0.00E+00	1.38E-05	2.28E-05
	2028	1/1/2028	12/31/2028	0.00	0.00	366.00	366	1.88E-03	0.00E+00	4.26E-03	3.18E-04	5.39E-05	0.00E+00	6.19E-06	9.12E-06
	2029	1/1/2029	12/31/2029	0.00	0.00	365.00	365	3.90E-04	0.00E+00	0.00E+00	0.00E+00	1.12E-05	0.00E+00	0.00E+00	0.00E+00
	2030	1/1/2030	12/31/2030	0.00	0.00	365.00	365	1.31E-03	2.50E-04	8.07E-03	4.65E-04	3.77E-05	1.33E-07	1.18E-05	1.34E-05
	2031	1/1/2031	12/31/2031	0.00	0.00	365.00	365	1.33E-03	3.00E-05	8.10E-03	4.36E-04	3.83E-05	1.60E-08	1.18E-05	1.25E-05
	2032	1/1/2032	12/31/2032	0.00	0.00	366.00	366	1.34E-03	2.00E-05	8.04E-03	4.06E-04	3.84E-05	1.06E-08	1.17E-05	1.16E-05

Diesel Particulate Matter concentration, C_{DPM} (ug/m^3)

		HDMC											Max	Max Year	HI		
X (UTM)	Y (UTM	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	µg/m^3		unitless	Receptor Determination	
547180	4179700	1.63E-04	2.06E-04	3.70E-04	1.14E-04	1.95E-04	1.57E-04	5.69E-05	9.51E-06	5.00E-05	4.98E-05	4.91E-05	3.70E-04	2024	7.40E-05	Stepping St School	1
547180	4179720	1.59E-04	2.01E-04	3.61E-04	1.12E-04	1.90E-04	1.54E-04	5.56E-05	9.29E-06	4.89E-05	4.86E-05	4.80E-05	3.61E-04	2024	7.23E-05	Stepping St School	2
547160	4179700	1.55E-04	1.96E-04	3.52E-04	1.09E-04	1.85E-04	1.50E-04	5.42E-05	9.05E-06	4.76E-05	4.74E-05	4.68E-05	3.52E-04	2024	7.04E-05	Stepping St School	3
547160	4179720	1.52E-04	1.91E-04	3.44E-04	1.06E-04	1.81E-04	1.46E-04	5.29E-05	8.84E-06	4.66E-05	4.63E-05	4.57E-05	3.44E-04	2024	6.88E-05	Stepping St School	4
547980	4179760	1.17E-02	1.48E-02	2.68E-02	8.44E-03	1.48E-02	1.19E-02	4.34E-03	6.84E-04	4.06E-03	4.03E-03	3.97E-03	2.68E-02	2024	5.36E-03	pot. res.	1
547980	4179780	9.63E-03	1.21E-02	2.23E-02	7.36E-03	1.36E-02	1.09E-02	4.08E-03	5.61E-04	4.34E-03	4.31E-03	4.25E-03	2.23E-02	2024	4.46E-03	pot. res.	2
548000	4179760	9.64E-03	1.22E-02	2.20E-02	6.94E-03	1.22E-02	9.79E-03	3.58E-03	5.62E-04	3.36E-03	3.34E-03	3.29E-03	2.20E-02	2024	4.40E-03	pot. res.	3
547980	4179740	9.40E-03	1.19E-02	2.14E-02	6.71E-03	1.16E-02	9.36E-03	3.40E-03	5.49E-04	3.09E-03	3.07E-03	3.02E-03	2.14E-02	2024	4.29E-03	pot. res.	4
547980	4179720	9.39E-03	1.19E-02	2.14E-02	6.66E-03	1.15E-02	9.23E-03	3.35E-03	5.48E-04	2.98E-03	2.96E-03	2.91E-03	2.14E-02	2024	4.27E-03	pot. res.	5
547940	4179800	9.07E-03	1.14E-02	2.09E-02	6.73E-03	1.21E-02	9.72E-03	3.60E-03	5.28E-04	3.62E-03	3.60E-03	3.55E-03	2.09E-02	2024	4.17E-03	pot. res.	6
547980	4179700	9.05E-03	1.14E-02	2.06E-02	6.40E-03	1.10E-02	8.84E-03	3.20E-03	5.28E-04	2.82E-03	2.80E-03	2.75E-03	2.06E-02	2024	4.11E-03	pot. res.	7
547860	4179780	9.06E-03	1.14E-02	2.05E-02	6.32E-03	1.07E-02	8.65E-03	3.12E-03	5.29E-04	2.67E-03	2.65E-03	2.61E-03	2.05E-02	2024	4.11E-03	pot. res.	8
548000	4179740	8.30E-03	1.05E-02	1.89E-02	5.91E-03	1.02E-02	8.23E-03	2.99E-03	4.84E-04	2.71E-03	2.69E-03	2.65E-03	1.89E-02	2024	3.78E-03	pot. res.	9
548000	4179780	8.12E-03	1.02E-02	1.88E-02	6.21E-03	1.15E-02	9.21E-03	3.45E-03	4.73E-04	3.67E-03	3.65E-03	3.60E-03	1.88E-02	2024	3.77E-03	pot. res.	10
547560	4179660	8.42E-04	1.06E-03	1.91E-03	5.86E-04	9.91E-04	8.01E-04	2.89E-04	4.91E-05	2.48E-04	2.46E-04	2.43E-04	1.91E-03	2024	3.81E-04	Lucia Child Day Care	1
547560	4179680	8.18E-04	1.03E-03	1.85E-03	5.69E-04	9.63E-04	7.78E-04	2.80E-04	4.77E-05	2.41E-04	2.39E-04	2.36E-04	1.85E-03	2024	3.71E-04	Lucia Child Day Care	2
547540	4179660	7.38E-04	9.32E-04	1.67E-03	5.14E-04	8.70E-04	7.03E-04	2.53E-04	4.31E-05	2.18E-04	2.17E-04	2.14E-04	1.67E-03	2024	3.34E-04	Lucia Child Day Care	3
547540	4179680	7.14E-04	9.02E-04	1.62E-03	4.97E-04	8.42E-04	6.80E-04	2.45E-04	4.17E-05	2.11E-04	2.10E-04	2.07E-04	1.62E-03	2024	3.24E-04	Lucia Child Day Care	4
547480	4179400	3.92E-04	4.95E-04	8.90E-04	2.75E-04	4.68E-04	3.78E-04	1.37E-04	2.29E-05	1.19E-04	1.19E-04	1.17E-04	8.90E-04	2024	1.78E-04	Kirkham Ch Day Care	1
547460	4179400	3.72E-04	4.70E-04	8.45E-04	2.61E-04	4.45E-04	3.59E-04	1.30E-04	2.17E-05	1.14E-04	1.13E-04	1.11E-04	8.45E-04	2024	1.69E-04	Kirkham Ch Day Care	2
547240	4179660	2.00E-04	2.53E-04	4.54E-04	1.40E-04	2.39E-04	1.93E-04	6.97E-05	1.17E-05	6.12E-05	6.09E-05	6.00E-05	4.54E-04	2024	9.08E-05	IndependenSchool	1
547240	4179680	1.96E-04	2.48E-04	4.46E-04	1.38E-04	2.35E-04	1.89E-04	6.85E-05	1.15E-05	6.01E-05	5.98E-05	5.90E-05	4.46E-04	2024	8.92E-05	IndependenSchool	2
547220	4179660	1.89E-04	2.39E-04	4.29E-04	1.32E-04	2.26E-04	1.82E-04	6.59E-05	1.10E-05	5.79E-05	5.76E-05	5.68E-05	4.29E-04	2024	8.58E-05	IndependenSchool	3
547220	4179680	1.86E-04	2.35E-04	4.22E-04	1.30E-04	2.22E-04	1.79E-04	6.48E-05	1.08E-05	5.69E-05	5.66E-05	5.58E-05	4.22E-04	2024	8.43E-05	IndependenSchool	4
548260	4179640	1.84E-03	2.32E-03	4.20E-03	1.32E-03	2.29E-03	1.84E-03	6.70E-04	1.07E-04	6.14E-04	6.10E-04	6.01E-04	4.20E-03	2024	8.39E-04	Haight AshbSchool	1
548260	4179620	1.79E-03	2.26E-03	4.07E-03	1.27E-03	2.20E-03	1.77E-03	6.45E-04	1.04E-04	5.84E-04	5.80E-04	5.72E-04	4.07E-03	2024	8.14E-04	Haight AshbSchool	2
548280	4179640	1.71E-03	2.15E-03	3.89E-03	1.22E-03	2.13E-03	1.71E-03	6.24E-04	9.95E-05	5.73E-04	5.69E-04	5.61E-04	3.89E-03	2024	7.78E-04	Haight AshbSchool	3
548280	4179620	1.66E-03	2.10E-03	3.79E-03	1.19E-03	2.05E-03	1.65E-03	6.02E-04	9.70E-05	5.47E-04	5.44E-04	5.36E-04	3.79E-03	2024	7.58E-04	Haight AshbSchool	4
547420	4179560	4.03E-04	5.08E-04	9.13E-04	2.82E-04	4.80E-04	3.87E-04	1.40E-04	2.35E-05	1.22E-04	1.21E-04	1.19E-04	9.13E-04	2024	1.83E-04	Fifth Ave HoRes Hall	1
547420	4179540	3.97E-04	5.01E-04	9.01E-04	2.78E-04	4.73E-04	3.82E-04	1.38E-04	2.32E-05	1.20E-04	1.20E-04	1.18E-04	9.01E-04	2024	1.80E-04	Fifth Ave HoRes Hall	2
547420	4179520	3.92E-04	4.95E-04	8.91E-04	2.75E-04	4.68E-04	3.78E-04	1.37E-04	2.29E-05	1.19E-04	1.19E-04	1.17E-04	8.91E-04	2024	1.78E-04	Fifth Ave HoRes Hall	3
547420	4179500	3.86E-04	4.88E-04	8.77E-04	2.71E-04	4.62E-04	3.72E-04	1.35E-04	2.25E-05	1.18E-04	1.17E-04	1.15E-04	8.77E-04	2024	1.75E-04	Fifth Ave HoRes Hall	4
547420	4179480	3.77E-04	4.76E-04	8.55E-04	2.64E-04	4.50E-04	3.63E-04	1.31E-04	2.20E-05	1.15E-04	1.14E-04	1.13E-04	8.55E-04	2024	1.71E-04	Fifth Ave HoRes Hall	5
547420	4179460	3.67E-04	4.63E-04	8.33E-04	2.57E-04	4.39E-04	3.54E-04	1.28E-04	2.14E-05	1.12E-04	1.11E-04	1.10E-04	8.33E-04	2024	1.67E-04	Fifth Ave HoRes Hall	6
547420	4179440	3.58E-04	4.52E-04	8.13E-04	2.51E-04	4.28E-04	3.46E-04	1.25E-04	2.09E-05	1.09E-04	1.09E-04	1.07E-04	8.13E-04	2024	1.63E-04	Fifth Ave HoRes Hall	7
547420	4179420	3.45E-04	4.36E-04	7.84E-04	2.42E-04	4.13E-04	3.33E-04	1.21E-04	2.01E-05	1.06E-04	1.05E-04	1.04E-04	7.84E-04	2024	1.57E-04	Fifth Ave HoRes Hall	8
547420	4179400	3.33E-04	4.20E-04	7.55E-04	2.34E-04	3.99E-04	3.21E-04	1.16E-04	1.94E-05	1.02E-04	1.01E-04	9.99E-05	7.55E-04	2024	1.51E-04	Fifth Ave HoRes Hall	9
547880	4178660	3.09E-05	3.90E-05	7.04E-05	2.20E-05	3.81E-05	3.07E-05	1.12E-05	1.80E-06	1.02E-05	1.01E-05	9.99E-06	7.04E-05	2024	1.41E-05	Clarendon ASchool	1
547900	4178680	3.08E-05	3.88E-05	7.01E-05	2.19E-05	3.79E-05	3.05E-05	1.11E-05	1.79E-06	1.01E-05	1.01E-05	9.95E-06	7.01E-05	2024	1.40E-05	Clarendon ASchool	2
547880	4178640	3.05E-05	3.85E-05	6.95E-05	2.17E-05	3.76E-05	3.03E-05	1.10E-05	1.78E-06	1.01E-05	1.00E-05	9.87E-06	6.95E-05	2024	1.39E-05	Clarendon ASchool	3
547920	4178680	3.05E-05	3.84E-05	6.94E-05	2.17E-05	3.75E-05	3.02E-05	1.10E-05	1.78E-06	1.00E-05	9.99E-06	9.85E-06	6.94E-05	2024	1.39E-05	Clarendon ASchool	4
547900	4178660	3.04E-05	3.83E-05	6.92E-05	2.16E-05	3.74E-05	3.02E-05	1.10E-05	1.77E-06	1.00E-05	9.96E-06	9.82E-06	6.92E-05	2024	1.38E-05	Clarendon ASchool	5
547900	4178640	3.03E-05	3.82E-05	6.89E-05	2.15E-05	3.73E-05	3.00E-05	1.09E-05	1.77E-06	9.97E-06	9.92E-06	9.78E-06	6.89E-05	2024	1.38E-05	Clarendon ASchool	6
547940	4178680	3.01E-05	3.80E-05	6.87E-05	2.14E-05	3.71E-05	2.99E-05	1.09E-05	1.76E-06	9.94E-06	9.88E-06	9.75E-06	6.87E-05	2024	1.37E-05	Clarendon ASchool	7
547920	4178640	3.01E-05	3.79E-05	6.85E-05	2.14E-05	3.70E-05	2.98E-05	1.09E-05	1.75E-06	9.90E-06	9.85E-06	9.71E-06	6.85E-05	2024	1.37E-05	Clarendon ASchool	8
547860	4178600	3.00E-05	3.79E-05	6.84E-05	2.14E-05	3.70E-05	2.98E-05	1.08E-05	1.75E-06	9.89E-06	9.83E-06	9.69E-06	6.84E-05	2024	1.37E-05	Clarendon ASchool	9
547920	4178660	3.00E-05	3.79E-05	6.83E-05	2.14E-05	3.70E-05	2.98E-05	1.08E-05	1.75E-06	9.89E-06	9.84E-06	9.70E-06	6.83E-05	2024	1.37E-05	Clarendon ASchool	10
548120	4179300	1.12E-04	1.42E-04	2.55E-04	7.94E-05	1.37E-04	1.10E-04	4.00E-05	6.55E-06	3.60E-05	3.58E-05	3.53E-05	2.55E-04	2024	5.11E-05	Aldea Hous Res Hall	1
548100	4179300	1.11E-04	1.40E-04	2.53E-04	7.88E-05	1.36E-04	1.09E-04	3.97E-05	6.49E-06	3.58E-05	3.56E-05	3.51E-05	2.53E-04	2024	5.06E-05	Aldea Hous Res Hall	2
548140	4179280	1.02E-04	1.29E-04	2.33E-04	7.24E-05	1.25E-04	1.00E-04	3.65E-05	5.98E-06	3.27E-05	3.26E-05	3.21E-05	2.33E-04	2024	4.66E-05	Aldea Hous Res Hall	3
548120	4179280	1.01E-04	1.27E-04	2.30E-04	7.15E-05	1.23E-04	9.92E-05	3.60E-05	5.89E-06	3.24E-05	3.22E-05	3.18E-05	2.30E-04	2024	4.59E-05	Aldea Hous Res Hall	4
548100	4179280	1.00E-04	1.27E-04	2.28E-04	7.10E-05	1.22E-04	9.86E-05	3.58E-05	5.85E-06	3.23E-05	3.21E-05	3.17E-05	2.28E-04	2024	4.56E-05	Aldea Hous Res Hall	5
548140	4179260	9.42E-05	1.19E-04	2.14E-04	6.67E-05	1.15E-04	9.26E-05	3.36E-05	5.50E-06	3.03E-05	3.01E-05	2.97E-05	2.14E-04	2024	4.29E-05	Aldea Hous Res Hall	6
548120	4179260	9.25E-05	1.17E-04	2.10E-04	6.55E-05	1.13E-04	9.09E-05	3.31E-05	5.40E-06	2.98E-05	2.96E-05	2.92E-05	2.10E-04	2024	4.21E-05	Aldea Hous Res Hall	7
548100	4179260	9.17E-05	1.16E-04	2.09E-04	6.49E-05	1.12E-04	9.03E-05	3.28E-05	5.35E-06	2.96E-05	2.95E-05	2.91E-05	2.09E-04	2024	4.17E-05	Aldea Hous Res Hall	8
548140	4179240	8.76E-05	1.11E-04	1.99E-04	6.21E-05	1.07E-04	8.62E-05	3.13E-05	5.11E-06	2.82E-05	2.81E-05	2.77E-05	1.99E-04	2024	3.99E-05	Aldea Hous Res Hall	9
548120	4179240	8.62E-05	1.09E-04	1.96E-04	6.11E-05	1.05E-04	8.49E-05	3.09E-05	5.03E-06	2.79E-05	2.77E-05	2.73E-05	1.96E-04	2024	3.92E-05	Aldea Hous Res Hall	10
547220	4179140	1.39E-04	1.76E-04	3.16E-04	9.80E-05	1.68E-04	1.35E-04	4.91E-05	8.12E-06	4.35E-05	4.33E-05	4.27E-05	3.16E-04	2024	6.32E-05	ABC Bay Ar Day Care	1
547200	4179140	1.37E-04	1.73E-04	3.11E-04	9.64E-05	1.65E-04	1.33E-04	4.83E-05	7.98E-06	4.28E-05	4.26E-05	4.20E-05	3.11E-04	2024	6.22E-05	ABC Bay Ar Day Care	2
547600	4179700	1.02E-03	1.29E-03	2.32E-03	7.11E-04	1.20E-03	9.71E-04	3.50E-04	5.97E-05	3.00E-04	2.98E-04	2.94E-04	2.32E-03	2024	4.64E-04	3rd Ave HouRes Hall	1
547600	4179720	9.57E-04	1.21E-03	2.17E-03	6.66E-04	1.13E-03	9.09E-04	3.28E-04	5.59E-05	2.81E-04	2.79E-04	2.76E-04	2.17E-03	2024	4.34E-04	3rd Ave HouRes Hall	2
547600	4179740	8.83E-04	1.12E-03	2.00E-03	6.14E-04	1.04E-03	8.40E-04	3.03E-04	5.16E-05	2.60E-04	2.59E-04	2.55E-04	2.00E-03	2024	4.00E-04	3rd Ave HouRes Hall	3
547600	4179760	8.07E-04	1.02E-03	1.83E-03	5.62E-04	9.52E-04	7.69E-04	2.77E-04	4.71E-05	2.39E-04	2.37E-04	2.34E-04	1.83E-03	2024	3.66E-04	3rd Ave HouRes Hall	4
547600	4179780	7.25E-04	9.15E-04	1.64E-03	5.05E-04	8.56E-04	6.91E-04	2.49E-04	4.23E-05	2.15E-04	2.14E-04	2.11E-04	1.64E-03	2024	3.29E-04	145 Irving S Res Hall	1
547580	4179780	6.43E-04	8.12E-04	1.46E-03	4.48E-04	7.60E-04	6.14E-04	2.22E-04	3.75E-05	1.92E-04	1.91E-04	1.88E-04	1.46E-03	2024	2.92E-04	145 Irving S Res Hall	2

UCSF Parnassus Heights New Hospital

New Hospital (2031)

Mitigated Construction Annual PM2.5 Concentration by Construction Year

Haul Truck Trip Adjustment Factor to Model

	One Way (miles)	
	HDMC	
CalEEMod, Haul	20	*haul truck trip distance as modeled in CalEEMod*
CalEEMod, Vend	7.3	*vendor trip distance as modeled in CalEEMod*
AERMOD	0.37	
% in Dispersion Model, Haul	2%	
% in Dispersion Model, Vend	5%	

Construction Emissions, *as applied to AERMOD results*

				Days				Total Mitigated PM2.5 (tons)				Total Mitigated PM2.5 (g/s)			
	Year	Start Date	Stop Date	3rd Trimester	0<2	2<16	Duration	Offroad	Hauling	Vendor	Idle	Offroad	Hauling	Vendor	Idle
New Hospital	2022	9/1/2022	12/31/2022	90.00	32.00	0.00	122	2.10E-03	1.00E-04	0.00E+00	2.17E-06	1.81E-04	1.59E-07	0.00E+00	1.87E-07
	2023	1/1/2023	12/31/2023	0.00	365.00	0.00	365	7.92E-03	1.80E-04	0.00E+00	4.96E-06	2.28E-04	9.57E-08	0.00E+00	1.43E-07
	2024	1/1/2024	12/31/2024	0.00	333.00	33.00	366	1.41E-02	5.59E-03	8.10E-04	2.31E-04	4.05E-04	2.96E-06	1.18E-06	6.63E-06
	2025	1/1/2025	12/31/2025	0.00	0.00	365.00	365	4.03E-03	0.00E+00	3.46E-03	3.40E-04	1.16E-04	0.00E+00	5.04E-06	9.77E-06
	2026	1/1/2026	12/31/2026	0.00	0.00	365.00	365	6.00E-03	0.00E+00	1.18E-02	1.07E-03	1.73E-04	0.00E+00	1.72E-05	3.08E-05
	2027	1/1/2027	12/31/2027	0.00	0.00	365.00	365	4.99E-03	0.00E+00	9.04E-03	7.60E-04	1.44E-04	0.00E+00	1.32E-05	2.19E-05
	2028	1/1/2028	12/31/2028	0.00	0.00	366.00	366	1.79E-03	0.00E+00	4.07E-03	3.04E-04	5.14E-05	0.00E+00	5.91E-06	8.73E-06
	2029	1/1/2029	12/31/2029	0.00	0.00	365.00	365	3.90E-04	0.00E+00	0.00E+00	0.00E+00	1.12E-05	0.00E+00	0.00E+00	0.00E+00
	2030	1/1/2030	12/31/2030	0.00	0.00	365.00	365	1.31E-03	2.30E-04	7.72E-03	4.45E-04	3.77E-05	1.22E-07	1.12E-05	1.28E-05
	2031	1/1/2031	12/31/2031	0.00	0.00	365.00	365	1.33E-03	2.00E-05	7.75E-03	4.17E-04	3.83E-05	1.06E-08	1.13E-05	1.20E-05
	2032	1/1/2032	12/31/2032	0.00	0.00	366.00	366	1.34E-03	2.00E-05	7.69E-03	3.88E-04	3.84E-05	1.06E-08	1.12E-05	1.11E-05

Particulate Matter concentration, $C_{PM2.5}$ (ug/m^3)

		HDMC										Max	Max Year	Receptor
X (UTM)	Y (UTM	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	$\mu g/m^3$		Determination
547180	4179700	1.53E-04	1.93E-04	3.51E-04	1.09E-04	1.82E-04	1.47E-04	5.42E-05	9.51E-06	4.92E-05	4.90E-05	4.84E-05	3.51E-04	2024	Stepping St School
547180	4179720	1.50E-04	1.89E-04	3.43E-04	1.07E-04	1.78E-04	1.44E-04	5.30E-05	9.29E-06	4.81E-05	4.79E-05	4.73E-05	3.43E-04	2024	Stepping St School
547160	4179700	1.46E-04	1.84E-04	3.34E-04	1.04E-04	1.73E-04	1.40E-04	5.16E-05	9.05E-06	4.69E-05	4.67E-05	4.61E-05	3.34E-04	2024	Stepping St School
547160	4179720	1.43E-04	1.80E-04	3.26E-04	1.02E-04	1.69E-04	1.37E-04	5.04E-05	8.84E-06	4.58E-05	4.56E-05	4.51E-05	3.26E-04	2024	Stepping St School
547980	4179760	1.10E-02	1.39E-02	2.54E-02	8.08E-03	1.38E-02	1.12E-02	4.14E-03	6.84E-04	3.98E-03	3.96E-03	3.90E-03	2.54E-02	2024	pot. res.
547980	4179780	9.07E-03	1.14E-02	2.12E-02	7.05E-03	1.28E-02	1.03E-02	3.89E-03	5.61E-04	4.23E-03	4.21E-03	4.15E-03	2.12E-02	2024	pot. res.
548000	4179760	9.07E-03	1.14E-02	2.09E-02	6.65E-03	1.14E-02	9.19E-03	3.41E-03	5.62E-04	3.29E-03	3.27E-03	3.23E-03	2.09E-02	2024	pot. res.
547980	4179740	8.86E-03	1.12E-02	2.03E-02	6.42E-03	1.09E-02	8.78E-03	3.24E-03	5.49E-04	3.04E-03	3.02E-03	2.97E-03	2.03E-02	2024	pot. res.
547980	4179720	8.84E-03	1.11E-02	2.03E-02	6.37E-03	1.07E-02	8.66E-03	3.19E-03	5.48E-04	2.93E-03	2.91E-03	2.87E-03	2.03E-02	2024	pot. res.
547940	4179800	8.54E-03	1.07E-02	1.98E-02	6.44E-03	1.14E-02	9.14E-03	3.44E-03	5.28E-04	3.54E-03	3.52E-03	3.48E-03	1.98E-02	2024	pot. res.
547980	4179700	8.52E-03	1.07E-02	1.95E-02	6.12E-03	1.03E-02	8.30E-03	3.05E-03	5.28E-04	2.77E-03	2.75E-03	2.71E-03	1.95E-02	2024	pot. res.
547860	4179780	8.53E-03	1.07E-02	1.95E-02	6.05E-03	1.00E-02	8.11E-03	2.97E-03	5.29E-04	2.63E-03	2.62E-03	2.58E-03	1.95E-02	2024	pot. res.
548000	4179740	7.82E-03	9.85E-03	1.79E-02	5.66E-03	9.56E-03	7.73E-03	2.85E-03	4.84E-04	2.66E-03	2.65E-03	2.61E-03	1.79E-02	2024	pot. res.
548000	4179780	7.65E-03	9.62E-03	1.79E-02	5.95E-03	1.08E-02	8.67E-03	3.29E-03	4.73E-04	3.58E-03	3.56E-03	3.51E-03	1.79E-02	2024	pot. res.
547560	4179660	7.93E-04	9.99E-04	1.81E-03	5.61E-04	9.26E-04	7.51E-04	2.75E-04	4.91E-05	2.44E-04	2.43E-04	2.40E-04	1.81E-03	2024	Lucia Child Day Care
547560	4179680	7.70E-04	9.70E-04	1.76E-03	5.45E-04	8.99E-04	7.29E-04	2.67E-04	4.77E-05	2.37E-04	2.36E-04	2.33E-04	1.76E-03	2024	Lucia Child Day Care
547540	4179660	6.95E-04	8.75E-04	1.59E-03	4.92E-04	8.13E-04	6.59E-04	2.42E-04	4.31E-05	2.15E-04	2.14E-04	2.11E-04	1.59E-03	2024	Lucia Child Day Care
547540	4179680	6.72E-04	8.47E-04	1.54E-03	4.76E-04	7.86E-04	6.38E-04	2.34E-04	4.17E-05	2.08E-04	2.07E-04	2.04E-04	1.54E-03	2024	Lucia Child Day Care
547480	4179400	3.69E-04	4.65E-04	8.44E-04	2.63E-04	4.37E-04	3.54E-04	1.30E-04	2.29E-05	1.17E-04	1.17E-04	1.15E-04	8.44E-04	2024	Kirkham Ch Day Care
547460	4179400	3.51E-04	4.42E-04	8.02E-04	2.50E-04	4.16E-04	3.37E-04	1.24E-04	2.17E-05	1.12E-04	1.11E-04	1.10E-04	8.02E-04	2024	Kirkham Ch Day Care
547240	4179660	1.88E-04	2.37E-04	4.31E-04	1.34E-04	2.23E-04	1.81E-04	6.65E-05	1.17E-05	6.02E-05	6.00E-05	5.92E-05	4.31E-04	2024	IndependenSchool
547240	4179680	1.85E-04	2.33E-04	4.23E-04	1.32E-04	2.19E-04	1.78E-04	6.53E-05	1.15E-05	5.91E-05	5.89E-05	5.81E-05	4.23E-04	2024	IndependenSchool
547220	4179660	1.78E-04	2.24E-04	4.07E-04	1.27E-04	2.11E-04	1.71E-04	6.28E-05	1.10E-05	5.70E-05	5.67E-05	5.60E-05	4.07E-04	2024	IndependenSchool
547220	4179680	1.75E-04	2.20E-04	4.00E-04	1.25E-04	2.07E-04	1.68E-04	6.17E-05	1.08E-05	5.60E-05	5.57E-05	5.50E-05	4.00E-04	2024	IndependenSchool
548260	4179640	1.73E-03	2.18E-03	3.98E-03	1.26E-03	2.14E-03	1.73E-03	6.39E-04	1.07E-04	6.03E-04	5.99E-04	5.90E-04	3.98E-03	2024	Haight AshbSchool
548260	4179620	1.68E-03	2.12E-03	3.86E-03	1.22E-03	2.06E-03	1.66E-03	6.15E-04	1.04E-04	5.74E-04	5.71E-04	5.63E-04	3.86E-03	2024	Haight AshbSchool
548280	4179640	1.61E-03	2.02E-03	3.69E-03	1.17E-03	1.99E-03	1.61E-03	5.94E-04	9.95E-05	5.63E-04	5.59E-04	5.51E-04	3.69E-03	2024	Haight AshbSchool
548280	4179620	1.57E-03	1.97E-03	3.60E-03	1.13E-03	1.92E-03	1.55E-03	5.74E-04	9.70E-05	5.38E-04	5.35E-04	5.27E-04	3.60E-03	2024	Haight AshbSchool
547420	4179560	3.79E-04	4.78E-04	8.67E-04	2.70E-04	4.48E-04	3.63E-04	1.33E-04	2.35E-05	1.20E-04	1.19E-04	1.18E-04	8.67E-04	2024	Fifth Ave HoRes Hall
547420	4179540	3.74E-04	4.71E-04	8.55E-04	2.66E-04	4.42E-04	3.58E-04	1.32E-04	2.32E-05	1.19E-04	1.18E-04	1.16E-04	8.55E-04	2024	Fifth Ave HoRes Hall
547420	4179520	3.70E-04	4.65E-04	8.45E-04	2.63E-04	4.38E-04	3.55E-04	1.30E-04	2.29E-05	1.17E-04	1.17E-04	1.15E-04	8.45E-04	2024	Fifth Ave HoRes Hall
547420	4179500	3.64E-04	4.58E-04	8.32E-04	2.59E-04	4.31E-04	3.49E-04	1.28E-04	2.25E-05	1.16E-04	1.15E-04	1.14E-04	8.32E-04	2024	Fifth Ave HoRes Hall
547420	4179480	3.55E-04	4.47E-04	8.12E-04	2.53E-04	4.21E-04	3.41E-04	1.25E-04	2.20E-05	1.13E-04	1.13E-04	1.11E-04	8.12E-04	2024	Fifth Ave HoRes Hall
547420	4179460	3.45E-04	4.35E-04	7.90E-04	2.46E-04	4.10E-04	3.32E-04	1.22E-04	2.14E-05	1.10E-04	1.10E-04	1.08E-04	7.90E-04	2024	Fifth Ave HoRes Hall
547420	4179440	3.37E-04	4.25E-04	7.71E-04	2.40E-04	4.00E-04	3.24E-04	1.19E-04	2.09E-05	1.08E-04	1.07E-04	1.06E-04	7.71E-04	2024	Fifth Ave HoRes Hall
547420	4179420	3.25E-04	4.09E-04	7.44E-04	2.32E-04	3.86E-04	3.13E-04	1.15E-04	2.01E-05	1.04E-04	1.03E-04	1.02E-04	7.44E-04	2024	Fifth Ave HoRes Hall
547420	4179400	3.13E-04	3.95E-04	7.17E-04	2.24E-04	3.72E-04	3.02E-04	1.11E-04	1.94E-05	1.00E-04	9.98E-05	9.85E-05	7.17E-04	2024	Fifth Ave HoRes Hall
547880	4178660	2.91E-05	3.66E-05	6.68E-05	2.10E-05	3.56E-05	2.88E-05	1.06E-05	1.80E-06	1.00E-05	9.96E-06	9.83E-06	6.68E-05	2024	Clarendon ASchool
547900	4178680	2.90E-05	3.65E-05	6.65E-05	2.10E-05	3.54E-05	2.87E-05	1.06E-05	1.79E-06	9.97E-06	9.92E-06	9.79E-06	6.65E-05	2024	Clarendon ASchool
547880	4178640	2.87E-05	3.62E-05	6.60E-05	2.08E-05	3.52E-05	2.84E-05	1.05E-05	1.78E-06	9.88E-06	9.83E-06	9.70E-06	6.60E-05	2024	Clarendon ASchool
547920	4178680	2.87E-05	3.61E-05	6.58E-05	2.07E-05	3.51E-05	2.84E-05	1.05E-05	1.78E-06	9.87E-06	9.82E-06	9.69E-06	6.58E-05	2024	Clarendon ASchool
547900	4178660	2.86E-05	3.60E-05	6.57E-05	2.07E-05	3.50E-05	2.83E-05	1.05E-05	1.77E-06	9.84E-06	9.79E-06	9.66E-06	6.57E-05	2024	Clarendon ASchool
547900	4178640	2.85E-05	3.59E-05	6.54E-05	2.06E-05	3.48E-05	2.82E-05	1.04E-05	1.77E-06	9.80E-06	9.75E-06	9.62E-06	6.54E-05	2024	Clarendon ASchool
547940	4178680	2.84E-05	3.57E-05	6.52E-05	2.05E-05	3.47E-05	2.81E-05	1.04E-05	1.76E-06	9.76E-06	9.71E-06	9.58E-06	6.52E-05	2024	Clarendon ASchool
547920	4178640	2.83E-05	3.57E-05	6.50E-05	2.05E-05	3.46E-05	2.80E-05	1.04E-05	1.75E-06	9.73E-06	9.68E-06	9.55E-06	6.50E-05	2024	Clarendon ASchool
547860	4178600	2.83E-05	3.56E-05	6.49E-05	2.05E-05	3.46E-05	2.80E-05	1.03E-05	1.75E-06	9.71E-06	9.66E-06	9.53E-06	6.49E-05	2024	Clarendon ASchool
547920	4178660	2.83E-05	3.56E-05	6.49E-05	2.04E-05	3.46E-05	2.80E-05	1.03E-05	1.75E-06	9.72E-06	9.67E-06	9.54E-06	6.49E-05	2024	Clarendon ASchool
548120	4179300	1.06E-04	1.33E-04	2.42E-04	7.60E-05	1.28E-04	1.03E-04	3.82E-05	6.55E-06	3.54E-05	3.52E-05	3.47E-05	2.42E-04	2024	Aldea Hous Res Hall
548100	4179300	1.05E-04	1.32E-04	2.40E-04	7.54E-05	1.27E-04	1.03E-04	3.79E-05	6.49E-06	3.52E-05	3.50E-05	3.45E-05	2.40E-04	2024	Aldea Hous Res Hall
548140	4179280	9.64E-05	1.21E-04	2.21E-04	6.93E-05	1.16E-04	9.43E-05	3.48E-05	5.98E-06	3.22E-05	3.20E-05	3.16E-05	2.21E-04	2024	Aldea Hous Res Hall
548120	4179280	9.51E-05	1.20E-04	2.18E-04	6.84E-05	1.15E-04	9.31E-05	3.43E-05	5.89E-06	3.19E-05	3.17E-05	3.13E-05	2.18E-04	2024	Aldea Hous Res Hall
548100	4179280	9.44E-05	1.19E-04	2.17E-04	6.80E-05	1.14E-04	9.26E-05	3.42E-05	5.85E-06	3.18E-05	3.16E-05	3.12E-05	2.17E-04	2024	Aldea Hous Res Hall
548140	4179260	8.87E-05	1.12E-04	2.03E-04	6.38E-05	1.07E-04	8.69E-05	3.21E-05	5.50E-06	2.97E-05	2.96E-05	2.92E-05	2.03E-04	2024	Aldea Hous Res Hall
548120	4179260	8.71E-05	1.10E-04	2.00E-04	6.27E-05	1.05E-04	8.54E-05	3.15E-05	5.40E-06	2.93E-05	2.91E-05	2.88E-05	2.00E-04	2024	Aldea Hous Res Hall
548100	4179260	8.63E-05	1.09E-04	1.98E-04	6.22E-05	1.05E-04	8.47E-05	3.13E-05	5.35E-06	2.91E-05	2.90E-05	2.86E-05	1.98E-04	2024	Aldea Hous Res Hall
548140	4179240	8.25E-05	1.04E-04	1.89E-04	5.94E-05	9.99E-05	8.09E-05	2.99E-05	5.11E-06	2.77E-05	2.76E-05	2.72E-05	1.89E-04	2024	Aldea Hous Res Hall
548120	4179240	8.11E-05	1.02E-04	1.86E-04	5.85E-05	9.84E-05	7.97E-05	2.94E-05	5.03E-06	2.74E-05	2.72E-05	2.69E-05	1.86E-04	2024	Aldea Hous Res Hall
547220	4179140	1.31E-04	1.65E-04	3.00E-04	9.38E-05	1.57E-04	1.27E-04	4.68E-05	8.12E-06	4.28E-05	4.26E-05	4.20E-05	3.00E-04	2024	ABC Bay AreaDay Care
547200	4179140	1.29E-04	1.62E-04	2.95E-04	9.22E-05	1.54E-04	1.25E-04	4.60E-05	7.98E-06	4.22E-05	4.19E-05	4.14E-05	2.95E-04	2024	ABC Bay AreaDay Care
547600	4179700	9.64E-04	1.21E-03	2.20E-03	6.81E-04	1.12E-03	9.11E-04	3.34E-04	5.97E-05	2.95E-04	2.94E-04	2.90E-04	2.20E-03	2024	3rd Ave HouRes Hall
547600	4179720	9.01E-04	1.14E-03	2.06E-03	6.37E-04	1.05E-03	8.53E-04	3.12E-04	5.59E-05	2.77E-04	2.76E-04	2.72E-04	2.06E-03	2024	3rd Ave HouRes Hall
547600	4179740	8.32E-04	1.05E-03	1.90E-03	5.88E-04	9.71E-04	7.88E-04	2.89E-04	5.16E-05	2.56E-04	2.55E-04	2.52E-04	1.90E-03	2024	3rd Ave HouRes Hall
547600	4179760	7.60E-04	9.58E-04	1.74E-03	5.38E-04	8.89E-04	7.21E-04	2.64E-04	4.71E-05	2.35E-04	2.34E-04	2.31E-04	1.74E-03	2024	3rd Ave HouRes Hall
547600	4179780	6.82E-04	8.60E-04	1.56E-03	4.83E-04	7.99E-04	6.48E-04	2.38E-04	4.23E-05	2.12E-04	2.11E-04	2.08E-04	1.56E-03	2024	145 Irving S Res Hall
547580	4179780	6.06E-04	7.63E-04	1.38E-03	4.29E-04	7.10E-04	5.76E-04	2.11E-04	3.75E-05	1.89E-04	1.88E-04	1.85E-04	1.38E-03	2024	145 Irving S Res Hall

Operational HRA Calculations

UCSF Parnassus Heights New Hospital

New Hospital (2031)

Operational Inhalation Cancer Risk for Residential Child to Adult Receptor

Risk = $\sum[Dose_i * CFP * ASF_i * ED_i/AT * FAH_i]$

where,

Dose = C_{air} * {BR/BW} *A * EF * 10^{-6}

CFP = Cancer Potency Factor

ASF = Age sentivity factor

ED = Exposure duration

AT = Averaging time, 70 yrs

FAH = Fraction of time at home

Cair = Pollutant concentration

{BR/BW} = Daily Breathing Rate

A = Inhalation absorption factor

EF = Exposure Frequency

i = age bin groups

Equations Rearranged

Risk = C_{air} * CPF * $\sum$ [$\{BR/BW\}_i$ * A * EF * ASF_i * ED_i/AT * FAH_i * 10^{-6}]

Risk inputs part 1 / Risk calculations part 1

Age Bin	BR/BW (L/kg-day)	A	EF	FAH	ED/AT	ASF	CF1 (ug/mg)	CF2 (L/m^3)	$\{BR/BW\}_i$ * A * EF * ASF_i * ED_i/AT * FAH_i * 10^{-6}
3rd Trimester	361	1	0.96	0.85	0.00	10	1.00E-03	1.00E-03	1.05E-05
0<2	1090	1	0.96	0.85	0.03	10	1.00E-03	1.00E-03	2.54E-04
2<16	745	1	0.96	0.72	0.20	3	1.00E-03	1.00E-03	3.09E-04
16<30	335	1	0.96	0.73	0.20	1	1.00E-03	1.00E-03	4.69E-05
								total	**6.20E-04**

Pollutant Concentrations by Source

Unique Identifier	Emission Source		EDG1	EDG2	EDG3	Delivery 1	Delivery 2	Delivery 3	Fume Hoods										
	Pollutant		DPM	DPM	DPM	DPM	DPM	DPM	Arsenic and	Benzene	Benzidine	Benzyl chloride	Cadmium and	Carbon tetrachloride	Chloroform	Chromium (VI)	Dioxane, 1,4-	Ethyl Benzene	Ethylene
	CPF (mg/kg-day)$^{-1}$		1.1	1.1	1.1	1.1	1.1	1.1	12	0.1	500	0.17	15	0.15	0.019	510	0.027	0.0087	0.25
	UTM X	UTM Y	DPM (ug/m^3)	DPM (ug/m^3)	DPM (ug/m^3)	DPM (ug/m^3)	DPM (ug/m^3)	DPM (ug/m^3)	Arsenic (ug/m^3)	Benzene (ug/m^3)	Benzidine (ug/m^3)	Benzyl chloride (ug/m^3)	Cadmium (ug/m^3)	Carbon tetrachloride (ug/m^3)	Chloroform (ug/m^3)	Chromium (VI) (ug/m^3)	Dioxane, 1,4- (ug/m^3)	Ethyl Benzene (ug/m^3)	Ethylene dibromide (ug/m^3)
547980 4179760	547980	4179760	2.51E-04	2.24E-04	1.39E-04	2.22E-03	1.26E-03	7.18E-03	7.24E-11	1.08E-05	0.00E+00	2.47E-08	1.08E-08	3.32E-05	2.26E-03	1.32E-10	1.59E-05	6.91E-06	8.91E-06
547940 4179800	547940	4179800	1.30E-04	1.31E-04	7.99E-05	1.85E-03	1.17E-03	8.23E-03	4.33E-11	6.44E-06	0.00E+00	1.48E-08	6.45E-09	1.98E-05	1.35E-03	7.87E-11	9.49E-06	4.13E-06	5.33E-06
547980 4179780	547980	4179780	1.99E-04	1.84E-04	1.15E-04	1.90E-03	1.12E-03	6.10E-03	5.86E-11	8.72E-06	0.00E+00	2.00E-08	8.74E-09	2.69E-05	1.83E-03	1.07E-10	1.29E-05	5.60E-06	7.21E-06
547980 4179740	547980	4179740	2.64E-04	2.28E-04	1.40E-04	2.32E-03	1.40E-03	4.89E-03	7.42E-11	1.10E-05	0.00E+00	2.53E-08	1.11E-08	3.40E-05	2.31E-03	1.35E-10	1.63E-05	7.08E-06	9.13E-06
548000 4179760	548000	4179760	2.42E-04	2.11E-04	1.31E-04	2.01E-03	1.14E-03	5.08E-03	6.80E-11	1.01E-05	0.00E+00	2.32E-08	1.01E-08	3.12E-05	2.12E-03	1.24E-10	1.49E-05	6.49E-06	8.37E-06
547860 4179800	547860	4179800	6.36E-05	7.82E-05	5.32E-05	1.89E-03	1.36E-03	5.75E-03	3.31E-11	4.93E-06	0.00E+00	1.13E-08	4.94E-09	1.52E-05	1.03E-03	6.02E-11	7.27E-06	3.16E-06	4.08E-06
547980 4179720	547980	4179720	2.49E-04	2.13E-04	1.34E-04	2.37E-03	1.39E-03	3.62E-03	7.23E-11	1.08E-05	0.00E+00	2.46E-08	1.08E-08	3.31E-05	2.25E-03	1.31E-10	1.59E-05	6.90E-06	8.90E-06
548000 4179740	548000	4179740	2.49E-04	2.12E-04	1.30E-04	2.19E-03	1.30E-03	3.84E-03	6.90E-11	1.03E-05	0.00E+00	2.35E-08	1.03E-08	3.16E-05	2.15E-03	1.25E-10	1.51E-05	6.58E-06	8.49E-06
547920 4179820	547920	4179820	8.02E-05	8.61E-05	5.31E-05	1.59E-03	1.06E-03	5.61E-03	3.25E-11	4.84E-06	0.00E+00	1.11E-08	4.84E-09	1.49E-05	1.01E-03	5.91E-11	7.13E-06	3.10E-06	4.00E-06
547940 4179820	547940	4179820	9.13E-05	9.55E-05	5.93E-05	1.55E-03	1.01E-03	5.29E-03	3.36E-11	4.99E-06	0.00E+00	1.14E-08	5.00E-09	1.54E-05	1.05E-03	6.10E-11	7.36E-06	3.20E-06	4.13E-06
547900 4179820	547900	4179820	6.73E-05	7.47E-05	4.59E-05	1.59E-03	1.09E-03	5.29E-03	3.04E-11	4.52E-06	0.00E+00	1.04E-08	4.53E-09	1.39E-05	9.47E-04	5.53E-11	6.67E-06	2.90E-06	3.74E-06
548020 4179760	548020	4179760	2.31E-04	1.99E-04	1.23E-04	1.82E-03	1.03E-03	3.70E-03	6.43E-11	9.57E-06	0.00E+00	2.19E-08	9.59E-09	2.95E-05	2.00E-03	1.17E-10	1.41E-05	6.14E-06	7.91E-06
548000 4179720	548000	4179720	2.32E-04	1.95E-04	1.22E-04	2.26E-03	1.31E-03	3.00E-03	6.66E-11	9.91E-06	0.00E+00	2.27E-08	9.93E-09	3.05E-05	2.07E-03	1.21E-10	1.46E-05	6.35E-06	8.19E-06
548020 4179740	548020	4179740	2.35E-04	1.97E-04	1.20E-04	2.06E-03	1.21E-03	3.17E-03	6.43E-11	9.57E-06	0.00E+00	2.19E-08	9.59E-09	2.95E-05	2.01E-03	1.17E-10	1.41E-05	6.14E-06	7.92E-06
547960 4179820	547960	4179820	1.02E-04	1.05E-04	6.56E-05	1.48E-03	9.51E-04	4.58E-03	3.47E-11	5.17E-06	0.00E+00	1.18E-08	5.18E-09	1.59E-05	1.08E-03	6.32E-11	7.62E-06	3.32E-06	4.28E-06
547980 4179700	547980	4179700	2.03E-04	1.73E-04	1.13E-04	2.52E-03	1.39E-03	2.27E-03	6.25E-11	9.29E-06	0.00E+00	2.13E-08	9.31E-09	2.86E-05	1.95E-03	1.14E-10	1.37E-05	5.96E-06	7.69E-06
548040 4179740	548040	4179740	2.30E-04	1.91E-04	1.18E-04	1.93E-03	1.09E-03	2.95E-03	6.36E-11	9.47E-06	0.00E+00	2.17E-08	9.49E-09	2.92E-05	1.98E-03	1.16E-10	1.40E-05	6.07E-06	7.83E-06
548020 4179780	548020	4179780	1.88E-04	1.66E-04	1.05E-04	1.58E-03	9.29E-04	3.37E-03	5.43E-11	8.07E-06	0.00E+00	1.85E-08	8.09E-09	2.49E-05	1.69E-03	9.87E-11	1.19E-05	5.18E-06	6.68E-06
548040 4179720	548040	4179720	2.14E-04	1.76E-04	1.12E-04	2.13E-03	1.19E-03	2.56E-03	6.16E-11	9.16E-06	0.00E+00	2.10E-08	9.18E-09	2.82E-05	1.92E-03	1.12E-10	1.35E-05	5.88E-06	7.58E-06
548000 4179700	548000	4179700	1.93E-04	1.63E-04	1.06E-04	2.40E-03	1.35E-03	2.14E-03	5.95E-11	8.86E-06	0.00E+00	2.03E-08	8.88E-09	2.73E-05	1.86E-03	1.08E-10	1.31E-05	5.68E-06	7.33E-06
547980 4179820	547980	4179820	1.10E-04	1.10E-04	7.00E-05	1.40E-03	8.86E-04	3.78E-03	3.58E-11	5.32E-06	0.00E+00	1.22E-08	5.33E-09	1.64E-05	1.11E-03	6.50E-11	7.84E-06	3.41E-06	4.40E-06
548040 4179760	548040	4179760	2.12E-04	1.80E-04	1.12E-04	1.63E-03	9.33E-04	2.85E-03	6.00E-11	8.93E-06	0.00E+00	2.05E-08	8.94E-09	2.75E-05	1.87E-03	1.09E-10	1.32E-05	5.73E-06	7.38E-06
547860 4179820	547860	4179820	4.50E-05	5.51E-05	3.62E-05	1.51E-03	1.10E-03	3.72E-03	2.39E-11	3.55E-06	0.00E+00	8.14E-09	3.56E-09	1.09E-05	7.44E-04	4.34E-11	5.24E-06	2.28E-06	2.94E-06
547980 4179680	547980	4179680	1.49E-04	1.28E-04	8.85E-05	2.81E-03	1.46E-03	1.38E-03	5.02E-11	7.47E-06	0.00E+00	1.71E-08	7.48E-09	2.30E-05	1.56E-03	9.13E-11	1.10E-05	4.79E-06	6.18E-06
548040 4179700	548040	4179700	1.78E-04	1.46E-04	9.65E-05	2.22E-03	1.24E-03	1.97E-03	5.47E-11	8.14E-06	0.00E+00	1.87E-08	8.16E-09	2.51E-05	1.71E-03	9.95E-11	1.20E-05	5.22E-06	6.73E-06
548020 4179700	548020	4179700	1.79E-04	1.49E-04	9.69E-05	2.21E-03	1.26E-03	1.94E-03	5.49E-11	8.17E-06	0.00E+00	1.87E-08	8.19E-09	2.52E-05	1.71E-03	9.99E-11	1.20E-05	5.24E-06	6.76E-06
547920 4179840	547920	4179840	5.88E-05	6.33E-05	3.86E-05	1.34E-03	9.20E-04	3.72E-03	2.60E-11	3.86E-06	0.00E+00	8.85E-09	3.87E-09	1.19E-05	8.09E-04	4.72E-11	5.70E-06	2.48E-06	3.20E-06
548000 4179680	548000	4179680	1.43E-04	1.22E-04	8.48E-05	2.57E-03	1.39E-03	1.42E-03	4.86E-11	7.23E-06	0.00E+00	1.66E-08	7.25E-09	2.23E-05	1.52E-03	8.84E-11	1.07E-05	4.64E-06	5.98E-06
547940 4179840	547940	4179840	6.79E-05	7.22E-05	4.52E-05	1.30E-03	8.74E-04	3.52E-03	2.73E-11	4.06E-06	0.00E+00	9.30E-09	4.07E-09	1.25E-05	8.50E-04	4.96E-11	5.98E-06	2.60E-06	3.36E-06
548040 4179780	548040	4179780	1.71E-04	1.49E-04	9.38E-05	1.44E-03	8.48E-04	2.65E-03	5.00E-11	7.44E-06	0.00E+00	1.71E-08	7.46E-09	2.29E-05	1.56E-03	9.10E-11	1.10E-05	4.77E-06	6.16E-06
548000 4179820	548000	4179820	1.17E-04	1.15E-04	7.27E-05	1.31E-03	8.24E-04	3.10E-03	3.66E-11	5.45E-06	0.00E+00	1.25E-08	5.46E-09	1.68E-05	1.14E-03	6.66E-11	8.03E-06	3.49E-06	4.51E-06
548060 4179720	548060	4179720	1.76E-04	1.42E-04	9.10E-05	1.74E-03	9.56E-04	2.27E-03	5.25E-11	7.82E-06	0.00E+00	1.79E-08	7.83E-09	2.41E-05	1.64E-03	9.55E-11	1.15E-05	5.01E-06	6.47E-06
548060 4179700	548060	4179700	1.55E-04	1.24E-04	8.19E-05	2.03E-03	1.11E-03	1.97E-03	4.80E-11	7.15E-06	0.00E+00	1.64E-08	7.16E-09	2.20E-05	1.50E-03	8.73E-11	1.05E-05	4.58E-06	5.91E-06
547980 4179660	547980	4179660	9.42E-05	8.40E-05	6.37E-05	3.06E-03	1.52E-03	8.93E-04	3.66E-11	5.45E-06	0.00E+00	1.25E-08	5.46E-09	1.68E-05	1.14E-03	6.66E-11	8.03E-06	3.49E-06	4.51E-06
548060 4179740	548060	4179740	1.80E-04	1.47E-04	9.28E-05	1.61E-03	9.04E-04	2.29E-03	5.32E-11	7.91E-06	0.00E+00	1.81E-08	7.93E-09	2.44E-05	1.66E-03	9.67E-11	1.17E-05	5.08E-06	6.54E-06
547900 4179840	547900	4179840	4.75E-05	5.28E-05	3.21E-05	1.31E-03	9.20E-04	3.38E-03	2.33E-11	3.47E-06	0.00E+00	7.94E-09	3.47E-09	1.07E-05	7.26E-04	4.23E-11	5.11E-06	2.22E-06	2.87E-06
547980 4179640	547980	4179640	5.20E-05	4.97E-05	4.32E-05	3.18E-03	1.54E-03	6.36E-04	2.48E-11	3.69E-06	0.00E+00	8.45E-09	3.69E-09	1.14E-05	7.72E-04	4.51E-11	5.44E-06	2.37E-06	3.05E-06
547960 4179840	547960	4179840	7.64E-05	8.03E-05	5.10E-05	1.24E-03	8.20E-04	3.15E-03	2.83E-11	4.20E-06	0.00E+00	9.63E-09	4.21E-09	1.29E-05	8.81E-04	5.14E-11	6.20E-06	2.70E-06	3.48E-06
548020 4179680	548020	4179680	1.33E-04	1.12E-04	7.78E-05	2.30E-03	1.27E-03	1.37E-03	4.53E-11	6.74E-06	0.00E+00	1.54E-08	6.75E-09	2.07E-05	1.41E-03	8.23E-11	9.93E-06	4.32E-06	5.57E-06
548060 4179760	548060	4179760	1.65E-04	1.37E-04	8.54E-05	1.46E-03	8.43E-04	2.26E-03	4.89E-11	7.27E-06	0.00E+00	1.67E-08	7.29E-09	2.24E-05	1.52E-03	8.89E-11	1.07E-05	4.67E-06	6.02E-06
548000 4179660	548000	4179660	9.35E-05	8.25E-05	6.27E-05	2.71E-03	1.42E-03	9.52E-04	3.67E-11	5.46E-06	0.00E+00	1.25E-08	5.47E-09	1.68E-05	1.14E-03	6.68E-11	8.06E-06	3.50E-06	4.52E-06
548040 4179680	548040	4179680	1.33E-04	1.09E-04	7.57E-05	2.20E-03	1.23E-03	1.40E-03	4.47E-11	6.65E-06	0.00E+00	1.52E-08	6.66E-09	2.05E-05	1.39E-03	8.12E-11	9.80E-06	4.26E-06	5.50E-06
547980 4179620	547980	4179620	2.57E-05	2.81E-05	2.94E-05	3.08E-03	1.50E-03	4.89E-04	1.63E-11	2.43E-06	0.00E+00	5.57E-09	2.44E-09	7.49E-06	5.09E-04	2.97E-11	3.59E-06	1.56E-06	2.01E-06
548060 4179680	548060	4179680	1.22E-04	9.74E-05	6.70E-05	2.13E-03	1.17E-03	1.52E-03	4.02E-11	5.99E-06	0.00E+00	1.37E-08	6.00E-09	1.84E-05	1.25E-03	7.32E-11	8.83E-06	3.84E-06	4.95E-06
548020 4179820	548020	4179820	1.18E-04	1.14E-04	7.20E-05	1.23E-03	7.66E-04	2.56E-03	3.65E-11	5.42E-06	0.00E+00	1.24E-08	5.43E-09	1.67E-05	1.14E-03	6.63E-11	8.00E-06	3.48E-06	4.49E-06
547980 4179840	547980	4179840	8.30E-05	8.56E-05	5.46E-05	1.18E-03	7.68E-04	2.75E-03	2.87E-11	4.27E-06	0.00E+00	9.78E-09	4.28E-09	1.31E-05	8.94E-04	5.22E-11	6.29E-06	2.74E-06	3.53E-06
547980 4179600	547980	4179600	1.22E-05	1.65E-05	2.11E-05	2.70E-03	1.39E-03	3.87E-04	1.08E-11	1.61E-06	0.00E+00	3.70E-09	1.62E-09	4.97E-06	3.38E-04	1.97E-11	2.38E-06	1.03E-06	1.33E-06
548000 4179640	548000	4179640	5.42E-05	5.05E-05	4.37E-05	2.73E-03	1.40E-03	6.63E-04	2.58E-11	3.83E-06	0.00E+00	8.78E-09	3.84E-09	1.18E-05	8.03E-04	4.68E-11	5.65E-06	2.46E-06	3.17E-06
548020 4179660	548020	4179660	9.08E-05	7.85E-05	5.94E-05	2.39E-03	1.29E-03	9.62E-04	3.54E-11	5.26E-06	0.00E+00	1.21E-08	5.27E-09	1.62E-05	1.10E-03	6.43E-11	7.76E-06	3.37E-06	4.35E-06
548060 4179780	548060	4179780	1.32E-04	1.13E-04	6.99E-05	1.31E-03	7.75E-04	2.13E-03	4.00E-11	5.95E-06	0.00E+00	1.36E-08	5.96E-09	1.83E-05	1.25E-03	7.27E-11	8.77E-06	3.82E-06	4.92E-06
548080 4179720	548080	4179720	1.30E-04	1.03E-04	6.64E-05	1.54E-03	8.59E-04	1.81E-03	3.99E-11	5.94E-06	0.00E+00	1.36E-08	5.96E-09	1.83E-05	1.24E-03	7.26E-11	8.76E-06	3.81E-06	4.92E-06
548080 4179700	548080	4179700	1.21E-04	9.52E-05	6.26E-05	1.63E-03	8.96E-04	1.74E-03	3.79E-11	5.64E-06	0.00E+00	1.29E-08	5.65E-09	1.74E-05	1.18E-03	6.89E-11	8.31E-06	3.62E-06	4.66E-06
548040 4179660	548040	4179660	9.33E-05	7.84E-05	5.85E-05	2.22E-03	1.23E-03	1.01E-03	3.55E-11	5.29E-06	0.00E+00	1.21E-08	5.30E-09	1.63E-05	1.11E-03	6.46E-11	7.80E-06	3.39E-06	4.37E-06
548080 4179680	548080	4179680	1.02E-04	7.98E-05	5.51E-05	1.87E-03	1.02E-03	1.50E-03	3.33E-11	4.95E-06	0.00E+00	1.14E-08	4.96E-09	1.53E-05	1.04E-03	6.05E-11	7.30E-06	3.18E-06	4.10E-06
548000 4179840	548000	4179840	9.19E-05	9.33E-05	5.94E-05	1.13E-03	7.29E-04	2.43E-03	3.02E-11	4.49E-06	0.00E+00	1.03E-08	4.50E-09	1.38E-05	9.41E-04	5.49E-11	6.62E-06	2.88E-06	3.72E-06
548080 4179740	548080	4179740	1.24E-04	9.98E-05	6.34E-05	1.44E-03	8.17E-04	1.86E-03	3.85E-11	5.72E-06	0.00E+00	1.31E-08	5.74E-09	1.76E-05	1.20E-03	6.99E-11	8.44E-06	3.67E-06	4.73E-06
548060 4179660	548060	4179660	8.82E-05	6.97E-05	5.08E-05	2.10E-03	1.17E-03	1.08E-03	3.17E-11	4.71E-06	0.00E+00	1.08E-08	4.72E-09	1.45E-05	9.87E-04	5.76E-11	6.94E-06	3.02E-06	3.90E-06
547860 4179840	547860	4179840	3.37E-05	4.06E-05	2.52E-05	1.23E-03	9.05E-04	2.59E-03	1.79E-11	2.66E-06	0.00E+00	6.09E-09	2.66E-09	8.18E-06	5.57E-04	3.25E-11	3.92E-06	1.71E-06	2.20E-06
548000 4179620	548000	4179620	2.91E-05	2.99E-05	3.04E-05	2.63E-03	1.35E-03	4.97E-04	1.76E-11	2.62E-06	0.00E+00	6.00E-09	2.63E-09	8.07E-06	5.49E-04	3.20E-11	3.86E-06	1.68E-06	2.17E-06
548020 4179640	548020	4179640	5.65E-05	5.05E-05	4.27E-05	2.36E-03	1.26E-03	6.70E-04	2.58E-11	3.84E-06	0.00E+00	8.80E-09	3.85E-09	1.18E-05	8.04E-04	4.69E-11	5.66E-06	2.46E-06	3.18E-06
548040 4179820	548040	4179820	1.02E-04	9.46E-05	5.82E-05	1.14E-03	7.09E-04	2.12E-03	3.14E-11	4.67E-06	0.00E+00	1.07E-08	4.68E-09	1.44E-05	9.79E-04	5.71E-11	6.89E-06	3.00E-06	3.87E-06
548080 4179760	548080	4179760	1.11E-04	9.15E-05	5.75E-05	1.32E-03	7.68E-04	1.85E-03	3.49E-11	5.19E-06	0.00E+00	1.19E-08	5.20E-09	1.60E-05	1.09E-03	6.34E-11	7.65E-06	3.33E-06	4.29E-06
548080 4179660	548080	4179660	7.90E-05	6.18E-05	4.49E-05	1.95E-03	1.07E-03	1.18E-03	2.72E-11	4.05E-06	0.00E+00	9.29E-09	4.06E-09	1.25E-05	8.49E-04	4.95E-11	5.98E-06	2.60E-06	3.35E-06
548040 4179640	548040	4179640	6.12E-05	5.22E-05	4.30E-05	2.18E-03	1.20E-03	7.29E-04	2.66E-11	3.95E-06	0.00E+00	9.06E-09	3.96E-09	1.22E-05	8.28E-04	4.83E-11	5.83E-06	2.54E-06	3.27E-06
548060 4179640	548060	4179640	6.28E-05	5.07E-05	3.99E-05	2.11E-03	1.17E-03	8.41E-04	2.56E-11	3.80E-06	0.00E+00	8.72E-09	3.81E-09	1.17E-05	7.97E-04	4.65E-11	5.61E-06	2.44E-06	3.15E-06
547980 4179580	547980	4179580	7.10E-06	1.17E-05	1.71E-05	2.16E-03	1.22E-03	3.18E-04	7.97E-12	1.19E-06	0.00E+00	2.72E-09	1.19E-09	3.65E-06	2.48E-04	1.45E-11	1.75E-06	7.61E-07	9.81E-07
548020 4179840	548020	4179840	8.43E-05	8.31E-05	5.21E-05	1.07E-03	6.84E-04	2.10E-03	2.76E-11	4.10E-06	0.00E+00	9.39E-09	4.11E-09	1.26E-05	8.59E-04	5.01E-11	6.04E-06	2.63E-06	3.39E-06
548100 4179680	548100	4179680	8.36E-05	6.54E-05	4.56E-05	1.63E-03	9.01E-04	1.35E-03	2.53E-11	3.76E-06	0.00E+00	8.62E-09	3.77E-09	1.16E-05	7.88E-04	4.60E-11	5.55E-06	2.41E-06	3.11E-06
547940 4179860	547940	4179860	4.81E-05	5.14E-05	3.17E-05	1.06E-03	7.30E-04	2.34E-03	2.08E-11	3.09E-06	0.00E+00	7.08E-09	3.10E-09	9.52E-06	6.47E-04	3.78E-11	4.56E-06	1.98E-06	2.56E-06
548000 4179600	548000	4179600	1.56E-05	1.85E-05	2.22E-05	2.35E-03	1.25E-03	3.88E-04	1.23E-11	1.82E-06	0.00E+00	4.18E-09	1.83E-09	5.61E-06	3.82E-04	2.23E-11	2.69E-06	1.17E-06	1.51E-06
547920 4179860	547920	4179860	4.03E-05	4.37E-05	2.63E-05	1.07E-03	7.52E-04	2.36E-03	1.93E-11	2.87E-06	0.00E+00	6.57E-09	2.87E-09	8.83E-06	6.01E-04	3.51E-11	4.23E-06	1.84E-06	2.37E-06
548100 4179700	548100	4179700	9.42E-05	7.43E-05	4.99E-05	1.45E-03	8.08E-04	1.48E-03	2.82E-11	4.19E-06	0.00E+00	9.61E-09	4.20E-09	1.29E-05	8.78E-04	5.12E-11	6.18E-06	2.69E-06	3.47E-06
548100 4179720	548100	4179720	9.85E-05	7.96E-05	5.38E-05	1.37E-03	7.78E-04	1.52E-03	3.02E-11	4.50E-06	0.00E+00	1.03E-08	4.50E-09	1.38E-05	9.42E-04	5.49E-11	6.63E-06	2.88E-06	3.72E-06
548080 4179640	548080	4179640	5.92E-05	4.63E-05	3.59E-05	1.93E-03	1.08E-03	8.94E-04	2.14E-11	3.18E-06	0.00E+00	7.28E-09	3.19E-09	9.79E-06	6.66E-04	3.89E-11	4.69E-06	2.04E-06	2.63E-06
548100 4179740	548100	4179740	1.01E-04	8.30E-05	5.49E-05	1.29E-03	7.42E-04	1.55E-03	3.10E-11	4.62E-06	0.00E+00	1.06E-08	4.63E-09	1.42E-05	9.67E-04	5.64E-11	6.81E-06	2.96E-06	3.82E-06
548100 4179660	548100	4179660	7.21E-05	5.54E-05	4.05E-05	1.72E-03	9.63E-04	1.11E-03	2.21E-11	3.28E-06	0.00E+00	7.52E-09	3.29E-09	1.01E-05	6.88E-04	4.01E-11	4.84E-06	2.11E-06	2.72E-06
547900 4179860	547900	4179860	3.36E-05	3.67E-05	2.13E-05	1.06E-03	7.59E-04	2.26E-03	1.73E-11	2.57E-06	0.00E+00	5.90E-09	2.58E-09	7.93E-06	5.39E-04	3.15E-11	3.80E-06	1.65E-06	2.13E-06
547960 4179860	547960	4179860	5.55E-05	5.84E-05	3.62E-05	1.02E-03	6.89E-04	2.17E-03	2.15E-11	3.20E-06	0.00E+00	7.33E-09	3.21E-09	9.85E-06	6.70E-04	3.91E-11	4.72E-06	2.05E-06	2.65E-06
548100 4179760	548100	4179760	9.96E-05	8.29E-05	5.42E-05	1.19E-03	7.00E-04	1.54E-03	3.04E-11	4.52E-06	0.00E+00	1.03E-08	4.53E-09	1.39E-05	9.46E-04	5.52E-11	6.66E-06	2.90E-06	3.74E-06
548060 4179820	548060	4179820	8.36E-05	7.60E-05	4.65E-05	1.06E-03	6.60E-04	1.79E-03	2.62E-11	3.91E-06	0.00E+00	8.95E-09	3.91E-09	1.20E-05	8.18E-04	4.77E-11	5.76E-06	2.51E-06	3.23E-06
548040 4179620	548040	4179620	3.81E-05	3.28E-05	2.98E-05	2.02E-03	1.12E-03	5.16E-04	1.90E-11	2.83E-06	0.00E+00	6.48E-09	2.83E-09	8.70E-06	5.92E-04	3.45E-11	4.17E-06	1.81E-06	2.34E-06
548040 4179840	548040	4179840	7.64E-05	7.28E-05	4.48E-05	1.00E-03	6.41E-04	1.81E-03	2.46E-11	3.65E-06	0.00E+00	8.37E-09	3.66E-09	1.12E-05	7.65E-04	4.46E-11	5.39E-06	2.34E-06	3.02E-06
547880 4179860	547880	4179860	2.93E-05	3.31E-05	1.91E-05	1.04E-03	7.56E-04	2.09E-03	1.56E-11	2.32E-06	0.00E+00	5.31E-09	2.32E-09	7.14E-06	4.86E-04	2.83E-11	3.42E-06	1.49E-06	1.92E-06
548080 4179620	548080	4179620	4.22E-05	3.28E-05	2.73E-05	1.90E-03	1.07E-03	7.27E-04	1.62E-11	2.41E-06	0.00E+00	5.52E-09	2.41E-09	7.42E-06	5.05E-04	2.94E-11	3.55E-06	1.55E-06	1.99E-06
548060 4179620	548060	4179620	4.19E-05	3.47E-05	3.08E-05	1.94E-03	1.10E-03	5.92E-04	1.90E-11	2.83E-06	0.00E+00	6.48E-09	2.83E-09	8.70E-06	5.92E-04	3.45E-11	4.17E-06	1.81E-06	2.34E-06
547980 4179860	547980	4179860	6.12E-05	6.38E-05	3.95E-05	9.56E-04	6.41E-04	1.95E-03	2.16E-11	3.22E-06	0.00E+00	7.38E-09	3.23E-09	9.91E-06	6.74E-04	3.93E-11	4.75E-06	2.07E-06	2.66E-06
548020 4179600	548020	4179600	2.01E-05	2.03E-05	2.28E-05	2.06E-03	1.12E-03	3.83E-04	1.34E-11	1.99E-06	0.00E+00	4.57E-09	2.00E-09	6.13E-06	4.17E-04	2.43E-11	2.94E-06	1.28E-06	1.65E-06
548100 4179780	548100	4179780	9.63E-05	8.23E-05	5.38E-05	1.10E-03	6.57E-04	1.50E-03	2.90E-11	4.32E-06	0.00E+00	9.90E-09	4.33E-09	1.33E-05	9.05E-04	5.28E-11	6.37E-06	2.77E-06	3.57E-06
548120 4179720	548120	4179720	9.79E-05	8.07E-05	5.67E-05	1.22E-03	7.03E-04	1.29E-03	2.84E-11	4.22E-06	0.00E+00	9.67E-09	4.23E-09	1.30E-05	8.84E-04	5.15E-11	6.22E-06	2.71E-06	3.49E-06
548120 4179700	548120	4179700	9.37E-05	7.63E-05	5.52E-05	1.28E-03	7.28E-04	1.23E-03	2.70E-11	4.02E-06	0.00E+00	9.20E-09	4.03E-09	1.24E-05	8.41E-04	4.91E-11	5.92E-06	2.58E-06	3.32E-06
547860 4179860	547860	4179860	2.69E-05	3.19E-05	1.88E-05	1.02E-03	7.58E-04	1.91E-03	1.41E-11	2.10E-06	0.00E+00	4.82E-09	2.11E-09	6.48E-06	4.41E-04	2.57E-11	3.10E-06	1.35E-06	1.74E-06
548120 4179680	548120	4179680	8.80E-05	7.07E-05	5.02E-05	1.33E-03	7.47E-04	1.17E-03	2.45E-11	3.65E-06	0.00E+00	8.36E-09	3.66E-09	1.12E-05	7.64E-04	4.46E-11	5.38E-06	2.34E-06	3.02E-06
548120 4179740	548120	4179740	9.94E-05	8.33E-05	5.76E-05	1.15E-03	6.70E-04	1.30E-03	2.89E-11	4.30E-06	0.00E+00	9.84E-09	4.30E-09	1.32E-05	9.00E-04	5.25E-11	6.33E-06	2.76E-06	3.55E-06
548000 4179860	548000	4179860	6.27E-05	6.38E-05	3.93E-05	9.31E-04	6.18E-04	1.80E-03	2.14E-11	3.19E-06	0.00E+00	7.31E-09	3.20E-09	9.82E-06	6.68E-04	3.90E-11	4.70E-06	2.05E-06	2.64E-06
548120 4179660	548120	4179660	7.82E-05	6.16E-05	4.50E-05	1.40E-03	7.58E-04	1.07E-03	2.18E-11	3.24E-06	0.00E+00	7.43E-09	3.25E-09	9.98E-06	6.79E-04	3.96E-11	4.78E-06	2.08E-06	2.68E-06
548100 4179620	548100	4179620	4.88E-05	3.73E-05	2.98E-05	1.70E-03	9.68E-04	7.28E-04	1.58E-11	2.36E-06	0.00E+00	5.40E-09	2.36E-09	7.25E-06	4.94E-04	2.88E-11	3.47E-06	1.51E-06	1.95E-06
548120 4179760	548120	4179760	9.86E-05	8.37E-05	5.74E-05	1.07E-03	6.37E-04	1.30E-03	2.85E-11	4.24E-06	0.00E+00	9.72E-09	4.25E-09	1.31E-05	8.88E-04	5.18E-11	6.25E-06	2.72E-06	3.51E-06
548120 4179640	548120	4179640	6.74E-05	5.25E-05	3.96E-05	1.50E-03	8.43E-04	9.20E-04	1.89E-11	2.82E-06	0.00E+00	6.45E-09	2.82E-09	8.67E-06	5.90E-04	3.44E-11	4.15E-06	1.81E-06	2.33E-06
548100 4179800	548100	4179800	8.92E-05	7.81E-05	5.14E-05	1.00E-03	6.12E-04	1.41E-03	2.65E-11	3.95E-06	0.00E+00	9.04E-09	3.95E-09	1.21E-05	8.27E-04	4.82E-11	5.82E-06	2.53E-06	3.26E-06
548080 4179600	548080	4179600	3.21E-05	2.55E-05	2.28E-05	1.78E-03	1.03E-03	5.66E-04	1.28E-11	1.90E-06	0.00E+00	4.36E-09	1.90E-09	5.85E-06	3.98E-04	2.32E-11	2.80E-06	1.22E-06	1.57E-06
548020 4179860	548020	4179860	6.15E-05	6.11E-05	3.74E-05	9.11E-04	5.98E-04	1.65E-03	2.07E-11	3.08E-06	0.00E+00	7.06E-09	3.09E-09	9.48E-06	6.45E-04	3.76E-11	4.54E-06	1.98E-06	2.55E-06
548040 4179600	548040	4179600	2.53E-05	2.25E-05	2.30E-05	1.84E-03	1.03E-03	3.91E-04	1.39E-11	2.07E-06	0.00E+00	4.74E-09	2.07E-09	6.37E-06	4.33E-04	2.53E-11	3.05E-06	1.33E-06	1.71E-06
547840 4179860	547840	4179860	2.56E-05	3.18E-05	1.98E-05	1.01E-03	7.60E-04	1.71E-03	1.29E-11	1.93E-06	0.00E+00	4.41E-09	1.93E-09	5.93E-06	4.03E-04	2.35E-11	2.84E-06	1.24E-06	1.59E-06
548060 4179840	548060	4179840	6.67E-05	6.20E-05	3.85E-05	9.44E-04	6.00E-04	1.56E-03	2.15E-11	3.19E-06	0.00E+00	7.32E-09	3.20E-09	9.83E-06	6.69E-04	3.90E-11	4.71E-06	2.05E-06	2.64E-06
548060 4179600	548060	4179600	2.88E-05	2.45E-05	2.38E-05	1.79E-03	1.04E-03	4.58E-04	1.38E-11	2.06E-06	0.00E+00	4.72E-09	2.06E-09	6.34E-06	4.31E-04	2.52E-11	3.04E-06	1.32E-06	1.70E-06
547980 4179560	547980	4179560	5.45E-06	1.01E-05	1.55E-05	1.61E-03	1.02E-03	2.68E-04	6.45E-12	9.60E-07	0.00E+00	2.20E-09	9.62E-10	2.96E-06	2.01E-04	1.17E-11	1.42E-06	6.16E-07	7.94E-07
548120 4179780	548120	4179780	9.48E-05	8.20E-05	5.64E-05	9.88E-04	5.98E-04	1.25E-03	2.73E-11	4.06E-06	0.00E+00	9.29E-09	4.06E-09	1.25E-05	8.50E-04	4.96E-11	5.98E-06	2.60E-06	3.36E-06
548120 4179620	548120	4179620	5.58E-05	4.30E-05	3.34E-05	1.51E-03	8.57E-04	7.67E-04	1.60E-11	2.38E-06	0.00E+00	5.46E-09	2.39E-09	7.34E-06	5.00E-04	2.91E-11	3.52E-06	1.53E-06	1.97E-06
548020 4179580	548020	4179580	1.32E-05	1.46E-05	1.84E-05	1.76E-03	1.01E-03	3.10E-04	9.75E-12	1.45E-06	0.00E+00	3.32E-09	1.45E-09	4.46E-06	3.04E-04	1.77E-11	2.14E-06	9.30E-07	1.20E-06
548140 4179720	548140	4179720	9.71E-05	8.16E-05	5.97E-05	1.09E-03	6.35E-04	1.10E-03	2.66E-11	3.95E-06	0.00E+00	9.06E-09	3.96E-09	1.22E-05	8.28E-04	4.83E-11	5.83E-06	2.54E-06	3.27E-06
548140 4179700	548140	4179700	9.29E-05	7.75E-05	5.76E-05	1.13E-03	6.56E-04	1.06E-03	2.53E-11	3.77E-06	0.00E+00	8.63E-09	3.78E-09	1.16E-05	7.89E-04	4.60E-11	5.56E-06	2.42E-06	3.12E-06
548140 4179740	548140	4179740	9.89E-05	8.44E-05	6.12E-05	1.03E-03	6.11E-04	1.12E-03	2.72E-11	4.05E-06	0.00E+00	9.27E-09	4.05E-09	1.25E-05	8.47E-04	4.94E-11	5.96E-06	2.60E-06	3.35E-06
547940 4179880	547940	4179880	3.52E-05	3.73E-05	2.21E-05	8.86E-04	6.21E-04	1.70E-03	1.59E-11	2.36E-06	0.00E+00	5.41E-09	2.37E-09	7.27E-06	4.95E-04	2.89E-11	3.48E-06	1.51E-06	1.95E-06
548140 4179680	548140	4179680	8.68E-05	7.12E-05	5.40E-05	1.17E-03	6.72E-04	1.01E-03	2.35E-11	3.50E-06	0.00E+00	8.02E-09	3.51E-09	1.08E-05	7.33E-04	4.28E-11	5.16E-06	2.24E-06	2.89E-06
547920 4179880	547920	4179880	2.99E-05	3.17E-05	1.81E-05	8.92E-04	6.34E-04	1.70E-03	1.47E-11	2.19E-06	0.00E+00	5.03E-09	2.20E-09	6.75E-06	4.59E-04	2.68E-11	3.23E-06	1.41E-06	1.81E-06
547960 4179880	547960	4179880	4.03E-05	4.25E-05	2.57E-05	8.71E-04	6.02E-04	1.66E-03	1.66E-11	2.47E-06	0.00E+00	5.65E-09	2.47E-09	7.60E-06	5.17E-04	3.02E-11	3.64E-06	1.58E-06	2.04E-06
548080 4179840	548080	4179840	6.98E-05	6.52E-05	4.25E-05	8.92E-04	5.65E-04	1.37E-03	2.17E-11	3.23E-06	0.00E+00	7.39E-09	3.23E-09	9.93E-06	6.76E-04	3.94E-11	4.76E-06	2.07E-06	2.67E-06
548080 4179580	548080	4179580	2.40E-05	1.99E-05	1.95E-05	1.66E-03	9.78E-04	4.83E-04	1.03E-11	1.53E-06	0.00E+00	3.52E-09	1.54E-09	4.72E-06	3.21E-04	1.87E-11	2.26E-06	9.84E-07	1.27E-06
548140 4179760	548140	4179760	9.82E-05	8.51E-05	6.16E-05	9.73E-04	5.84E-04	1.11E-03	2.70E-11	4.02E-06	0.00E+00	9.22E-09	4.03E-09	1.24E-05	8.43E-04	4.92E-11	5.93E-06	2.58E-06	3.33E-06
547900 4179880	547900	4179880	2.62E-05	2.85E-05	1.61E-05	8.95E-04	6.46E-04	1.67E-03	1.39E-11	2.07E-06	0.00E+00	4.74E-09	2.07E-09	6.36E-06	4.33E-04	2.53E-11	3.05E-06	1.33E-06	1.71E-06
548040 4179860	548040	4179860	5.35E-05	5.21E-05	3.22E-05	8.77E-04	5.72E-04	1.50E-03	1.84E-11	2.74E-06	0.00E+00	6.28E-09	2.74E-09	8.43E-06	5.74E-04	3.35E-11	4.04E-06	1.76E-06	2.27E-06
547980 4179880	547980	4179880	4.52E-05	4.69E-05	2.81E-05	8.50E-04	5.80E-04	1.57E-03	1.71E-11	2.54E-06	0.00E+00	5.82E-09	2.55E-09	7.82E-06	5.32E-04	3.10E-11	3.74E-06	1.63E-06	2.10E-06
548140 4179660	548140	4179660	8.11E-05	6.59E-05	5.05E-05	1.19E-03	6.82E-04	9.44E-04	2.15E-11	3.19E-06	0.00E+00	7.31E-09	3.20E-09	9.83E-06	6.69E-04	3.90E-11	4.71E-06	2.05E-06	2.64E-06
547880 4179880	547880	4179880	2.39E-05	2.66E-05	1.47E-05	8.94E-04	6.54E-04	1.60E-03	1.28E-11	1.91E-06	0.00E+00	4.38E-09	1.91E-09	5.88E-06	4.00E-04	2.33E-11	2.82E-06	1.23E-06	1.58E-06
548120 4179600	548120	4179600	4.59E-05	3.54E-05	2.87E-05	1.45E-03	8.31E-04	6.65E-04	1.35E-11	2.00E-06	0.00E+00	4.59E-09	2.01E-09	6.16E-06	4.19E-04	2.45E-11	2.95E-06	1.28E-06	1.66E-06
548100 4179580	548100	4179580	3.00E-05	2.38E-05	2.14E-05	1.54E-03	8.90E-04	5.72E-04	1.08E-11	1.60E-06	0.00E+00	3.67E-09	1.60E-09	4.93E-06	3.35E-04	1.96E-11	2.36E-06	1.03E-06	1.32E-06
548140 4179780	548140	4179780	9.50E-05	8.33E-05	6.02E-05	9.12E-04	5.55E-04	1.09E-03	2.62E-11	3.89E-06	0.00E+00	8.92E-09	3.90E-09	1.20E-05	8.15E-04	4.76E-11	5.74E-06	2.50E-06	3.22E-06
548040 4179580	548040	4179580	1.75E-05	1.72E-05	2.01E-05	1.61E-03	9.39E-04	3.16E-04	1.05E-11	1.56E-06	0.00E+00	3.57E-09	1.56E-09	4.80E-06	3.26E-04	1.90E-11	2.30E-06	9.99E-07	1.29E-06
548060 4179580	548060	4179580	2.02E-05	1.78E-05	1.89E-05	1.60E-03	9.55E-04	3.70E-04	1.01E-11	1.50E-06	0.00E+00	3.45E-09	1.51E-09	4.63E-06	3.15E-04	1.84E-11	2.22E-06	9.65E-07	1.24E-06
548000 4179880	548000	4179880	4.53E-05	4.65E-05	2.84E-05	8.27E-04	5.58E-04	1.47E-03	1.67E-11	2.49E-06	0.00E+00	5.70E-09	2.49E-09	7.65E-06	5.21E-04	3.04E-11	3.67E-06	1.60E-06	2.06E-06
548140 4179640	548140	4179640	7.12E-05	5.70E-05	4.38E-05	1.20E-03	6.83E-04	8.66E-04	1.88E-11	2.79E-06	0.00E+00	6.40E-09	2.80E-09	8.60E-06	5.85E-04	3.41E-11	4.12E-06	1.79E-06	2.31E-06
548160 4179720	548160	4179720	9.78E-05	8.42E-05	6.43E-05	9.86E-04	5.83E-04	9.63E-04	2.54E-11	3.78E-06	0.00E+00	8.65E-09	3.78E-09	1.16E-05	7.91E-04	4.61E-11	5.57E-06	2.42E-06	3.12E-06
547860 4179880	547860	4179880	2.25E-05	2.62E-05	1.49E-05	8.88E-04	6.60E-04	1.49E-03	1.18E-11	1.76E-06	0.00E+00	4.03E-09	1.76E-09	5.42E-06	3.69E-04	2.15E-11	2.60E-06	1.13E-06	1.46E-06
548160 4179700	548160	4179700	9.46E-05	8.04E-05	6.21E-05	1.03E-03	6.01E-04	9.37E-04	2.43E-11	3.61E-06	0.00E+00	8.28E-09	3.62E-09	1.11E-05	7.57E-04	4.42E-11	5.33E-06	2.32E-06	2.99E-06
548060 4179860	548060	4179860	5.65E-05	5.48E-05	3.55E-05	8.41E-04	5.45E-04	1.35E-03	1.86E-11	2.77E-06	0.00E+00	6.34E-09	2.77E-09	8.51E-06	5.79E-04	3.38E-11	4.08E-06	1.77E-06	2.29E-06
547740 4179820	547740	4179820	1.70E-05	2.46E-05	2.34E-05	1.11E-03	9.43E-04	1.08E-03	1.13E-11	1.68E-06	0.00E+00	3.85E-09	1.68E-09	5.17E-06	3.52E-04	2.05E-11	2.48E-06	1.08E-06	1.39E-06
548160 4179740	548160	4179740	9.90E-05	8.59E-05	6.51E-05	9.40E-04	5.62E-04	9.76E-04	2.59E-11	3.85E-06	0.00E+00	8.83E-09	3.86E-09	1.19E-05	8.07E-04	4.71E-11	5.68E-06	2.47E-06	3.19E-06
548100 4179840	548100	4179840	7.25E-05	6.77E-05	4.62E-05	8.41E-04	5.33E-04	1.21E-03	2.16E-11	3.21E-06	0.00E+00	7.35E-09	3.22E-09	9.88E-06	6.72E-04	3.92E-11	4.73E-06	2.06E-06	2.65E-06
548160 4179680	548160	4179680	8.90E-05	7.47E-05	5.83E-05	1.05E-03	6.13E-04	8.94E-04	2.26E-11	3.37E-06	0.00E+00	7.72E-09	3.38E-09	1.04E-05	7.06E-04	4.12E-11	4.97E-06	2.16E-06	2.79E-06
548140 4179800	548140	4179800	8.96E-05	8.03E-05	5.84E-05	8.50E-04	5.25E-04	1.05E-03	2.46E-11	3.66E-06	0.00E+00	8.38E-09	3.67E-09	1.13E-05	7.66E-04	4.47E-11	5.39E-06	2.35E-06	3.03E-06
548160 4179760	548160	4179760	9.74E-05	8.57E-05	6.48E-05	8.89E-04	5.38E-04	9.71E-04	2.56E-11	3.81E-06	0.00E+00	8.74E-09	3.82E-09	1.17E-05	7.99E-04	4.66E-11	5.62E-06	2.45E-06	3.15E-06

Pollutant Concentrations by Source (continued) / Risk calculations part 2

Unique Identifier	Fume Hoods								PCUP								EDG	DELIVERY	FH	PCUP	Total	Receptor Type Determination
	Ethylene	Formaldehyde	Hydrazine	Methylene bis (2-	Methylene	Nickel and	PAH (as	Vinyl	1,3-Butadiene	Acetaldehyde	Benzene	Ethyl	Formaldehyde	Naphthalene	Propylene oxide	Total PAH (excluding						
	0.072	0.021	0.0049	1.5	0.0035	0.91	3.9	0.27	0.6	0.01	0.1	0.0087	0.021	0.12	0.013	3.9	Cancer Risk (per million)					
	Ethylene dichloride (ug/m^3)	Formaldehyde (ug/m^3)	Hydrazine (ug/m^3)	Methylene bis (2-chloroaniline), 4,4'- (ug/m^3)	Methylene chloride (ug/m^3)	Nickel (ug/m^3)	PAH (as benzo(a)pyrene) (ug/m^3)	Vinyl chloride (ug/m^3)	1,3-Butadiene (ug/m^3)	Acetaldehyde (ug/m^3)	Benzene (ug/m^3)	Ethyl Benzene (ug/m^3)	Formaldehyde (ug/m^3)	Naphthalene (ug/m^3)	Propylene oxide (ug/m^3)	PAH (as benzo(a)pyrene) (ug/m^3)						
547980 4179760	9.96E-07	5.32E-05	4.93E-07	0.00E+00	2.88E-03	0.00E+00	1.45E-13	0.00E+00	1.86E-06	1.77E-04	4.49E-04	1.47E-04	6.37E-02	6.94E-06	1.26E-04	4.33E-06	0.42	7.27	0.04	0.87	8.60	pot. res.
547940 4179800	5.95E-07	3.18E-05	2.95E-07	0.00E+00	1.72E-03	0.00E+00	8.65E-14	0.00E+00	1.22E-06	1.15E-04	2.92E-04	9.57E-05	4.15E-02	4.49E-06	8.20E-05	2.81E-06	0.23	7.67	0.02	0.57	8.49	pot. res.
547980 4179780	8.06E-07	4.30E-05	3.99E-07	0.00E+00	2.33E-03	0.00E+00	1.17E-13	0.00E+00	1.63E-06	1.55E-04	3.91E-04	1.28E-04	5.56E-02	6.02E-06	1.10E-04	3.77E-06	0.34	6.22	0.03	0.76	7.35	pot. res.
547980 4179740	1.02E-06	5.45E-05	5.05E-07	0.00E+00	2.96E-03	0.00E+00	1.48E-13	0.00E+00	1.89E-06	1.80E-04	4.55E-04	1.49E-04	6.46E-02	7.10E-06	1.27E-04	4.41E-06	0.43	5.87	0.04	0.88	7.22	pot. res.
548000 4179760	9.35E-07	4.99E-05	4.63E-07	0.00E+00	2.71E-03	0.00E+00	1.36E-13	0.00E+00	1.78E-06	1.70E-04	4.30E-04	1.41E-04	6.10E-02	6.64E-06	1.20E-04	4.14E-06	0.40	5.61	0.04	0.83	6.88	pot. res.
547860 4179800	4.55E-07	2.43E-05	2.26E-07	0.00E+00	1.32E-03	0.00E+00	6.63E-14	0.00E+00	6.44E-07	6.15E-05	1.55E-04	5.15E-05	2.20E-02	2.50E-06	4.34E-05	1.53E-06	0.13	6.14	0.02	0.30	6.59	pot. res.
547980 4179720	9.94E-07	5.31E-05	4.92E-07	0.00E+00	2.88E-03	0.00E+00	1.45E-13	0.00E+00	1.70E-06	1.62E-04	4.10E-04	1.35E-04	5.83E-02	6.49E-06	1.15E-04	4.00E-06	0.41	5.04	0.04	0.80	6.28	pot. res.
548000 4179740	9.48E-07	5.06E-05	4.70E-07	0.00E+00	2.75E-03	0.00E+00	1.38E-13	0.00E+00	1.75E-06	1.67E-04	4.22E-04	1.39E-04	5.99E-02	6.59E-06	1.18E-04	4.09E-06	0.40	5.00	0.04	0.82	6.26	pot. res.
547920 4179820	4.47E-07	2.39E-05	2.21E-07	0.00E+00	1.29E-03	0.00E+00	6.50E-14	0.00E+00	8.11E-07	7.71E-05	1.94E-04	6.40E-05	2.76E-02	3.02E-06	5.47E-05	1.88E-06	0.15	5.63	0.02	0.38	6.18	pot. res.
547940 4179820	4.61E-07	2.46E-05	2.28E-07	0.00E+00	1.34E-03	0.00E+00	6.71E-14	0.00E+00	9.09E-07	8.63E-05	2.18E-04	7.16E-05	3.10E-02	3.36E-06	6.13E-05	2.10E-06	0.17	5.35	0.02	0.42	5.96	pot. res.
547900 4179820	4.18E-07	2.23E-05	2.07E-07	0.00E+00	1.21E-03	0.00E+00	6.08E-14	0.00E+00	7.14E-07	6.80E-05	1.71E-04	5.66E-05	2.44E-02	2.69E-06	4.82E-05	1.67E-06	0.13	5.44	0.02	0.33	5.92	pot. res.
548020 4179760	8.84E-07	4.72E-05	4.38E-07	0.00E+00	2.56E-03	0.00E+00	1.29E-13	0.00E+00	1.70E-06	1.61E-04	4.09E-04	1.34E-04	5.81E-02	6.32E-06	1.14E-04	3.94E-06	0.38	4.47	0.03	0.79	5.67	pot. res.
548000 4179720	9.15E-07	4.89E-05	4.53E-07	0.00E+00	2.65E-03	0.00E+00	1.33E-13	0.00E+00	1.55E-06	1.48E-04	3.75E-04	1.24E-04	5.33E-02	5.94E-06	1.05E-04	3.66E-06	0.37	4.48	0.04	0.73	5.62	pot. res.
548020 4179740	8.84E-07	4.72E-05	4.38E-07	0.00E+00	2.56E-03	0.00E+00	1.29E-13	0.00E+00	1.66E-06	1.58E-04	4.00E-04	1.31E-04	5.68E-02	6.24E-06	1.12E-04	3.87E-06	0.38	4.39	0.03	0.78	5.58	pot. res.
547960 4179820	4.78E-07	2.55E-05	2.36E-07	0.00E+00	1.38E-03	0.00E+00	6.95E-14	0.00E+00	1.00E-06	9.52E-05	2.41E-04	7.89E-05	3.42E-02	3.69E-06	6.76E-05	2.32E-06	0.19	4.78	0.02	0.47	5.45	pot. res.
547980 4179700	8.59E-07	4.58E-05	4.25E-07	0.00E+00	2.49E-03	0.00E+00	1.25E-13	0.00E+00	1.35E-06	1.29E-04	3.26E-04	1.08E-04	4.63E-02	5.24E-06	9.09E-05	3.21E-06	0.33	4.22	0.03	0.63	5.22	pot. res.
548040 4179740	8.75E-07	4.67E-05	4.33E-07	0.00E+00	2.53E-03	0.00E+00	1.27E-13	0.00E+00	1.60E-06	1.52E-04	3.86E-04	1.27E-04	5.48E-02	6.03E-06	1.08E-04	3.74E-06	0.37	4.06	0.03	0.75	5.22	pot. res.
548020 4179780	7.46E-07	3.98E-05	3.69E-07	0.00E+00	2.16E-03	0.00E+00	1.09E-13	0.00E+00	1.54E-06	1.46E-04	3.70E-04	1.21E-04	5.25E-02	5.67E-06	1.04E-04	3.55E-06	0.31	4.01	0.03	0.72	5.07	pot. res.
548040 4179720	8.46E-07	4.52E-05	4.19E-07	0.00E+00	2.45E-03	0.00E+00	1.23E-13	0.00E+00	1.42E-06	1.35E-04	3.43E-04	1.13E-04	4.87E-02	5.44E-06	9.57E-05	3.35E-06	0.34	4.01	0.03	0.67	5.05	pot. res.
548000 4179700	8.18E-07	4.37E-05	4.05E-07	0.00E+00	2.37E-03	0.00E+00	1.19E-13	0.00E+00	1.23E-06	1.17E-04	2.97E-04	9.83E-05	4.22E-02	4.80E-06	8.27E-05	2.93E-06	0.32	4.02	0.03	0.58	4.94	pot. res.
547980 4179820	4.91E-07	2.62E-05	2.43E-07	0.00E+00	1.42E-03	0.00E+00	7.15E-14	0.00E+00	1.08E-06	1.02E-04	2.58E-04	8.46E-05	3.67E-02	3.96E-06	7.27E-05	2.48E-06	0.20	4.13	0.02	0.50	4.85	pot. res.
548040 4179760	8.25E-07	4.40E-05	4.08E-07	0.00E+00	2.39E-03	0.00E+00	1.20E-13	0.00E+00	1.59E-06	1.51E-04	3.82E-04	1.25E-04	5.42E-02	5.91E-06	1.07E-04	3.68E-06	0.34	3.69	0.03	0.74	4.81	pot. res.
547860 4179820	3.28E-07	1.75E-05	1.63E-07	0.00E+00	9.51E-04	0.00E+00	4.78E-14	0.00E+00	4.94E-07	4.72E-05	1.19E-04	3.95E-05	1.69E-02	1.92E-06	3.33E-05	1.17E-06	0.09	4.31	0.01	0.23	4.65	pot. res.
547980 4179680	6.90E-07	3.68E-05	3.42E-07	0.00E+00	2.00E-03	0.00E+00	1.00E-13	0.00E+00	9.85E-07	9.44E-05	2.39E-04	7.94E-05	3.39E-02	3.92E-06	6.64E-05	2.37E-06	0.25	3.85	0.03	0.46	4.59	pot. res.
548040 4179700	7.52E-07	4.02E-05	3.72E-07	0.00E+00	2.18E-03	0.00E+00	1.09E-13	0.00E+00	1.17E-06	1.12E-04	2.84E-04	9.40E-05	4.03E-02	4.59E-06	7.91E-05	2.80E-06	0.29	3.71	0.03	0.55	4.58	pot. res.
548020 4179700	7.55E-07	4.03E-05	3.74E-07	0.00E+00	2.19E-03	0.00E+00	1.10E-13	0.00E+00	1.18E-06	1.13E-04	2.86E-04	9.45E-05	4.05E-02	4.61E-06	7.95E-05	2.81E-06	0.29	3.69	0.03	0.55	4.56	pot. res.
547920 4179840	3.57E-07	1.91E-05	1.77E-07	0.00E+00	1.03E-03	0.00E+00	5.19E-14	0.00E+00	6.21E-07	5.91E-05	1.49E-04	4.91E-05	2.12E-02	2.33E-06	4.19E-05	1.45E-06	0.11	4.08	0.01	0.29	4.49	pot. res.
548000 4179680	6.68E-07	3.57E-05	3.31E-07	0.00E+00	1.94E-03	0.00E+00	9.72E-14	0.00E+00	9.43E-07	9.04E-05	2.29E-04	7.61E-05	3.24E-02	3.77E-06	6.36E-05	2.28E-06	0.24	3.67	0.03	0.44	4.38	pot. res.
547940 4179840	3.75E-07	2.00E-05	1.86E-07	0.00E+00	1.09E-03	0.00E+00	5.45E-14	0.00E+00	6.99E-07	6.64E-05	1.68E-04	5.51E-05	2.38E-02	2.60E-06	4.71E-05	1.62E-06	0.13	3.88	0.01	0.33	4.35	pot. res.
548040 4179780	6.88E-07	3.67E-05	3.41E-07	0.00E+00	1.99E-03	0.00E+00	1.00E-13	0.00E+00	1.42E-06	1.35E-04	3.42E-04	1.12E-04	4.86E-02	5.26E-06	9.59E-05	3.29E-06	0.28	3.36	0.03	0.66	4.34	pot. res.
548000 4179820	5.03E-07	2.69E-05	2.49E-07	0.00E+00	1.46E-03	0.00E+00	7.32E-14	0.00E+00	1.13E-06	1.07E-04	2.71E-04	8.87E-05	3.85E-02	4.14E-06	7.62E-05	2.60E-06	0.21	3.57	0.02	0.53	4.32	pot. res.
548060 4179720	7.22E-07	3.86E-05	3.58E-07	0.00E+00	2.09E-03	0.00E+00	1.05E-13	0.00E+00	1.34E-06	1.28E-04	3.24E-04	1.06E-04	4.59E-02	5.12E-06	9.03E-05	3.15E-06	0.28	3.39	0.03	0.63	4.32	pot. res.
548060 4179700	6.60E-07	3.52E-05	3.27E-07	0.00E+00	1.91E-03	0.00E+00	9.60E-14	0.00E+00	1.16E-06	1.10E-04	2.80E-04	9.25E-05	3.97E-02	4.50E-06	7.80E-05	2.75E-06	0.25	3.49	0.03	0.54	4.30	pot. res.
547980 4179660	5.03E-07	2.69E-05	2.49E-07	0.00E+00	1.46E-03	0.00E+00	7.32E-14	0.00E+00	7.71E-07	7.40E-05	1.87E-04	6.25E-05	2.65E-02	3.12E-06	5.20E-05	1.88E-06	0.16	3.73	0.02	0.36	4.28	pot. res.
548060 4179740	7.31E-07	3.90E-05	3.62E-07	0.00E+00	2.12E-03	0.00E+00	1.06E-13	0.00E+00	1.40E-06	1.33E-04	3.37E-04	1.11E-04	4.79E-02	5.28E-06	9.42E-05	3.27E-06	0.29	3.28	0.03	0.66	4.25	pot. res.
547900 4179840	3.20E-07	1.71E-05	1.59E-07	0.00E+00	9.28E-04	0.00E+00	4.66E-14	0.00E+00	5.26E-07	5.01E-05	1.26E-04	4.17E-05	1.79E-02	1.99E-06	3.55E-05	1.23E-06	0.09	3.82	0.01	0.25	4.17	pot. res.
547980 4179640	3.41E-07	1.82E-05	1.69E-07	0.00E+00	9.87E-04	0.00E+00	4.96E-14	0.00E+00	7.85E-07	7.53E-05	1.89E-04	6.36E-05	2.69E-02	3.18E-06	5.29E-05	1.91E-06	0.10	3.65	0.01	0.37	4.13	pot. res.
547960 4179840	3.88E-07	2.07E-05	1.92E-07	0.00E+00	1.13E-03	0.00E+00	5.65E-14	0.00E+00	7.80E-07	7.40E-05	1.87E-04	6.14E-05	2.66E-02	2.88E-06	5.26E-05	1.80E-06	0.14	3.55	0.02	0.36	4.08	pot. res.
548020 4179680	6.22E-07	3.32E-05	3.08E-07	0.00E+00	1.80E-03	0.00E+00	9.05E-14	0.00E+00	9.52E-07	9.12E-05	2.31E-04	7.68E-05	3.27E-02	3.80E-06	6.42E-05	2.30E-06	0.22	3.37	0.02	0.45	4.06	pot. res.
548060 4179760	6.72E-07	3.59E-05	3.33E-07	0.00E+00	1.95E-03	0.00E+00	9.78E-14	0.00E+00	1.37E-06	1.30E-04	3.30E-04	1.08E-04	4.69E-02	5.13E-06	9.25E-05	3.19E-06	0.26	3.11	0.03	0.64	4.05	pot. res.
548000 4179660	5.05E-07	2.70E-05	2.50E-07	0.00E+00	1.46E-03	0.00E+00	7.34E-14	0.00E+00	7.81E-07	7.50E-05	1.89E-04	6.33E-05	2.68E-02	3.16E-06	5.26E-05	1.90E-06	0.16	3.46	0.02	0.37	4.01	pot. res.
548040 4179680	6.14E-07	3.28E-05	3.04E-07	0.00E+00	1.78E-03	0.00E+00	8.93E-14	0.00E+00	9.68E-07	9.27E-05	2.35E-04	7.80E-05	3.33E-02	3.86E-06	6.52E-05	2.33E-06	0.22	3.29	0.02	0.46	3.99	pot. res.
547980 4179620	2.25E-07	1.20E-05	1.11E-07	0.00E+00	6.51E-04	0.00E+00	3.27E-14	0.00E+00	9.81E-07	9.42E-05	2.36E-04	7.96E-05	3.35E-02	3.99E-06	6.61E-05	2.39E-06	0.06	3.46	0.01	0.46	3.98	pot. res.
548060 4179680	5.53E-07	2.95E-05	2.74E-07	0.00E+00	1.60E-03	0.00E+00	8.05E-14	0.00E+00	9.48E-07	9.08E-05	2.30E-04	7.64E-05	3.26E-02	3.78E-06	6.39E-05	2.28E-06	0.20	3.29	0.02	0.45	3.95	pot. res.
548020 4179820	5.01E-07	2.68E-05	2.48E-07	0.00E+00	1.45E-03	0.00E+00	7.29E-14	0.00E+00	1.14E-06	1.09E-04	2.74E-04	8.98E-05	3.90E-02	4.19E-06	7.71E-05	2.63E-06	0.21	3.11	0.02	0.53	3.87	pot. res.
547980 4179840	3.94E-07	2.11E-05	1.95E-07	0.00E+00	1.14E-03	0.00E+00	5.74E-14	0.00E+00	8.59E-07	8.15E-05	2.06E-04	6.75E-05	2.93E-02	3.16E-06	5.79E-05	1.98E-06	0.15	3.20	0.02	0.40	3.77	pot. res.
547980 4179600	1.49E-07	7.96E-06	7.38E-08	0.00E+00	4.32E-04	0.00E+00	2.17E-14	0.00E+00	1.35E-06	1.30E-04	3.25E-04	1.10E-04	4.61E-02	5.59E-06	9.09E-05	3.32E-06	0.03	3.05	0.01	0.63	3.72	pot. res.
548000 4179640	3.54E-07	1.89E-05	1.75E-07	0.00E+00	1.03E-03	0.00E+00	5.15E-14	0.00E+00	7.25E-07	6.97E-05	1.75E-04	5.89E-05	2.49E-02	2.96E-06	4.89E-05	1.77E-06	0.10	3.27	0.01	0.34	3.72	pot. res.
548020 4179660	4.86E-07	2.60E-05	2.41E-07	0.00E+00	1.41E-03	0.00E+00	7.07E-14	0.00E+00	8.11E-07	7.78E-05	1.96E-04	6.57E-05	2.78E-02	3.28E-06	5.46E-05	1.97E-06	0.16	3.17	0.02	0.38	3.72	pot. res.
548060 4179780	5.50E-07	2.93E-05	2.72E-07	0.00E+00	1.59E-03	0.00E+00	8.00E-14	0.00E+00	1.22E-06	1.16E-04	2.93E-04	9.60E-05	4.16E-02	4.53E-06	8.21E-05	2.83E-06	0.22	2.88	0.02	0.57	3.68	pot. res.
548080 4179720	5.49E-07	2.93E-05	2.72E-07	0.00E+00	1.59E-03	0.00E+00	7.99E-14	0.00E+00	1.11E-06	1.06E-04	2.68E-04	8.84E-05	3.81E-02	4.26E-06	7.48E-05	2.62E-06	0.20	2.87	0.02	0.52	3.62	pot. res.
548080 4179700	5.21E-07	2.78E-05	2.58E-07	0.00E+00	1.51E-03	0.00E+00	7.58E-14	0.00E+00	1.04E-06	9.92E-05	2.51E-04	8.31E-05	3.57E-02	4.04E-06	7.00E-05	2.47E-06	0.19	2.91	0.02	0.49	3.61	pot. res.
548040 4179660	4.89E-07	2.61E-05	2.42E-07	0.00E+00	1.42E-03	0.00E+00	7.11E-14	0.00E+00	8.05E-07	7.73E-05	1.95E-04	6.53E-05	2.77E-02	3.27E-06	5.43E-05	1.96E-06	0.16	3.05	0.02	0.38	3.60	pot. res.
548080 4179680	4.58E-07	2.44E-05	2.27E-07	0.00E+00	1.33E-03	0.00E+00	6.66E-14	0.00E+00	8.95E-07	8.57E-05	2.17E-04	7.21E-05	3.08E-02	3.56E-06	6.03E-05	2.15E-06	0.16	2.99	0.02	0.42	3.60	pot. res.
548000 4179840	4.15E-07	2.22E-05	2.06E-07	0.00E+00	1.20E-03	0.00E+00	6.04E-14	0.00E+00	9.36E-07	8.88E-05	2.24E-04	7.35E-05	3.19E-02	3.44E-06	6.31E-05	2.16E-06	0.17	2.92	0.02	0.44	3.54	pot. res.
548080 4179740	5.29E-07	2.82E-05	2.62E-07	0.00E+00	1.53E-03	0.00E+00	7.69E-14	0.00E+00	1.12E-06	1.07E-04	2.70E-04	8.88E-05	3.84E-02	4.24E-06	7.55E-05	2.63E-06	0.20	2.80	0.02	0.52	3.54	pot. res.
548060 4179660	4.35E-07	2.32E-05	2.15E-07	0.00E+00	1.26E-03	0.00E+00	6.33E-14	0.00E+00	7.98E-07	7.66E-05	1.93E-04	6.48E-05	2.74E-02	3.25E-06	5.38E-05	1.95E-06	0.14	2.97	0.02	0.38	3.51	pot. res.
547860 4179840	2.46E-07	1.31E-05	1.22E-07	0.00E+00	7.11E-04	0.00E+00	3.57E-14	0.00E+00	3.96E-07	3.78E-05	9.54E-05	3.17E-05	1.35E-02	1.54E-06	2.67E-05	9.40E-07	0.07	3.22	0.01	0.19	3.48	pot. res.
548000 4179620	2.42E-07	1.29E-05	1.20E-07	0.00E+00	7.01E-04	0.00E+00	3.52E-14	0.00E+00	7.44E-07	7.16E-05	1.79E-04	6.07E-05	2.54E-02	3.08E-06	5.01E-05	1.83E-06	0.06	3.05	0.01	0.35	3.47	pot. res.
548020 4179640	3.55E-07	1.89E-05	1.76E-07	0.00E+00	1.03E-03	0.00E+00	5.16E-14	0.00E+00	7.47E-07	7.18E-05	1.81E-04	6.08E-05	2.56E-02	3.07E-06	5.03E-05	1.83E-06	0.10	2.93	0.01	0.35	3.39	pot. res.
548040 4179820	4.32E-07	2.31E-05	2.14E-07	0.00E+00	1.25E-03	0.00E+00	6.28E-14	0.00E+00	1.04E-06	9.91E-05	2.51E-04	8.21E-05	3.56E-02	3.84E-06	7.04E-05	2.41E-06	0.17	2.70	0.02	0.49	3.38	pot. res.
548080 4179760	4.79E-07	2.56E-05	2.37E-07	0.00E+00	1.39E-03	0.00E+00	6.97E-14	0.00E+00	1.06E-06	1.01E-04	2.56E-04	8.42E-05	3.64E-02	4.00E-06	7.17E-05	2.48E-06	0.18	2.68	0.02	0.50	3.38	pot. res.
548080 4179660	3.74E-07	2.00E-05	1.85E-07	0.00E+00	1.08E-03	0.00E+00	5.45E-14	0.00E+00	7.62E-07	7.32E-05	1.85E-04	6.19E-05	2.62E-02	3.10E-06	5.14E-05	1.86E-06	0.13	2.86	0.01	0.36	3.36	pot. res.
548040 4179640	3.65E-07	1.95E-05	1.81E-07	0.00E+00	1.06E-03	0.00E+00	5.32E-14	0.00E+00	7.05E-07	6.79E-05	1.71E-04	5.77E-05	2.42E-02	2.93E-06	4.76E-05	1.74E-06	0.11	2.80	0.01	0.33	3.26	pot. res.
548060 4179640	3.51E-07	1.88E-05	1.74E-07	0.00E+00	1.02E-03	0.00E+00	5.11E-14	0.00E+00	6.74E-07	6.50E-05	1.64E-04	5.52E-05	2.32E-02	2.82E-06	4.54E-05	1.67E-06	0.10	2.81	0.01	0.32	3.24	pot. res.
547980 4179580	1.10E-07	5.85E-06	5.43E-08	0.00E+00	3.18E-04	0.00E+00	1.59E-14	0.00E+00	1.43E-06	1.38E-04	3.46E-04	1.17E-04	4.91E-02	5.99E-06	9.66E-05	3.55E-06	0.02	2.52	0.00	0.67	3.23	pot. res.
548020 4179840	3.79E-07	2.02E-05	1.88E-07	0.00E+00	1.10E-03	0.00E+00	5.51E-14	0.00E+00	8.77E-07	8.32E-05	2.10E-04	6.89E-05	2.99E-02	3.23E-06	5.91E-05	2.02E-06	0.15	2.62	0.01	0.41	3.20	pot. res.
548100 4179680	3.48E-07	1.86E-05	1.72E-07	0.00E+00	1.01E-03	0.00E+00	5.06E-14	0.00E+00	8.34E-07	7.98E-05	2.02E-04	6.70E-05	2.86E-02	3.30E-06	5.62E-05	2.00E-06	0.13	2.64	0.01	0.39	3.18	pot. res.
547940 4179860	2.86E-07	1.52E-05	1.41E-07	0.00E+00	8.27E-04	0.00E+00	4.15E-14	0.00E+00	5.25E-07	4.99E-05	1.26E-04	4.14E-05	1.79E-02	1.96E-06	3.54E-05	1.22E-06	0.09	2.81	0.01	0.24	3.16	pot. res.
548000 4179600	1.68E-07	8.99E-06	8.34E-08	0.00E+00	4.88E-04	0.00E+00	2.45E-14	0.00E+00	8.34E-07	8.06E-05	2.01E-04	6.87E-05	2.85E-02	3.55E-06	5.62E-05	2.08E-06	0.04	2.72	0.01	0.39	3.16	pot. res.
547920 4179860	2.65E-07	1.42E-05	1.31E-07	0.00E+00	7.68E-04	0.00E+00	3.86E-14	0.00E+00	4.54E-07	4.32E-05	1.09E-04	3.59E-05	1.55E-02	1.71E-06	3.06E-05	1.06E-06	0.08	2.85	0.01	0.21	3.15	pot. res.
548100 4179700	3.87E-07	2.07E-05	1.92E-07	0.00E+00	1.12E-03	0.00E+00	5.64E-14	0.00E+00	9.07E-07	8.66E-05	2.19E-04	7.25E-05	3.11E-02	3.52E-06	6.11E-05	2.15E-06	0.15	2.55	0.02	0.43	3.14	pot. res.
548100 4179720	4.15E-07	2.22E-05	2.06E-07	0.00E+00	1.20E-03	0.00E+00	6.04E-14	0.00E+00	9.40E-07	8.97E-05	2.27E-04	7.49E-05	3.23E-02	3.61E-06	6.34E-05	2.22E-06	0.16	2.50	0.02	0.44	3.12	pot. res.
548080 4179640	2.94E-07	1.57E-05	1.45E-07	0.00E+00	8.51E-04	0.00E+00	4.27E-14	0.00E+00	6.56E-07	6.32E-05	1.59E-04	5.37E-05	2.26E-02	2.73E-06	4.43E-05	1.62E-06	0.10	2.66	0.01	0.31	3.08	pot. res.
548100 4179740	4.27E-07	2.28E-05	2.11E-07	0.00E+00	1.24E-03	0.00E+00	6.21E-14	0.00E+00	9.58E-07	9.13E-05	2.31E-04	7.61E-05	3.28E-02	3.64E-06	6.46E-05	2.25E-06	0.16	2.44	0.02	0.45	3.07	pot. res.
548100 4179660	3.03E-07	1.62E-05	1.50E-07	0.00E+00	8.79E-04	0.00E+00	4.41E-14	0.00E+00	7.35E-07	7.06E-05	1.78E-04	5.95E-05	2.53E-02	2.97E-06	4.96E-05	1.78E-06	0.11	2.59	0.01	0.35	3.06	pot. res.
547900 4179860	2.38E-07	1.27E-05	1.18E-07	0.00E+00	6.89E-04	0.00E+00	3.46E-14	0.00E+00	3.97E-07	3.78E-05	9.51E-05	3.15E-05	1.35E-02	1.51E-06	2.67E-05	9.31E-07	0.06	2.78	0.01	0.18	3.04	pot. res.
547960 4179860	2.96E-07	1.58E-05	1.46E-07	0.00E+00	8.57E-04	0.00E+00	4.30E-14	0.00E+00	5.93E-07	5.63E-05	1.42E-04	4.67E-05	2.02E-02	2.20E-06	4.00E-05	1.37E-06	0.10	2.64	0.01	0.28	3.03	pot. res.
548100 4179760	4.17E-07	2.23E-05	2.07E-07	0.00E+00	1.21E-03	0.00E+00	6.07E-14	0.00E+00	9.47E-07	9.01E-05	2.28E-04	7.50E-05	3.24E-02	3.57E-06	6.38E-05	2.21E-06	0.16	2.34	0.02	0.44	2.96	pot. res.
548060 4179820	3.61E-07	1.93E-05	1.79E-07	0.00E+00	1.05E-03	0.00E+00	5.25E-14	0.00E+00	8.83E-07	8.39E-05	2.12E-04	6.96E-05	3.01E-02	3.27E-06	5.96E-05	2.05E-06	0.14	2.39	0.01	0.41	2.96	pot. res.
548040 4179620	2.61E-07	1.39E-05	1.29E-07	0.00E+00	7.57E-04	0.00E+00	3.80E-14	0.00E+00	6.75E-07	6.52E-05	1.64E-04	5.55E-05	2.32E-02	2.86E-06	4.55E-05	1.68E-06	0.07	2.49	0.01	0.32	2.89	pot. res.
548040 4179840	3.38E-07	1.80E-05	1.67E-07	0.00E+00	9.78E-04	0.00E+00	4.91E-14	0.00E+00	8.16E-07	7.74E-05	1.96E-04	6.42E-05	2.78E-02	3.01E-06	5.50E-05	1.89E-06	0.13	2.35	0.01	0.38	2.88	pot. res.
547880 4179860	2.14E-07	1.14E-05	1.06E-07	0.00E+00	6.20E-04	0.00E+00	3.12E-14	0.00E+00	3.55E-07	3.38E-05	8.52E-05	2.83E-05	1.21E-02	1.36E-06	2.39E-05	8.37E-07	0.06	2.65	0.01	0.17	2.88	pot. res.
548080 4179620	2.23E-07	1.19E-05	1.10E-07	0.00E+00	6.45E-04	0.00E+00	3.24E-14	0.00E+00	5.68E-07	5.48E-05	1.38E-04	4.67E-05	1.95E-02	2.41E-06	3.83E-05	1.42E-06	0.07	2.52	0.01	0.27	2.86	pot. res.
548060 4179620	2.61E-07	1.39E-05	1.29E-07	0.00E+00	7.57E-04	0.00E+00	3.80E-14	0.00E+00	6.08E-07	5.88E-05	1.47E-04	5.01E-05	2.09E-02	2.59E-06	4.10E-05	1.52E-06	0.07	2.48	0.01	0.29	2.85	pot. res.
547980 4179860	2.97E-07	1.59E-05	1.47E-07	0.00E+00	8.62E-04	0.00E+00	4.33E-14	0.00E+00	6.43E-07	6.10E-05	1.54E-04	5.06E-05	2.19E-02	2.38E-06	4.33E-05	1.49E-06	0.11	2.42	0.01	0.30	2.84	pot. res.
548020 4179600	1.84E-07	9.83E-06	9.12E-08	0.00E+00	5.33E-04	0.00E+00	2.68E-14	0.00E+00	7.32E-07	7.08E-05	1.77E-04	6.06E-05	2.51E-02	3.15E-06	4.94E-05	1.84E-06	0.04	2.43	0.01	0.34	2.82	pot. res.
548100 4179780	3.99E-07	2.13E-05	1.98E-07	0.00E+00	1.16E-03	0.00E+00	5.81E-14	0.00E+00	9.10E-07	8.65E-05	2.19E-04	7.19E-05	3.11E-02	3.41E-06	6.13E-05	2.12E-06	0.16	2.22	0.02	0.43	2.82	pot. res.
548120 4179720	3.90E-07	2.08E-05	1.93E-07	0.00E+00	1.13E-03	0.00E+00	5.67E-14	0.00E+00	8.69E-07	8.29E-05	2.10E-04	6.92E-05	2.98E-02	3.34E-06	5.86E-05	2.05E-06	0.16	2.19	0.02	0.41	2.77	pot. res.
548120 4179700	3.71E-07	1.98E-05	1.84E-07	0.00E+00	1.08E-03	0.00E+00	5.40E-14	0.00E+00	8.14E-07	7.78E-05	1.97E-04	6.52E-05	2.80E-02	3.17E-06	5.49E-05	1.94E-06	0.15	2.21	0.01	0.38	2.76	pot. res.
547860 4179860	1.94E-07	1.04E-05	9.63E-08	0.00E+00	5.63E-04	0.00E+00	2.83E-14	0.00E+00	3.29E-07	3.14E-05	7.91E-05	2.63E-05	1.12E-02	1.27E-06	2.22E-05	7.80E-07	0.05	2.52	0.01	0.15	2.73	pot. res.
548120 4179680	3.37E-07	1.80E-05	1.67E-07	0.00E+00	9.77E-04	0.00E+00	4.90E-14	0.00E+00	7.70E-07	7.37E-05	1.86E-04	6.19E-05	2.64E-02	3.05E-06	5.19E-05	1.85E-06	0.14	2.21	0.01	0.36	2.73	pot. res.
548120 4179740	3.97E-07	2.12E-05	1.97E-07	0.00E+00	1.15E-03	0.00E+00	5.77E-14	0.00E+00	8.81E-07	8.40E-05	2.13E-04	7.00E-05	3.02E-02	3.35E-06	5.94E-05	2.07E-06	0.16	2.13	0.02	0.41	2.72	pot. res.
548000 4179860	2.95E-07	1.57E-05	1.46E-07	0.00E+00	8.54E-04	0.00E+00	4.29E-14	0.00E+00	6.66E-07	6.32E-05	1.60E-04	5.24E-05	2.27E-02	2.46E-06	4.49E-05	1.54E-06	0.11	2.28	0.01	0.31	2.72	pot. res.
548120 4179660	3.00E-07	1.60E-05	1.48E-07	0.00E+00	8.68E-04	0.00E+00	4.36E-14	0.00E+00	7.07E-07	6.79E-05	1.71E-04	5.73E-05	2.43E-02	2.86E-06	4.77E-05	1.72E-06	0.13	2.20	0.01	0.33	2.67	pot. res.
548100 4179620	2.18E-07	1.16E-05	1.08E-07	0.00E+00	6.31E-04	0.00E+00	3.17E-14	0.00E+00	5.64E-07	5.44E-05	1.37E-04	4.64E-05	1.94E-02	2.39E-06	3.80E-05	1.41E-06	0.08	2.32	0.01	0.27	2.67	pot. res.
548120 4179760	3.92E-07	2.09E-05	1.94E-07	0.00E+00	1.13E-03	0.00E+00	5.70E-14	0.00E+00	8.86E-07	8.43E-05	2.14E-04	7.02E-05	3.03E-02	3.34E-06	5.97E-05	2.07E-06	0.16	2.05	0.02	0.42	2.64	pot. res.
548120 4179640	2.60E-07	1.39E-05	1.29E-07	0.00E+00	7.54E-04	0.00E+00	3.79E-14	0.00E+00	6.27E-07	6.03E-05	1.52E-04	5.12E-05	2.16E-02	2.59E-06	4.23E-05	1.54E-06	0.11	2.22	0.01	0.30	2.64	pot. res.
548100 4179800	3.65E-07	1.95E-05	1.81E-07	0.00E+00	1.06E-03	0.00E+00	5.30E-14	0.00E+00	8.53E-07	8.11E-05	2.05E-04	6.73E-05	2.91E-02	3.18E-06	5.75E-05	1.98E-06	0.15	2.06	0.01	0.40	2.63	pot. res.
548080 4179600	1.76E-07	9.38E-06	8.70E-08	0.00E+00	5.09E-04	0.00E+00	2.56E-14	0.00E+00	5.07E-07	4.91E-05	1.23E-04	4.20E-05	1.74E-02	2.19E-06	3.42E-05	1.28E-06	0.05	2.30	0.01	0.24	2.60	pot. res.
548020 4179860	2.85E-07	1.52E-05	1.41E-07	0.00E+00	8.25E-04	0.00E+00	4.14E-14	0.00E+00	6.68E-07	6.34E-05	1.60E-04	5.26E-05	2.28E-02	2.47E-06	4.51E-05	1.55E-06	0.11	2.16	0.01	0.31	2.59	pot. res.
548040 4179600	1.91E-07	1.02E-05	9.46E-08	0.00E+00	5.53E-04	0.00E+00	2.78E-14	0.00E+00	6.57E-07	6.36E-05	1.59E-04	5.43E-05	2.26E-02	2.82E-06	4.43E-05	1.65E-06	0.05	2.22	0.01	0.31	2.59	pot. res.
547840 4179860	1.78E-07	9.50E-06	8.81E-08	0.00E+00	5.16E-04	0.00E+00	2.59E-14	0.00E+00	3.07E-07	2.93E-05	7.39E-05	2.46E-05	1.05E-02	1.20E-06	2.07E-05	7.31E-07	0.05	2.37	0.01	0.14	2.58	pot. res.
548060 4179840	2.95E-07	1.58E-05	1.46E-07	0.00E+00	8.55E-04	0.00E+00	4.29E-14	0.00E+00	7.08E-07	6.73E-05	1.70E-04	5.58E-05	2.42E-02	2.63E-06	4.78E-05	1.64E-06	0.11	2.12	0.01	0.33	2.58	pot. res.
548060 4179600	1.90E-07	1.02E-05	9.42E-08	0.00E+00	5.51E-04	0.00E+00	2.77E-14	0.00E+00	5.54E-07	5.36E-05	1.34E-04	4.58E-05	1.90E-02	2.38E-06	3.73E-05	1.39E-06	0.05	2.24	0.01	0.26	2.56	pot. res.
547980 4179560	8.87E-08	4.74E-06	4.39E-08	0.00E+00	2.57E-04	0.00E+00	1.29E-14	0.00E+00	1.19E-06	1.14E-04	2.86E-04	9.61E-05	4.06E-02	4.80E-06	8.00E-05	2.88E-06	0.02	1.97	0.00	0.56	2.55	pot. res.
548120 4179780	3.75E-07	2.00E-05	1.86E-07	0.00E+00	1.09E-03	0.00E+00	5.45E-14	0.00E+00	8.53E-07	8.11E-05	2.05E-04	6.74E-05	2.92E-02	3.19E-06	5.75E-05	1.99E-06	0.16	1.94	0.01	0.40	2.51	pot. res.
548120 4179620	2.20E-07	1.18E-05	1.09E-07	0.00E+00	6.38E-04	0.00E+00	3.21E-14	0.00E+00	5.51E-07	5.32E-05	1.34E-04	4.53E-05	1.89E-02	2.33E-06	3.72E-05	1.37E-06	0.09	2.14	0.01	0.26	2.49	pot. res.
548020 4179580	1.34E-07	7.15E-06	6.64E-08	0.00E+00	3.88E-04	0.00E+00	1.95E-14	0.00E+00	7.27E-07	7.03E-05	1.75E-04	6.02E-05	2.49E-02	3.14E-06	4.90E-05	1.83E-06	0.03	2.10	0.01	0.34	2.48	pot. res.
548140 4179720	3.65E-07	1.95E-05	1.81E-07	0.00E+00	1.06E-03	0.00E+00	5.31E-14	0.00E+00	7.99E-07	7.62E-05	1.93E-04	6.36E-05	2.74E-02	3.07E-06	5.38E-05	1.89E-06	0.16	1.92	0.01	0.37	2.48	pot. res.
548140 4179700	3.48E-07	1.86E-05	1.72E-07	0.00E+00	1.01E-03	0.00E+00	5.07E-14	0.00E+00	7.45E-07	7.12E-05	1.80E-04	5.96E-05	2.56E-02	2.90E-06	5.02E-05	1.77E-06	0.16	1.95	0.01	0.35	2.46	pot. res.
548140 4179740	3.74E-07	2.00E-05	1.85E-07	0.00E+00	1.08E-03	0.00E+00	5.44E-14	0.00E+00	8.22E-07	7.83E-05	1.98E-04	6.53E-05	2.82E-02	3.12E-06	5.54E-05	1.93E-06	0.17	1.88	0.01	0.39	2.45	pot. res.
547940 4179880	2.18E-07	1.16E-05	1.08E-07	0.00E+00	6.32E-04	0.00E+00	3.17E-14	0.00E+00	3.87E-07	3.68E-05	9.29E-05	3.06E-05	1.32E-02	1.46E-06	2.61E-05	9.04E-07	0.06	2.19	0.01	0.18	2.44	pot. res.
548140 4179680	3.23E-07	1.73E-05	1.60E-07	0.00E+00	9.36E-04	0.00E+00	4.70E-14	0.00E+00	6.90E-07	6.61E-05	1.67E-04	5.56E-05	2.37E-02	2.74E-06	4.65E-05	1.66E-06	0.14	1.95	0.01	0.32	2.43	pot. res.
547920 4179880	2.03E-07	1.08E-05	1.00E-07	0.00E+00	5.87E-04	0.00E+00	2.95E-14	0.00E+00	3.42E-07	3.26E-05	8.20E-05	2.71E-05	1.17E-02	1.30E-06	2.31E-05	8.02E-07	0.05	2.20	0.01	0.16	2.42	pot. res.
547960 4179880	2.28E-07	1.22E-05	1.13E-07	0.00E+00	6.60E-04	0.00E+00	3.32E-14	0.00E+00	4.33E-07	4.12E-05	1.04E-04	3.42E-05	1.48E-02	1.62E-06	2.92E-05	1.01E-06	0.07	2.13	0.01	0.20	2.42	pot. res.
548080 4179840	2.98E-07	1.59E-05	1.48E-07	0.00E+00	8.63E-04	0.00E+00	4.34E-14	0.00E+00	7.07E-07	6.72E-05	1.70E-04	5.57E-05	2.41E-02	2.62E-06	4.77E-05	1.64E-06	0.12	1.93	0.01	0.33	2.39	pot. res.
548080 4179580	1.42E-07	7.57E-06	7.02E-08	0.00E+00	4.11E-04	0.00E+00	2.06E-14	0.00E+00	4.48E-07	4.35E-05	1.09E-04	3.73E-05	1.54E-02	1.96E-06	3.02E-05	1.14E-06	0.04	2.13	0.01	0.21	2.39	pot. res.
548140 4179760	3.72E-07	1.98E-05	1.84E-07	0.00E+00	1.08E-03	0.00E+00	5.41E-14	0.00E+00	8.23E-07	7.83E-05	1.98E-04	6.52E-05	2.82E-02	3.10E-06	5.55E-05	1.92E-06	0.17	1.82	0.01	0.39	2.39	pot. res.
547900 4179880	1.91E-07	1.02E-05	9.46E-08	0.00E+00	5.53E-04	0.00E+00	2.78E-14	0.00E+00	3.09E-07	2.95E-05	7.41E-05	2.46E-05	1.05E-02	1.18E-06	2.08E-05	7.27E-07	0.05	2.19	0.01	0.14	2.39	pot. res.
548040 4179860	2.53E-07	1.35E-05	1.25E-07	0.00E+00	7.33E-04	0.00E+00	3.68E-14	0.00E+00	5.87E-07	5.58E-05	1.41E-04	4.63E-05	2.00E-02	2.18E-06	3.96E-05	1.36E-06	0.09	2.01	0.01	0.27	2.39	pot. res.
547980 4179880	2.35E-07	1.25E-05	1.16E-07	0.00E+00	6.80E-04	0.00E+00	3.41E-14	0.00E+00	4.92E-07	4.67E-05	1.18E-04	3.88E-05	1.68E-02	1.83E-06	3.31E-05	1.14E-06	0.08	2.05	0.01	0.23	2.37	pot. res.
548140 4179660	2.95E-07	1.57E-05	1.46E-07	0.00E+00	8.54E-04	0.00E+00	4.29E-14	0.00E+00	6.31E-07	6.05E-05	1.53E-04	5.11E-05	2.17E-02	2.56E-06	4.25E-05	1.53E-06	0.13	1.92	0.01	0.30	2.37	pot. res.
547880 4179880	1.77E-07	9.42E-06	8.74E-08	0.00E+00	5.11E-04	0.00E+00	2.57E-14	0.00E+00	2.96E-07	2.82E-05	7.09E-05	2.35E-05	1.01E-02	1.13E-06	1.99E-05	6.98E-07	0.04	2.14	0.01	0.14	2.33	pot. res.
548120 4179600	1.85E-07	9.88E-06	9.16E-08	0.00E+00	5.36E-04	0.00E+00	2.69E-14	0.00E+00	4.91E-07	4.75E-05	1.19E-04	4.07E-05	1.69E-02	2.12E-06	3.31E-05	1.24E-06	0.08	2.01	0.01	0.23	2.32	pot. res.
548100 4179580	1.48E-07	7.90E-06	7.32E-08	0.00E+00	4.28E-04	0.00E+00	2.15E-14	0.00E+00	4.37E-07	4.24E-05	1.06E-04	3.64E-05	1.50E-02	1.91E-06	2.95E-05	1.11E-06	0.05	2.05	0.01	0.21	2.31	pot. res.
548140 4179780	3.60E-07	1.92E-05	1.78E-07	0.00E+00	1.04E-03	0.00E+00	5.23E-14	0.00E+00	8.12E-07	7.72E-05	1.96E-04	6.42E-05	2.78E-02	3.04E-06	5.48E-05	1.89E-06	0.16	1.75	0.01	0.38	2.30	pot. res.
548040 4179580	1.44E-07	7.68E-06	7.13E-08	0.00E+00	4.17E-04	0.00E+00	2.09E-14	0.00E+00	6.17E-07	5.97E-05	1.49E-04	5.11E-05	2.12E-02	2.67E-06	4.16E-05	1.56E-06	0.04	1.95	0.01	0.29	2.29	pot. res.
548060 4179580	1.39E-07	7.42E-06	6.88E-08	0.00E+00	4.03E-04	0.00E+00	2.02E-14	0.00E+00	5.03E-07	4.87E-05	1.22E-04	4.18E-05	1.73E-02	2.19E-06	3.39E-05	1.27E-06	0.04	1.99	0.01	0.24	2.27	pot. res.
548000 4179880	2.30E-07	1.23E-05	1.14E-07	0.00E+00	6.66E-04	0.00E+00	3.34E-14	0.00E+00	4.92E-07	4.68E-05	1.18E-04	3.88E-05	1.68E-02	1.83E-06	3.32E-05	1.14E-06	0.08	1.95	0.01	0.23	2.27	pot. res.
548140 4179640	2.58E-07	1.38E-05	1.28E-07	0.00E+00	7.47E-04	0.00E+00	3.75E-14	0.00E+00	5.71E-07	5.49E-05	1.39E-04	4.66E-05	1.96E-02	2.36E-06	3.85E-05	1.40E-06	0.12	1.87	0.01	0.27	2.27	pot. res.
548160 4179720	3.49E-07	1.86E-05	1.73E-07	0.00E+00	1.01E-03	0.00E+00	5.07E-14	0.00E+00	7.44E-07	7.10E-05	1.80E-04	5.93E-05	2.55E-02	2.86E-06	5.02E-05	1.76E-06	0.17	1.73	0.01	0.35	2.26	pot. res.
547860 4179880	1.63E-07	8.69E-06	8.06E-08	0.00E+00	4.71E-04	0.00E+00	2.37E-14	0.00E+00	2.82E-07	2.69E-05	6.76E-05	2.25E-05	9.60E-03	1.09E-06	1.90E-05	6.66E-07	0.04	2.07	0.01	0.13	2.26	pot. res.
548160 4179700	3.34E-07	1.78E-05	1.65E-07	0.00E+00	9.67E-04	0.00E+00	4.86E-14	0.00E+00	7.02E-07	6.71E-05	1.70E-04	5.62E-05	2.41E-02	2.74E-06	4.73E-05	1.67E-06	0.16	1.75	0.01	0.33	2.25	pot. res.
548060 4179860	2.55E-07	1.36E-05	1.27E-07	0.00E+00	7.40E-04	0.00E+00	3.72E-14	0.00E+00	5.91E-07	5.61E-05	1.42E-04	4.66E-05	2.01E-02	2.19E-06	3.98E-05	1.37E-06	0.10	1.86	0.01	0.28	2.25	pot. res.
547740 4179820	1.55E-07	8.29E-06	7.69E-08	0.00E+00	4.50E-04	0.00E+00	2.26E-14	0.00E+00	1.30E-07	1.26E-05	3.17E-05	1.07E-05	4.49E-03	5.55E-07	8.79E-06	3.26E-07	0.04	2.13	0.01	0.06	2.24	pot. res.
548160 4179740	3.56E-07	1.90E-05	1.76E-07	0.00E+00	1.03E-03	0.00E+00	5.18E-14	0.00E+00	7.75E-07	7.38E-05	1.87E-04	6.15E-05	2.66E-02	2.95E-06	5.22E-05	1.82E-06	0.17	1.69	0.01	0.36	2.24	pot. res.
548100 4179840	2.96E-07	1.58E-05	1.47E-07	0.00E+00	8.59E-04	0.00E+00	4.31E-14	0.00E+00	6.96E-07	6.61E-05	1.67E-04	5.49E-05	2.38E-02	2.58E-06	4.70E-05	1.61E-06	0.13	1.76	0.01	0.33	2.23	pot. res.
548160 4179680	3.11E-07	1.66E-05	1.54E-07	0.00E+00	9.02E-04	0.00E+00	4.53E-14	0.00E+00	6.48E-07	6.21E-05	1.57E-04	5.22E-05	2.23E-02	2.58E-06	4.37E-05	1.56E-06	0.15	1.75	0.01	0.31	2.21	pot. res.
548140 4179800	3.38E-07	1.80E-05	1.67E-07	0.00E+00	9.79E-04	0.00E+00	4.92E-14	0.00E+00	7.74E-07	7.35E-05	1.86E-04	6.11E-05	2.64E-02	2.89E-06	5.22E-05	1.80E-06	0.16	1.66	0.01	0.36	2.19	pot. res.
548160 4179760	3.52E-07	1.88E-05	1.74E-07	0.00E+00	1.02E-03	0.00E+00	5.13E-14	0.00E+00	7.76E-07	7.39E-05	1.87E-04	6.15E-05	2.66E-02	2.93E-06	5.24E-05	1.82E-06	0.17	1.63	0.01	0.36	2.18	pot. res.

UCSF Parnassus Heights New Hospital
New Hospital (2031)
Operational Inhalation Cancer Risk for Daycare and School Receptors

Risk = $\sum$[Dose$_i$ * CFP * ASF$_i$ * ED$_i$/AT * FAH$_i$]
where,
Dose = C_{air} * {BR/BW} *A * EF * 10^{-6}
CFP = Cancer Potency Factor
ASF = Age sentivity factor
ED = Exposure duration
AT = Averaging time, 70 yrs
FAH = Fraction of time at home
Cair = Pollutant concentration
{BR/BW} = Daily Breathing Rate
A = Inhalation absorption factor
EF = Exposure Frequency
i = age bin groups

Equations Rearranged
Risk = C_{air} * CPF * $\sum$ [{BR/BW}$_i$ * A * EF * ASF$_i$ * ED$_i$/AT * FAH$_i$ * 10^{-6}]

Risk inputs part 1 / Risk calculations part 1

Daycare/School	Age Bin	BR/BW (L/kg-day)	A	EF	FAH	ED/AT	ASF	CF1 (ug/mg)	CF1 (L/m^3)	{BR/BW}$_i$ * A * EF * ASF$_i$ * ED$_i$/AT * FAH$_i$ * 10^{-6}
Lucia Child Care Center	0<2	1200	1	0.68	0.33	0.03	10	1.00E-03	1.00E-03	7.69E-05
	2<9	640	1	0.68	0.33	0.07	3	1.00E-03	1.00E-03	3.08E-05
							Lucia Child Care Center total		total	**1.08E-04**
ABC Bay Area Child Care	0<2	1200	1	0.68	0.33	0.03	10	1.00E-03	1.00E-03	7.69E-05
	2<9	640	1	0.68	0.33	0.07	3	1.00E-03	1.00E-03	3.08E-05
							ABC Bay Area Child Care total		total	**1.08E-04**
Kirkham Child Care Center	0<2	1200	1	0.68	0.33	0.03	10	1.00E-03	1.00E-03	7.69E-05
	2<9	640	1	0.68	0.33	0.07	3	1.00E-03	1.00E-03	3.08E-05
							Kirkham Child Care Center total		total	**1.08E-04**
Clarendon Alternative Elementary	2<16	520	1	0.49	0.33	0.10	3	1.00E-03	1.00E-03	2.52E-05
							Clarendon Alternative Elementary total		total	**2.52E-05**
Independence High	2<16	520	1	0.49	0.33	0.07	3	1.00E-03	1.00E-03	1.80E-05
							Independence High total		total	**1.80E-05**
Stepping Stones Preschool	2<16	520	1	0.49	0.33	0.06	3	1.00E-03	1.00E-03	1.44E-05
							Stepping Stones Preschool total		total	**1.44E-05**
Haight Ashbury Community Nursery School	2<16	520	1	0.49	0.33	0.06	3	1.00E-03	1.00E-03	1.44E-05
							Haight Ashbury Community Nursery School total		total	**1.44E-05**

Pollutant Concentrations by Source

Unique Identifier	UTM X	UTM Y	EDG1 / DPM / CPF 1.1 / DPM (ug/m^3)	EDG2 / DPM / 1.1 / DPM (ug/m^3)	EDG3 / DPM / 1.1 / DPM (ug/m^3)	Delivery 1 / DPM / 1.1 / DPM (ug/m^3)	Delivery 2 / DPM / 1.1 / DPM (ug/m^3)	Delivery 3 / DPM / 1.1 / DPM (ug/m^3)	Fume Hoods: Arsenic and / 12 / Arsenic (ug/m^3)	Benzene / 0.1 / Benzene (ug/m^3)	Benzidine / 500 / Benzidine (ug/m^3)	Benzyl chloride / 0.17 / Benzyl chloride (ug/m^3)	Cadmium and / 15 / Cadmium (ug/m^3)	Carbon / 0.15 / Carbon tetrachloride (ug/m^3)	Chloroform / 0.019 / Chloroform (ug/m^3)	Chromium (VI) / 510 / Chromium (VI) (ug/m^3)	Dioxane, 1,4- / 0.027 / Dioxane, 1,4- (ug/m^3)
547900 4178680	547900	4178680	4.93E-06	5.53E-06	5.86E-06	3.68E-05	2.70E-05	2.04E-05	1.40E-12	2.08E-07	0.00E+00	4.77E-10	2.09E-10	6.41E-07	4.36E-05	2.54E-12	3.07E-07
547920 4178680	547920	4178680	4.87E-06	5.45E-06	5.78E-06	3.65E-05	2.68E-05	2.02E-05	1.38E-12	2.05E-07	0.00E+00	4.70E-10	2.06E-10	6.32E-07	4.30E-05	2.51E-12	3.03E-07
547940 4178680	547940	4178680	4.81E-06	5.38E-06	5.72E-06	3.61E-05	2.66E-05	2.00E-05	1.37E-12	2.04E-07	0.00E+00	4.67E-10	2.04E-10	6.27E-07	4.27E-05	2.49E-12	3.00E-07
547880 4178660	547880	4178660	4.86E-06	5.46E-06	5.80E-06	3.73E-05	2.74E-05	2.06E-05	1.38E-12	2.05E-07	0.00E+00	4.70E-10	2.06E-10	6.31E-07	4.30E-05	2.51E-12	3.02E-07
547900 4178660	547900	4178660	4.82E-06	5.41E-06	5.75E-06	3.66E-05	2.69E-05	2.02E-05	1.37E-12	2.04E-07	0.00E+00	4.67E-10	2.04E-10	6.27E-07	4.27E-05	2.49E-12	3.00E-07
547920 4178660	547920	4178660	4.77E-06	5.35E-06	5.68E-06	3.61E-05	2.66E-05	2.00E-05	1.35E-12	2.01E-07	0.00E+00	4.61E-10	2.02E-10	6.20E-07	4.22E-05	2.46E-12	2.97E-07
547880 4178640	547880	4178640	4.76E-06	5.35E-06	5.69E-06	3.70E-05	2.72E-05	2.05E-05	1.35E-12	2.01E-07	0.00E+00	4.61E-10	2.02E-10	6.20E-07	4.22E-05	2.46E-12	2.97E-07
547900 4178640	547900	4178640	4.72E-06	5.30E-06	5.64E-06	3.67E-05	2.70E-05	2.03E-05	1.34E-12	2.00E-07	0.00E+00	4.58E-10	2.00E-10	6.15E-07	4.19E-05	2.44E-12	2.95E-07
547920 4178640	547920	4178640	4.66E-06	5.23E-06	5.57E-06	3.66E-05	2.69E-05	2.02E-05	1.33E-12	1.98E-07	0.00E+00	4.53E-10	1.98E-10	6.08E-07	4.14E-05	2.41E-12	2.91E-07
547880 4178620	547880	4178620	4.69E-06	5.26E-06	5.59E-06	3.61E-05	2.65E-05	2.00E-05	1.33E-12	1.97E-07	0.00E+00	4.52E-10	1.98E-10	6.08E-07	4.13E-05	2.41E-12	2.91E-07
547900 4178620	547900	4178620	4.64E-06	5.21E-06	5.54E-06	3.58E-05	2.63E-05	1.98E-05	1.32E-12	1.96E-07	0.00E+00	4.49E-10	1.97E-10	6.04E-07	4.11E-05	2.40E-12	2.89E-07
547860 4178600	547860	4178600	4.63E-06	5.22E-06	5.56E-06	3.67E-05	2.70E-05	2.03E-05	1.31E-12	1.95E-07	0.00E+00	4.46E-10	1.95E-10	6.00E-07	4.08E-05	2.38E-12	2.87E-07
547880 4178600	547880	4178600	4.59E-06	5.16E-06	5.49E-06	3.60E-05	2.65E-05	2.00E-05	1.30E-12	1.94E-07	0.00E+00	4.44E-10	1.94E-10	5.97E-07	4.06E-05	2.37E-12	2.86E-07
547900 4178600	547900	4178600	4.57E-06	5.12E-06	5.45E-06	3.50E-05	2.57E-05	1.94E-05	1.29E-12	1.93E-07	0.00E+00	4.41E-10	1.93E-10	5.93E-07	4.03E-05	2.35E-12	2.84E-07
547920 4178600	547920	4178600	4.50E-06	5.05E-06	5.38E-06	3.55E-05	2.62E-05	1.97E-05	1.28E-12	1.91E-07	0.00E+00	4.37E-10	1.91E-10	5.87E-07	3.99E-05	2.33E-12	2.81E-07
547880 4178580	547880	4178580	4.49E-06	5.06E-06	5.39E-06	3.68E-05	2.71E-05	2.04E-05	1.28E-12	1.90E-07	0.00E+00	4.36E-10	1.91E-10	5.86E-07	3.99E-05	2.33E-12	2.81E-07
547900 4178580	547900	4178580	4.46E-06	5.02E-06	5.35E-06	3.60E-05	2.65E-05	2.00E-05	1.27E-12	1.89E-07	0.00E+00	4.34E-10	1.90E-10	5.83E-07	3.97E-05	2.31E-12	2.79E-07
547920 4178580	547920	4178580	4.40E-06	4.95E-06	5.28E-06	3.65E-05	2.69E-05	2.02E-05	1.26E-12	1.87E-07	0.00E+00	4.29E-10	1.88E-10	5.77E-07	3.92E-05	2.29E-12	2.76E-07
547240 4179660	547240	4179660	8.96E-06	9.05E-06	8.65E-06	2.18E-04	1.87E-04	1.24E-04	3.87E-12	5.76E-07	0.00E+00	1.32E-09	5.78E-10	1.77E-06	1.21E-04	7.04E-12	8.50E-07
547220 4179660	547220	4179660	8.70E-06	8.76E-06	8.39E-06	2.06E-04	1.76E-04	1.18E-04	3.76E-12	5.59E-07	0.00E+00	1.28E-09	5.60E-10	1.72E-06	1.17E-04	6.83E-12	8.25E-07
547240 4179680	547240	4179680	8.67E-06	8.71E-06	8.38E-06	2.16E-04	1.86E-04	1.24E-04	3.83E-12	5.69E-07	0.00E+00	1.30E-09	5.70E-10	1.75E-06	1.19E-04	6.96E-12	8.39E-07
547220 4179680	547220	4179680	8.42E-06	8.45E-06	8.14E-06	2.05E-04	1.75E-04	1.18E-04	3.71E-12	5.53E-07	0.00E+00	1.27E-09	5.54E-10	1.70E-06	1.16E-04	6.75E-12	8.15E-07
547180 4179700	547180	4179700	7.70E-06	7.68E-06	7.45E-06	1.82E-04	1.54E-04	1.07E-04	3.47E-12	5.16E-07	0.00E+00	1.18E-09	5.17E-10	1.59E-06	1.08E-04	6.31E-12	7.61E-07
547180 4179720	547180	4179720	7.45E-06	7.41E-06	7.22E-06	1.80E-04	1.52E-04	1.06E-04	3.41E-12	5.07E-07	0.00E+00	1.16E-09	5.08E-10	1.56E-06	1.06E-04	6.20E-12	7.48E-07
547160 4179700	547160	4179700	7.52E-06	7.49E-06	7.26E-06	1.74E-04	1.47E-04	1.02E-04	3.38E-12	5.04E-07	0.00E+00	1.15E-09	5.05E-10	1.55E-06	1.05E-04	6.15E-12	7.42E-07
547160 4179720	547160	4179720	7.28E-06	7.24E-06	7.05E-06	1.72E-04	1.45E-04	1.01E-04	3.33E-12	4.96E-07	0.00E+00	1.14E-09	4.97E-10	1.53E-06	1.04E-04	6.06E-12	7.31E-07
548260 4179620	548260	4179620	7.17E-05	6.29E-05	5.36E-05	6.51E-04	4.02E-04	4.57E-04	1.41E-11	2.09E-06	0.00E+00	4.79E-09	2.10E-09	6.44E-06	4.38E-04	2.56E-11	3.08E-06
548280 4179620	548280	4179620	7.25E-05	6.44E-05	5.57E-05	6.04E-04	3.76E-04	4.25E-04	1.38E-11	2.06E-06	0.00E+00	4.71E-09	2.06E-09	6.33E-06	4.31E-04	2.51E-11	3.03E-06
548260 4179640	548260	4179640	7.74E-05	6.87E-05	5.88E-05	6.53E-04	4.03E-04	4.79E-04	1.54E-11	2.29E-06	0.00E+00	5.24E-09	2.29E-09	7.04E-06	4.79E-04	2.80E-11	3.37E-06
548280 4179640	548280	4179640	7.77E-05	6.97E-05	6.04E-05	6.05E-04	3.76E-04	4.43E-04	1.50E-11	2.23E-06	0.00E+00	5.11E-09	2.23E-09	6.86E-06	4.67E-04	2.72E-11	3.29E-06
547560 4179660	547560	4179660	1.53E-05	1.74E-05	1.70E-05	9.05E-04	9.50E-04	4.11E-04	9.20E-12	1.37E-06	0.00E+00	3.14E-09	1.37E-09	4.21E-06	2.87E-04	1.67E-11	2.02E-06
547560 4179680	547560	4179680	1.38E-05	1.54E-05	1.51E-05	8.68E-04	8.97E-04	4.14E-04	8.53E-12	1.27E-06	0.00E+00	2.91E-09	1.27E-09	3.91E-06	2.66E-04	1.55E-11	1.87E-06
547540 4179660	547540	4179660	1.48E-05	1.65E-05	1.61E-05	7.90E-04	8.07E-04	3.70E-04	8.32E-12	1.24E-06	0.00E+00	2.84E-09	1.24E-09	3.81E-06	2.59E-04	1.51E-11	1.83E-06
547540 4179680	547540	4179680	1.35E-05	1.48E-05	1.45E-05	7.58E-04	7.63E-04	3.71E-04	7.84E-12	1.17E-06	0.00E+00	2.67E-09	1.17E-09	3.59E-06	2.44E-04	1.43E-11	1.72E-06
547220 4179140	547220	4179140	8.61E-06	9.47E-06	1.01E-05	1.51E-04	1.22E-04	7.75E-05	2.87E-12	4.27E-07	0.00E+00	9.78E-10	4.28E-10	1.31E-06	8.94E-05	5.21E-12	6.29E-07
547200 4179140	547200	4179140	8.61E-06	9.46E-06	1.01E-05	1.48E-04	1.19E-04	7.58E-05	2.92E-12	4.35E-07	0.00E+00	9.97E-10	4.36E-10	1.34E-06	9.11E-05	5.32E-12	6.41E-07
547480 4179400	547480	4179400	1.66E-05	1.88E-05	1.95E-05	4.59E-04	4.09E-04	1.91E-04	5.70E-12	8.48E-07	0.00E+00	1.94E-09	8.49E-10	2.61E-06	1.78E-04	1.04E-11	1.25E-06
547460 4179400	547460	4179400	1.62E-05	1.83E-05	1.89E-05	4.28E-04	3.79E-04	1.83E-04	5.66E-12	8.41E-07	0.00E+00	1.93E-09	8.43E-10	2.59E-06	1.76E-04	1.03E-11	1.24E-06

Unique Identifier	Fume Hoods: Ethyl Benzene / 0.0087 / Ethyl Benzene (ug/m^3)	Ethylene / 0.25 / Ethylene dibromide (ug/m^3)	Ethylene / 0.072 / Ethylene dichloride (ug/m^3)	Formaldehyde / 0.021 / Formaldehyde (ug/m^3)	Hydrazine / 0.0049 / Hydrazine (ug/m^3)	Methylene bis (2- / 1.5 / Methylene bis (2-chloroaniline), 4,4'- (ug/m^3)	Methylene / 0.0035 / Methylene chloride (ug/m^3)	Nickel and / 0.91 / Nickel (ug/m^3)	PAH (as / 3.9 / PAH (as benzo(a)pyrene) (ug/m^3)	Vinyl chloride / 0.27 / Vinyl chloride (ug/m^3)
547900 4178680	1.33E-07	1.72E-07	1.92E-08	1.03E-06	9.52E-09	0.00E+00	5.57E-05	0.00E+00	2.80E-15	0.00E+00
547920 4178680	1.32E-07	1.70E-07	1.90E-08	1.01E-06	9.39E-09	0.00E+00	5.49E-05	0.00E+00	2.76E-15	0.00E+00
547940 4178680	1.31E-07	1.68E-07	1.88E-08	1.00E-06	9.32E-09	0.00E+00	5.45E-05	0.00E+00	2.74E-15	0.00E+00
547880 4178660	1.32E-07	1.70E-07	1.89E-08	1.01E-06	9.38E-09	0.00E+00	5.49E-05	0.00E+00	2.76E-15	0.00E+00
547900 4178660	1.31E-07	1.69E-07	1.88E-08	1.01E-06	9.32E-09	0.00E+00	5.45E-05	0.00E+00	2.74E-15	0.00E+00
547920 4178660	1.29E-07	1.67E-07	1.86E-08	9.93E-07	9.21E-09	0.00E+00	5.39E-05	0.00E+00	2.71E-15	0.00E+00
547880 4178640	1.29E-07	1.66E-07	1.86E-08	9.93E-07	9.21E-09	0.00E+00	5.39E-05	0.00E+00	2.71E-15	0.00E+00
547900 4178640	1.28E-07	1.65E-07	1.85E-08	9.86E-07	9.15E-09	0.00E+00	5.35E-05	0.00E+00	2.69E-15	0.00E+00
547920 4178640	1.27E-07	1.63E-07	1.83E-08	9.75E-07	9.04E-09	0.00E+00	5.29E-05	0.00E+00	2.66E-15	0.00E+00
547880 4178620	1.27E-07	1.63E-07	1.82E-08	9.74E-07	9.03E-09	0.00E+00	5.28E-05	0.00E+00	2.65E-15	0.00E+00
547900 4178620	1.26E-07	1.62E-07	1.81E-08	9.68E-07	8.97E-09	0.00E+00	5.25E-05	0.00E+00	2.64E-15	0.00E+00
547860 4178600	1.25E-07	1.61E-07	1.80E-08	9.61E-07	8.91E-09	0.00E+00	5.21E-05	0.00E+00	2.62E-15	0.00E+00
547880 4178600	1.24E-07	1.60E-07	1.79E-08	9.56E-07	8.87E-09	0.00E+00	5.19E-05	0.00E+00	2.61E-15	0.00E+00
547900 4178600	1.24E-07	1.59E-07	1.78E-08	9.50E-07	8.81E-09	0.00E+00	5.15E-05	0.00E+00	2.59E-15	0.00E+00
547920 4178600	1.22E-07	1.58E-07	1.76E-08	9.40E-07	8.72E-09	0.00E+00	5.10E-05	0.00E+00	2.56E-15	0.00E+00
547880 4178580	1.22E-07	1.57E-07	1.76E-08	9.39E-07	8.71E-09	0.00E+00	5.10E-05	0.00E+00	2.56E-15	0.00E+00
547900 4178580	1.21E-07	1.57E-07	1.75E-08	9.34E-07	8.66E-09	0.00E+00	5.07E-05	0.00E+00	2.54E-15	0.00E+00
547920 4178580	1.20E-07	1.55E-07	1.73E-08	9.24E-07	8.57E-09	0.00E+00	5.02E-05	0.00E+00	2.52E-15	0.00E+00
547240 4179660	3.70E-07	4.77E-07	5.32E-08	2.84E-06	2.64E-08	0.00E+00	1.54E-04	0.00E+00	7.75E-15	0.00E+00
547220 4179660	3.59E-07	4.63E-07	5.17E-08	2.76E-06	2.56E-08	0.00E+00	1.50E-04	0.00E+00	7.52E-15	0.00E+00
547240 4179680	3.65E-07	4.71E-07	5.26E-08	2.81E-06	2.60E-08	0.00E+00	1.52E-04	0.00E+00	7.65E-15	0.00E+00
547220 4179680	3.54E-07	4.57E-07	5.11E-08	2.73E-06	2.53E-08	0.00E+00	1.48E-04	0.00E+00	7.43E-15	0.00E+00
547180 4179700	3.31E-07	4.27E-07	4.77E-08	2.55E-06	2.36E-08	0.00E+00	1.38E-04	0.00E+00	6.94E-15	0.00E+00
547180 4179720	3.25E-07	4.20E-07	4.69E-08	2.50E-06	2.32E-08	0.00E+00	1.36E-04	0.00E+00	6.82E-15	0.00E+00
547160 4179700	3.23E-07	4.17E-07	4.65E-08	2.48E-06	2.30E-08	0.00E+00	1.35E-04	0.00E+00	6.77E-15	0.00E+00
547160 4179720	3.18E-07	4.10E-07	4.58E-08	2.45E-06	2.27E-08	0.00E+00	1.33E-04	0.00E+00	6.67E-15	0.00E+00
548260 4179620	1.34E-06	1.73E-06	1.93E-07	1.03E-05	9.57E-08	0.00E+00	5.60E-04	0.00E+00	2.81E-14	0.00E+00
548280 4179620	1.32E-06	1.70E-06	1.90E-07	1.01E-05	9.41E-08	0.00E+00	5.50E-04	0.00E+00	2.76E-14	0.00E+00
548260 4179640	1.47E-06	1.89E-06	2.11E-07	1.13E-05	1.05E-07	0.00E+00	6.12E-04	0.00E+00	3.08E-14	0.00E+00
548280 4179640	1.43E-06	1.84E-06	2.06E-07	1.10E-05	1.02E-07	0.00E+00	5.97E-04	0.00E+00	3.00E-14	0.00E+00
547560 4179660	8.78E-07	1.13E-06	1.26E-07	6.75E-06	6.26E-08	0.00E+00	3.66E-04	0.00E+00	1.84E-14	0.00E+00
547560 4179680	8.14E-07	1.05E-06	1.17E-07	6.26E-06	5.81E-08	0.00E+00	3.40E-04	0.00E+00	1.71E-14	0.00E+00
547540 4179660	7.95E-07	1.02E-06	1.14E-07	6.11E-06	5.67E-08	0.00E+00	3.32E-04	0.00E+00	1.66E-14	0.00E+00
547540 4179680	7.48E-07	9.65E-07	1.08E-07	5.75E-06	5.34E-08	0.00E+00	3.12E-04	0.00E+00	1.57E-14	0.00E+00
547220 4179140	2.74E-07	3.53E-07	3.94E-08	2.10E-06	1.95E-08	0.00E+00	1.14E-04	0.00E+00	5.74E-15	0.00E+00
547200 4179140	2.79E-07	3.60E-07	4.02E-08	2.15E-06	1.99E-08	0.00E+00	1.16E-04	0.00E+00	5.85E-15	0.00E+00
547480 4179400	5.44E-07	7.01E-07	7.83E-08	4.18E-06	3.88E-08	0.00E+00	2.27E-04	0.00E+00	1.14E-14	0.00E+00
547460 4179400	5.40E-07	6.96E-07	7.77E-08	4.15E-06	3.85E-08	0.00E+00	2.25E-04	0.00E+00	1.13E-14	0.00E+00

Risk calculations part 2

Unique Identifier	PCUP: 1,3-Butadiene / 0.6 / 1,3-Butadiene (ug/m^3)	Acetaldehyde / 0.01 / Acetaldehyde (ug/m^3)	Benzene / 0.1 / Benzene (ug/m^3)	Ethyl / 0.0087 / Ethyl Benzene (ug/m^3)	Formaldeh / 0.021 / Formaldehyde (ug/m^3)	Naphthale / 0.12 / Naphthalene (ug/m^3)	Propylene / 0.013 / Propylene oxide (ug/m^3)	Total PAH (excluding Napthalene) / 3.9 / PAH (as benzo(a)pyrene) (ug/m^3)	Cancer Risk (per million): EDG		FH	PCUP	Total	Receptor Type Determination
547900 4178680	2.51E-08	2.41E-06	6.03E-06	2.04E-06	8.56E-04	1.03E-07	1.69E-06	6.13E-08	4.53E-04	2.34E-03	3.08E-05	4.77E-04	0.003	Clarendon Alternative Elementary
547920 4178680	2.48E-08	2.39E-06	5.97E-06	2.02E-06	8.47E-04	1.01E-07	1.67E-06	6.06E-08	4.47E-04	2.32E-03	3.04E-05	4.72E-04	0.003	Clarendon Alternative Elementary
547940 4178680	2.45E-08	2.36E-06	5.90E-06	2.00E-06	8.38E-04	1.00E-07	1.66E-06	5.99E-08	4.42E-04	2.29E-03	3.01E-05	4.67E-04	0.003	Clarendon Alternative Elementary
547880 4178660	2.46E-08	2.36E-06	5.91E-06	2.00E-06	8.39E-04	1.01E-07	1.66E-06	6.01E-08	4.47E-04	2.37E-03	3.03E-05	4.67E-04	0.003	Clarendon Alternative Elementary
547900 4178660	2.45E-08	2.35E-06	5.89E-06	1.99E-06	8.36E-04	1.00E-07	1.65E-06	5.99E-08	4.44E-04	2.32E-03	3.01E-05	4.66E-04	0.003	Clarendon Alternative Elementary
547920 4178660	2.43E-08	2.33E-06	5.84E-06	1.97E-06	8.28E-04	9.92E-08	1.64E-06	5.93E-08	4.38E-04	2.29E-03	2.98E-05	4.62E-04	0.003	Clarendon Alternative Elementary
547880 4178640	2.40E-08	2.31E-06	5.78E-06	1.96E-06	8.20E-04	9.84E-08	1.62E-06	5.88E-08	4.39E-04	2.35E-03	2.98E-05	4.57E-04	0.003	Clarendon Alternative Elementary
547900 4178640	2.39E-08	2.30E-06	5.74E-06	1.94E-06	8.15E-04	9.77E-08	1.61E-06	5.84E-08	4.34E-04	2.33E-03	2.96E-05	4.54E-04	0.003	Clarendon Alternative Elementary
547920 4178640	2.36E-08	2.27E-06	5.68E-06	1.92E-06	8.06E-04	9.66E-08	1.59E-06	5.77E-08	4.29E-04	2.32E-03	2.92E-05	4.49E-04	0.003	Clarendon Alternative Elementary
547880 4178620	2.36E-08	2.27E-06	5.67E-06	1.92E-06	8.05E-04	9.65E-08	1.59E-06	5.77E-08	4.31E-04	2.29E-03	2.92E-05	4.49E-04	0.003	Clarendon Alternative Elementary
547900 4178620	2.35E-08	2.26E-06	5.65E-06	1.91E-06	8.02E-04	9.61E-08	1.59E-06	5.75E-08	4.27E-04	2.27E-03	2.90E-05	4.47E-04	0.003	Clarendon Alternative Elementary
547860 4178600	2.31E-08	2.22E-06	5.55E-06	1.88E-06	7.88E-04	9.45E-08	1.56E-06	5.65E-08	4.27E-04	2.33E-03	2.88E-05	4.39E-04	0.003	Clarendon Alternative Elementary
547880 4178600	2.31E-08	2.22E-06	5.55E-06	1.88E-06	7.88E-04	9.44E-08	1.56E-06	5.64E-08	4.23E-04	2.29E-03	2.87E-05	4.39E-04	0.003	Clarendon Alternative Elementary
547900 4178600	2.31E-08	2.22E-06	5.56E-06	1.88E-06	7.89E-04	9.46E-08	1.56E-06	5.65E-08	4.20E-04	2.22E-03	2.85E-05	4.40E-04	0.003	Clarendon Alternative Elementary
547920 4178600	2.27E-08	2.18E-06	5.47E-06	1.85E-06	7.76E-04	9.28E-08	1.53E-06	5.55E-08	4.14E-04	2.26E-03	2.82E-05	4.32E-04	0.003	Clarendon Alternative Elementary
547880 4178580	2.25E-08	2.16E-06	5.41E-06	1.83E-06	7.68E-04	9.20E-08	1.52E-06	5.50E-08	4.15E-04	2.34E-03	2.82E-05	4.28E-04	0.003	Clarendon Alternative Elementary
547900 4178580	2.24E-08	2.15E-06	5.39E-06	1.82E-06	7.65E-04	9.16E-08	1.51E-06	5.48E-08	4.11E-04	2.29E-03	2.80E-05	4.26E-04	0.003	Clarendon Alternative Elementary
547920 4178580	2.21E-08	2.13E-06	5.32E-06	1.80E-06	7.55E-04	9.03E-08	1.49E-06	5.40E-08	4.06E-04	2.32E-03	2.77E-05	4.21E-04	0.003	Clarendon Alternative Elementary
547240 4179660	3.52E-08	3.36E-06	8.45E-06	2.81E-06	1.20E-03	1.36E-07	2.37E-06	8.35E-08	5.28E-04	1.05E-02	6.09E-05	4.77E-04	0.012	Independence High
547220 4179660	3.40E-08	3.24E-06	8.16E-06	2.71E-06	1.16E-03	1.32E-07	2.29E-06	8.07E-08	5.12E-04	9.91E-03	5.91E-05	4.61E-04	0.011	Independence High
547240 4179680	3.41E-08	3.26E-06	8.18E-06	2.72E-06	1.16E-03	1.32E-07	2.30E-06	8.09E-08	5.11E-04	1.04E-02	6.01E-05	4.62E-04	0.011	Independence High
547220 4179680	3.30E-08	3.15E-06	7.92E-06	2.64E-06	1.12E-03	1.28E-07	2.22E-06	7.83E-08	4.96E-04	9.87E-03	5.84E-05	4.47E-04	0.011	Independence High
547180 4179700	3.02E-08	2.89E-06	7.25E-06	2.42E-06	1.03E-03	1.17E-07	2.04E-06	7.18E-08	3.62E-04	7.03E-03	4.36E-05	3.28E-04	0.008	Stepping Stones Preschool
547180 4179720	2.97E-08	2.84E-06	7.11E-06	2.37E-06	1.01E-03	1.15E-07	2.00E-06	7.05E-08	3.50E-04	6.95E-03	4.29E-05	3.22E-04	0.008	Stepping Stones Preschool
547160 4179700	2.94E-08	2.81E-06	7.04E-06	2.35E-06	1.00E-03	1.14E-07	1.98E-06	6.99E-08	3.53E-04	6.70E-03	4.26E-05	3.18E-04	0.007	Stepping Stones Preschool
547160 4179720	2.88E-08	2.76E-06	6.91E-06	2.31E-06	9.82E-04	1.12E-07	1.94E-06	6.86E-08	3.42E-04	6.62E-03	4.19E-05	3.12E-04	0.007	Stepping Stones Preschool
548260 4179620	3.67E-07	3.54E-05	8.92E-05	3.01E-05	1.26E-02	1.53E-06	2.48E-05	9.07E-07	2.98E-03	2.39E-02	1.77E-04	4.03E-03	0.031	Haight Ashbury Community Nursery School
548280 4179620	3.56E-07	3.43E-05	8.64E-05	2.91E-05	1.22E-02	1.48E-06	2.40E-05	8.77E-07	3.06E-03	2.23E-02	1.74E-04	3.90E-03	0.029	Haight Ashbury Community Nursery School
548260 4179640	3.97E-07	3.82E-05	9.64E-05	3.23E-05	1.37E-02	1.63E-06	2.68E-05	9.73E-07	3.25E-03	2.43E-02	1.93E-04	4.35E-03	0.032	Haight Ashbury Community Nursery School
548280 4179640	3.83E-07	3.68E-05	9.29E-05	3.11E-05	1.32E-02	1.57E-06	2.58E-05	9.36E-07	3.30E-03	2.26E-02	1.88E-04	4.19E-03	0.030	Haight Ashbury Community Nursery School
547560 4179660	9.02E-08	8.62E-06	2.16E-05	7.23E-06	3.07E-03	3.53E-07	6.08E-06	2.15E-07	5.89E-03	2.68E-01	8.64E-04	7.30E-03	0.282	Lucia Child Care Center
547560 4179680	8.56E-08	8.17E-06	2.05E-05	6.82E-06	2.91E-03	3.29E-07	5.77E-06	2.02E-07	5.24E-03	2.58E-01	8.01E-04	6.91E-03	0.271	Lucia Child Care Center
547540 4179660	8.21E-08	7.84E-06	1.97E-05	6.57E-06	2.80E-03	3.20E-07	5.53E-06	1.95E-07	5.62E-03	2.33E-01	7.82E-04	6.65E-03	0.246	Lucia Child Care Center
547540 4179680	7.80E-08	7.44E-06	1.86E-05	6.21E-06	2.65E-03	2.99E-07	5.26E-06	1.84E-07	5.07E-03	2.24E-01	7.37E-04	6.30E-03	0.236	Lucia Child Care Center
547220 4179140	3.65E-08	3.51E-06	8.79E-06	2.96E-06	1.25E-03	1.48E-07	2.46E-06	8.87E-08	3.34E-03	4.16E-02	2.69E-04	2.97E-03	0.048	ABC Bay Area Child Care
547200 4179140	3.65E-08	3.51E-06	8.78E-06	2.96E-06	1.25E-03	1.48E-07	2.46E-06	8.88E-08	3.34E-03	4.06E-02	2.75E-04	2.97E-03	0.047	ABC Bay Area Child Care
547480 4179400	8.16E-08	7.83E-06	1.96E-05	6.62E-06	2.78E-03	3.31E-07	5.50E-06	1.99E-07	6.50E-03	1.25E-01	5.35E-04	6.63E-03	0.139	Kirkham Child Care Center
547460 4179400	7.77E-08	7.47E-06	1.87E-05	6.31E-06	2.65E-03	3.17E-07	5.24E-06	1.90E-07	6.33E-03	1.17E-01	5.31E-04	6.31E-03	0.130	Kirkham Child Care Center

UCSF Parnassus Heights New Hospital
New Hospital (2031)
Operational Inhalation Chronic Hazard Index for Residential Receptor

Chronic Hazard Quotient = Annual Average Concentration / Chronic REL

Pollutant Concentrations by Source

Unique Identifier	Emission Source		EDG1	EDG2	EDG3	Delivery 1	Delivery 2	Delivery 3	Fume Hoods				
	Pollutant		DPM	DPM	DPM	DPM	DPM	DPM	Arsenic and	Benzene	Cadmium and	Carbon	Chloroform
	Chronic REL (ug/m^3)		5	5	5	5	5	5	0.015	3	0.02	40	300
	UTM X	UTM Y	DPM (ug/m^3)	DPM (ug/m^3)	DPM (ug/m^3)	DPM (ug/m^3)	DPM (ug/m^3)	DPM (ug/m^3)	Arsenic (ug/m^3)	Benzene (ug/m^3)	Cadmium (ug/m^3)	arbon tetrachlorid (ug/m^3)	Chloroform (ug/m^3)
547180_4179700	547180	4179700	7.70E-06	7.68E-06	7.45E-06	1.82E-04	1.54E-04	1.07E-04	3.47E-12	5.16E-07	5.17E-10	1.59E-06	1.08E-04
547180_4179720	547180	4179720	7.45E-06	7.41E-06	7.22E-06	1.80E-04	1.52E-04	1.06E-04	3.41E-12	5.07E-07	5.08E-10	1.56E-06	1.06E-04
547160_4179700	547160	4179700	7.52E-06	7.49E-06	7.26E-06	1.74E-04	1.47E-04	1.02E-04	3.38E-12	5.04E-07	5.05E-10	1.55E-06	1.05E-04
547160_4179720	547160	4179720	7.28E-06	7.24E-06	7.05E-06	1.72E-04	1.45E-04	1.01E-04	3.33E-12	4.96E-07	4.97E-10	1.53E-06	1.04E-04
547980_4179760	547980	4179760	2.51E-04	2.24E-04	1.39E-04	2.22E-03	1.26E-03	7.18E-03	7.24E-11	1.08E-05	1.08E-08	3.32E-05	2.26E-03
547980_4179740	547980	4179740	2.64E-04	2.28E-04	1.40E-04	2.32E-03	1.40E-03	4.89E-03	7.42E-11	1.10E-05	1.11E-08	3.40E-05	2.31E-03
548000_4179760	548000	4179760	2.42E-04	2.11E-04	1.31E-04	2.01E-03	1.14E-03	5.08E-03	6.80E-11	1.01E-05	1.01E-08	3.12E-05	2.12E-03
548000_4179740	548000	4179740	2.49E-04	2.12E-04	1.30E-04	2.19E-03	1.30E-03	3.84E-03	6.90E-11	1.03E-05	1.03E-08	3.16E-05	2.15E-03
547980_4179720	547980	4179720	2.49E-04	2.13E-04	1.34E-04	2.37E-03	1.39E-03	3.62E-03	7.23E-11	1.08E-05	1.08E-08	3.31E-05	2.25E-03
547980_4179780	547980	4179780	1.99E-04	1.84E-04	1.15E-04	1.90E-03	1.12E-03	6.10E-03	5.86E-11	8.72E-06	8.74E-09	2.69E-05	1.83E-03
548020_4179760	548020	4179760	2.31E-04	1.99E-04	1.23E-04	1.82E-03	1.03E-03	3.70E-03	6.43E-11	9.57E-06	9.59E-09	2.95E-05	2.00E-03
548020_4179740	548020	4179740	2.35E-04	1.97E-04	1.20E-04	2.06E-03	1.21E-03	3.17E-03	6.43E-11	9.57E-06	9.59E-09	2.95E-05	2.01E-03
548000_4179780	548000	4179780	1.95E-04	1.76E-04	1.11E-04	1.74E-03	1.02E-03	4.44E-03	5.65E-11	8.41E-06	8.42E-09	2.59E-05	1.76E-03
548040_4179740	548040	4179740	2.30E-04	1.91E-04	1.18E-04	1.93E-03	1.09E-03	2.95E-03	6.36E-11	9.47E-06	9.49E-09	2.92E-05	1.98E-03
547560_4179660	547560	4179660	1.53E-05	1.74E-05	1.70E-05	9.05E-04	9.50E-04	4.11E-04	9.20E-12	1.37E-06	1.37E-09	4.21E-06	2.87E-04
547560_4179680	547560	4179680	1.38E-05	1.54E-05	1.51E-05	8.68E-04	8.97E-04	4.14E-04	8.53E-12	1.27E-06	1.27E-09	3.91E-06	2.66E-04
547540_4179660	547540	4179660	1.48E-05	1.65E-05	1.61E-05	7.90E-04	8.07E-04	3.70E-04	8.32E-12	1.24E-06	1.24E-09	3.81E-06	2.59E-04
547540_4179680	547540	4179680	1.35E-05	1.48E-05	1.45E-05	7.58E-04	7.63E-04	3.71E-04	7.84E-12	1.17E-06	1.17E-09	3.59E-06	2.44E-04
547480_4179400	547480	4179400	1.66E-05	1.88E-05	1.95E-05	4.59E-04	4.09E-04	1.91E-04	5.70E-12	8.48E-07	8.49E-10	2.61E-06	1.78E-04
547460_4179400	547460	4179400	1.62E-05	1.83E-05	1.89E-05	4.28E-04	3.79E-04	1.83E-04	5.66E-12	8.41E-07	8.43E-10	2.59E-06	1.76E-04
547240_4179660	547240	4179660	8.96E-06	9.05E-06	8.65E-06	2.18E-04	1.87E-04	1.24E-04	3.87E-12	5.76E-07	5.78E-10	1.77E-06	1.21E-04
547240_4179680	547240	4179680	8.67E-06	8.71E-06	8.38E-06	2.16E-04	1.86E-04	1.24E-04	3.83E-12	5.69E-07	5.70E-10	1.75E-06	1.19E-04
547220_4179660	547220	4179660	8.70E-06	8.76E-06	8.39E-06	2.06E-04	1.76E-04	1.18E-04	3.76E-12	5.59E-07	5.60E-10	1.72E-06	1.17E-04
547220_4179680	547220	4179680	8.42E-06	8.45E-06	8.14E-06	2.05E-04	1.75E-04	1.18E-04	3.71E-12	5.53E-07	5.54E-10	1.70E-06	1.16E-04
548260_4179640	548260	4179640	7.74E-05	6.87E-05	5.88E-05	6.53E-04	4.03E-04	4.79E-04	1.54E-11	2.29E-06	2.29E-09	7.04E-06	4.79E-04
548280_4179640	548280	4179640	7.77E-05	6.97E-05	6.04E-05	6.05E-04	3.76E-04	4.43E-04	1.50E-11	2.23E-06	2.23E-09	6.86E-06	4.67E-04
548260_4179620	548260	4179620	7.17E-05	6.29E-05	5.36E-05	6.51E-04	4.02E-04	4.57E-04	1.41E-11	2.09E-06	2.10E-09	6.44E-06	4.38E-04
548280_4179620	548280	4179620	7.25E-05	6.44E-05	5.57E-05	6.04E-04	3.76E-04	4.25E-04	1.38E-11	2.06E-06	2.06E-09	6.33E-06	4.31E-04
547420_4179500	547420	4179500	1.61E-05	1.80E-05	1.75E-05	4.12E-04	3.75E-04	1.92E-04	6.33E-12	9.41E-07	9.43E-10	2.90E-06	1.97E-04
547420_4179480	547420	4179480	1.61E-05	1.80E-05	1.77E-05	4.04E-04	3.65E-04	1.86E-04	6.19E-12	9.21E-07	9.23E-10	2.84E-06	1.93E-04
547420_4179520	547420	4179520	1.59E-05	1.77E-05	1.71E-05	4.16E-04	3.81E-04	1.96E-04	6.33E-12	9.42E-07	9.44E-10	2.90E-06	1.97E-04
547420_4179460	547420	4179460	1.60E-05	1.79E-05	1.78E-05	3.96E-04	3.55E-04	1.81E-04	5.99E-12	8.92E-07	8.94E-10	2.75E-06	1.87E-04
547420_4179540	547420	4179540	1.56E-05	1.72E-05	1.65E-05	4.20E-04	3.85E-04	2.00E-04	6.30E-12	9.37E-07	9.39E-10	2.89E-06	1.96E-04
547420_4179440	547420	4179440	1.60E-05	1.78E-05	1.79E-05	3.90E-04	3.48E-04	1.76E-04	5.85E-12	8.70E-07	8.72E-10	2.68E-06	1.82E-04
547420_4179560	547420	4179560	1.53E-05	1.68E-05	1.60E-05	4.26E-04	3.93E-04	2.06E-04	6.28E-12	9.35E-07	9.37E-10	2.88E-06	1.96E-04
547420_4179420	547420	4179420	1.57E-05	1.75E-05	1.77E-05	3.79E-04	3.35E-04	1.71E-04	5.60E-12	8.34E-07	8.35E-10	2.57E-06	1.75E-04
547420_4179400	547420	4179400	1.53E-05	1.71E-05	1.75E-05	3.69E-04	3.24E-04	1.65E-04	5.39E-12	8.02E-07	8.03E-10	2.47E-06	1.68E-04
547900_4178680	547900	4178680	4.93E-06	5.53E-06	5.86E-06	3.68E-05	2.70E-05	2.04E-05	1.40E-12	2.08E-07	2.09E-10	6.41E-07	4.36E-05
547920_4178680	547920	4178680	4.87E-06	5.45E-06	5.78E-06	3.65E-05	2.68E-05	2.02E-05	1.38E-12	2.05E-07	2.06E-10	6.32E-07	4.30E-05
547880_4178660	547880	4178660	4.86E-06	5.46E-06	5.80E-06	3.73E-05	2.74E-05	2.06E-05	1.38E-12	2.05E-07	2.06E-10	6.31E-07	4.30E-05
547940_4178680	547940	4178680	4.81E-06	5.38E-06	5.72E-06	3.61E-05	2.66E-05	2.00E-05	1.37E-12	2.04E-07	2.04E-10	6.27E-07	4.27E-05
547900_4178660	547900	4178660	4.82E-06	5.41E-06	5.75E-06	3.66E-05	2.69E-05	2.02E-05	1.37E-12	2.04E-07	2.04E-10	6.27E-07	4.27E-05
547920_4178660	547920	4178660	4.77E-06	5.35E-06	5.68E-06	3.61E-05	2.66E-05	2.00E-05	1.35E-12	2.01E-07	2.02E-10	6.20E-07	4.22E-05
547880_4178640	547880	4178640	4.76E-06	5.35E-06	5.69E-06	3.70E-05	2.72E-05	2.05E-05	1.35E-12	2.01E-07	2.02E-10	6.20E-07	4.22E-05
547900_4178640	547900	4178640	4.72E-06	5.30E-06	5.64E-06	3.67E-05	2.70E-05	2.03E-05	1.34E-12	2.00E-07	2.00E-10	6.15E-07	4.19E-05
547920_4178640	547920	4178640	4.66E-06	5.23E-06	5.57E-06	3.66E-05	2.69E-05	2.02E-05	1.33E-12	1.98E-07	1.98E-10	6.08E-07	4.14E-05
547880_4178620	547880	4178620	4.69E-06	5.26E-06	5.59E-06	3.61E-05	2.65E-05	2.00E-05	1.33E-12	1.97E-07	1.98E-10	6.08E-07	4.13E-05
548120_4179300	548120	4179300	1.11E-05	1.18E-05	1.23E-05	1.18E-04	8.40E-05	5.53E-05	3.35E-12	4.98E-07	4.99E-10	1.53E-06	1.04E-04
548100_4179300	548100	4179300	1.10E-05	1.18E-05	1.23E-05	1.21E-04	8.56E-05	5.64E-05	3.40E-12	5.06E-07	5.07E-10	1.56E-06	1.06E-04
548140_4179280	548140	4179280	1.12E-05	1.17E-05	1.21E-05	1.05E-04	7.50E-05	5.05E-05	3.15E-12	4.68E-07	4.69E-10	1.44E-06	9.81E-05
548120_4179280	548120	4179280	1.13E-05	1.18E-05	1.22E-05	1.08E-04	7.61E-05	5.13E-05	3.20E-12	4.76E-07	4.77E-10	1.47E-06	9.97E-05
548100_4179280	548100	4179280	1.12E-05	1.18E-05	1.22E-05	1.11E-04	7.77E-05	5.21E-05	3.25E-12	4.83E-07	4.84E-10	1.49E-06	1.01E-04
548120_4179260	548120	4179260	1.10E-05	1.15E-05	1.18E-05	1.00E-04	7.04E-05	4.81E-05	3.05E-12	4.53E-07	4.54E-10	1.40E-06	9.50E-05
548100_4179260	548100	4179260	1.12E-05	1.17E-05	1.20E-05	1.02E-04	7.16E-05	4.87E-05	3.05E-12	4.53E-07	4.54E-10	1.40E-06	9.50E-05
548140_4179260	548140	4179260	1.06E-05	1.11E-05	1.15E-05	9.86E-05	6.98E-05	4.78E-05	3.02E-12	4.49E-07	4.50E-10	1.38E-06	9.41E-05
548120_4179240	548120	4179240	1.02E-05	1.08E-05	1.12E-05	9.42E-05	6.63E-05	4.58E-05	2.94E-12	4.37E-07	4.38E-10	1.35E-06	9.16E-05
548100_4179240	548100	4179240	1.05E-05	1.11E-05	1.14E-05	9.57E-05	6.72E-05	4.60E-05	2.96E-12	4.40E-07	4.41E-10	1.35E-06	9.21E-05
547220_4179140	547220	4179140	8.61E-06	9.47E-06	1.01E-05	1.51E-04	1.22E-04	7.75E-05	2.87E-12	4.27E-07	4.28E-10	1.31E-06	8.94E-05
547200_4179140	547200	4179140	8.61E-06	9.46E-06	1.01E-05	1.48E-04	1.19E-04	7.58E-05	2.92E-12	4.35E-07	4.36E-10	1.34E-06	9.11E-05
547600_4179700	547600	4179700	1.23E-05	1.39E-05	1.38E-05	1.05E-03	1.11E-03	5.12E-04	9.15E-12	1.36E-06	1.36E-09	4.19E-06	2.85E-04
547600_4179720	547600	4179720	1.11E-05	1.22E-05	1.22E-05	9.70E-04	9.97E-04	5.05E-04	8.37E-12	1.25E-06	1.25E-09	3.84E-06	2.61E-04
547600_4179740	547600	4179740	1.02E-05	1.11E-05	1.13E-05	8.89E-04	8.88E-04	4.93E-04	7.73E-12	1.15E-06	1.15E-09	3.54E-06	2.41E-04
547600_4179760	547600	4179760	9.56E-06	1.04E-05	1.07E-05	8.12E-04	7.90E-04	4.76E-04	7.12E-12	1.06E-06	1.06E-09	3.26E-06	2.22E-04
547600_4179780	547600	4179780	9.14E-06	9.89E-06	1.02E-05	7.31E-04	6.96E-04	4.51E-04	6.51E-12	9.69E-07	9.71E-10	2.98E-06	2.03E-04
547580_4179780	547580	4179780	9.27E-06	9.93E-06	1.02E-05	6.61E-04	6.25E-04	4.03E-04	6.23E-12	9.27E-07	9.29E-10	2.85E-06	1.94E-04

Unique Identifier	Fume Hoods												
	Chromium (VI)	Dichloroeth	Dioxane, 1,4-	Ethylene dibromide	Ethylene	Formaldehyde	Hydrazine	Manganese and	Mercury and	Mercuric chloride	Methylene	Nickel and	Ethyl
	0.2	70	3000	0.8	400	9	0.2	0.09	0.03	0.03	400	0.014	2000
	Chromium (VI) (ug/m^3)	loroethylene (ug/m^3)	Dioxane, 1,4- (ug/m^3)	Ethylene dibromide (ug/m^3)	thylene dichlorid (ug/m^3)	Formaldehyde (ug/m^3)	Hydrazine (ug/m^3)	ganese and compo (ug/m^3)	rcury and compou (ug/m^3)	Mercuric chloride (ug/m^3)	Methylene chlori (ug/m^3)	Nickel (ug/m^3)	Ethyl Benzene (ug/m^3)
547180_4179700	6.31E-12	0.00E+00	7.61E-07	4.27E-07	4.77E-08	2.55E-06	2.36E-08	8.83E-11	0.00E+00	3.53E-13	1.38E-04	0.00E+00	3.31E-07
547180_4179720	6.20E-12	0.00E+00	7.48E-07	4.20E-07	4.69E-08	2.50E-06	2.32E-08	8.68E-11	0.00E+00	3.47E-13	1.36E-04	0.00E+00	3.25E-07
547160_4179700	6.15E-12	0.00E+00	7.42E-07	4.17E-07	4.65E-08	2.48E-06	2.30E-08	8.61E-11	0.00E+00	3.45E-13	1.35E-04	0.00E+00	3.23E-07
547160_4179720	6.06E-12	0.00E+00	7.31E-07	4.10E-07	4.58E-08	2.45E-06	2.27E-08	8.48E-11	0.00E+00	3.39E-13	1.33E-04	0.00E+00	3.18E-07
547980_4179760	1.32E-10	0.00E+00	1.59E-05	8.91E-06	9.96E-07	5.32E-05	4.93E-07	1.84E-09	0.00E+00	7.37E-12	2.88E-03	0.00E+00	6.91E-06
547980_4179740	1.35E-10	0.00E+00	1.63E-05	9.13E-06	1.02E-06	5.45E-05	5.05E-07	1.89E-09	0.00E+00	7.55E-12	2.96E-03	0.00E+00	7.08E-06
548000_4179760	1.24E-10	0.00E+00	1.49E-05	8.37E-06	9.35E-07	4.99E-05	4.63E-07	1.73E-09	0.00E+00	6.93E-12	2.71E-03	0.00E+00	6.49E-06
548000_4179740	1.25E-10	0.00E+00	1.51E-05	8.49E-06	9.48E-07	5.06E-05	4.70E-07	1.76E-09	0.00E+00	7.02E-12	2.75E-03	0.00E+00	6.58E-06
547980_4179720	1.31E-10	0.00E+00	1.59E-05	8.90E-06	9.94E-07	5.31E-05	4.92E-07	1.84E-09	0.00E+00	7.36E-12	2.88E-03	0.00E+00	6.90E-06
547980_4179780	1.07E-10	0.00E+00	1.29E-05	7.21E-06	8.06E-07	4.30E-05	3.99E-07	1.49E-09	0.00E+00	5.97E-12	2.33E-03	0.00E+00	5.60E-06
548020_4179760	1.17E-10	0.00E+00	1.41E-05	7.91E-06	8.84E-07	4.72E-05	4.38E-07	1.64E-09	0.00E+00	6.55E-12	2.56E-03	0.00E+00	6.14E-06
548020_4179740	1.17E-10	0.00E+00	1.41E-05	7.92E-06	8.84E-07	4.72E-05	4.38E-07	1.64E-09	0.00E+00	6.55E-12	2.56E-03	0.00E+00	6.14E-06
548000_4179780	1.03E-10	0.00E+00	1.24E-05	6.95E-06	7.77E-07	4.15E-05	3.85E-07	1.44E-09	0.00E+00	5.75E-12	2.25E-03	0.00E+00	5.39E-06
548040_4179740	1.16E-10	0.00E+00	1.40E-05	7.83E-06	8.75E-07	4.67E-05	4.33E-07	1.62E-09	0.00E+00	6.48E-12	2.53E-03	0.00E+00	6.07E-06
547560_4179660	1.67E-11	0.00E+00	2.02E-06	1.13E-06	1.26E-07	6.75E-06	6.26E-08	2.34E-10	0.00E+00	9.37E-13	3.66E-04	0.00E+00	8.78E-07
547560_4179680	1.55E-11	0.00E+00	1.87E-06	1.05E-06	1.17E-07	6.26E-06	5.81E-08	2.17E-10	0.00E+00	8.68E-13	3.40E-04	0.00E+00	8.14E-07
547540_4179660	1.51E-11	0.00E+00	1.83E-06	1.02E-06	1.14E-07	6.11E-06	5.67E-08	2.12E-10	0.00E+00	8.48E-13	3.32E-04	0.00E+00	7.95E-07
547540_4179680	1.43E-11	0.00E+00	1.72E-06	9.65E-07	1.08E-07	5.75E-06	5.34E-08	2.00E-10	0.00E+00	7.98E-13	3.12E-04	0.00E+00	7.48E-07
547480_4179400	1.04E-11	0.00E+00	1.25E-06	7.01E-07	7.83E-08	4.18E-06	3.88E-08	1.45E-10	0.00E+00	5.80E-13	2.27E-04	0.00E+00	5.44E-07
547460_4179400	1.03E-11	0.00E+00	1.24E-06	6.96E-07	7.77E-08	4.15E-06	3.85E-08	1.44E-10	0.00E+00	5.76E-13	2.25E-04	0.00E+00	5.40E-07
547240_4179660	7.04E-12	0.00E+00	8.50E-07	4.77E-07	5.32E-08	2.84E-06	2.64E-08	9.86E-11	0.00E+00	3.94E-13	1.54E-04	0.00E+00	3.70E-07
547240_4179680	6.96E-12	0.00E+00	8.39E-07	4.71E-07	5.26E-08	2.81E-06	2.60E-08	9.74E-11	0.00E+00	3.90E-13	1.52E-04	0.00E+00	3.65E-07
547220_4179660	6.83E-12	0.00E+00	8.25E-07	4.63E-07	5.17E-08	2.76E-06	2.56E-08	9.57E-11	0.00E+00	3.83E-13	1.50E-04	0.00E+00	3.59E-07
547220_4179680	6.75E-12	0.00E+00	8.15E-07	4.57E-07	5.11E-08	2.73E-06	2.53E-08	9.45E-11	0.00E+00	3.78E-13	1.48E-04	0.00E+00	3.54E-07
548260_4179640	2.80E-11	0.00E+00	3.37E-06	1.89E-06	2.11E-07	1.13E-05	1.05E-07	3.91E-10	0.00E+00	1.57E-12	6.12E-04	0.00E+00	1.47E-06
548280_4179640	2.72E-11	0.00E+00	3.29E-06	1.84E-06	2.06E-07	1.10E-05	1.02E-07	3.81E-10	0.00E+00	1.53E-12	5.97E-04	0.00E+00	1.43E-06
548260_4179620	2.56E-11	0.00E+00	3.08E-06	1.73E-06	1.93E-07	1.03E-05	9.57E-08	3.58E-10	0.00E+00	1.43E-12	5.60E-04	0.00E+00	1.34E-06
548280_4179620	2.51E-11	0.00E+00	3.03E-06	1.70E-06	1.90E-07	1.01E-05	9.41E-08	3.52E-10	0.00E+00	1.41E-12	5.50E-04	0.00E+00	1.32E-06
547420_4179500	1.15E-11	0.00E+00	1.39E-06	7.78E-07	8.69E-08	4.64E-06	4.31E-08	1.61E-10	0.00E+00	6.44E-13	2.52E-04	0.00E+00	6.04E-07
547420_4179480	1.13E-11	0.00E+00	1.36E-06	7.62E-07	8.51E-08	4.54E-06	4.21E-08	1.58E-10	0.00E+00	6.30E-13	2.47E-04	0.00E+00	5.91E-07
547420_4179520	1.15E-11	0.00E+00	1.39E-06	7.79E-07	8.70E-08	4.65E-06	4.31E-08	1.61E-10	0.00E+00	6.44E-13	2.52E-04	0.00E+00	6.04E-07
547420_4179460	1.09E-11	0.00E+00	1.31E-06	7.38E-07	8.24E-08	4.40E-06	4.08E-08	1.53E-10	0.00E+00	6.10E-13	2.39E-04	0.00E+00	5.72E-07
547420_4179540	1.15E-11	0.00E+00	1.38E-06	7.75E-07	8.66E-08	4.62E-06	4.29E-08	1.60E-10	0.00E+00	6.41E-13	2.51E-04	0.00E+00	6.01E-07
547420_4179440	1.06E-11	0.00E+00	1.28E-06	7.20E-07	8.04E-08	4.29E-06	3.98E-08	1.49E-10	0.00E+00	5.95E-13	2.33E-04	0.00E+00	5.58E-07
547420_4179560	1.14E-11	0.00E+00	1.38E-06	7.73E-07	8.64E-08	4.61E-06	4.28E-08	1.60E-10	0.00E+00	6.40E-13	2.50E-04	0.00E+00	6.00E-07
547420_4179420	1.02E-11	0.00E+00	1.23E-06	6.89E-07	7.70E-08	4.11E-06	3.81E-08	1.43E-10	0.00E+00	5.70E-13	2.23E-04	0.00E+00	5.35E-07
547420_4179400	9.80E-12	0.00E+00	1.18E-06	6.63E-07	7.41E-08	3.95E-06	3.67E-08	1.37E-10	0.00E+00	5.49E-13	2.15E-04	0.00E+00	5.14E-07
547900_4178680	2.54E-12	0.00E+00	3.07E-07	1.72E-07	1.92E-08	1.03E-06	9.52E-09	3.56E-11	0.00E+00	1.42E-13	5.57E-05	0.00E+00	1.33E-07
547920_4178680	2.51E-12	0.00E+00	3.03E-07	1.70E-07	1.90E-08	1.01E-06	9.39E-09	3.51E-11	0.00E+00	1.40E-13	5.49E-05	0.00E+00	1.32E-07
547880_4178660	2.51E-12	0.00E+00	3.02E-07	1.70E-07	1.89E-08	1.01E-06	9.38E-09	3.51E-11	0.00E+00	1.40E-13	5.49E-05	0.00E+00	1.32E-07
547940_4178680	2.49E-12	0.00E+00	3.00E-07	1.68E-07	1.88E-08	1.00E-06	9.32E-09	3.48E-11	0.00E+00	1.39E-13	5.45E-05	0.00E+00	1.31E-07
547900_4178660	2.49E-12	0.00E+00	3.00E-07	1.69E-07	1.88E-08	1.01E-06	9.32E-09	3.49E-11	0.00E+00	1.39E-13	5.45E-05	0.00E+00	1.31E-07
547920_4178660	2.46E-12	0.00E+00	2.97E-07	1.67E-07	1.86E-08	9.93E-07	9.21E-09	3.44E-11	0.00E+00	1.38E-13	5.39E-05	0.00E+00	1.29E-07
547880_4178640	2.46E-12	0.00E+00	2.97E-07	1.66E-07	1.86E-08	9.93E-07	9.21E-09	3.44E-11	0.00E+00	1.38E-13	5.39E-05	0.00E+00	1.29E-07
547900_4178640	2.44E-12	0.00E+00	2.95E-07	1.65E-07	1.85E-08	9.86E-07	9.15E-09	3.42E-11	0.00E+00	1.37E-13	5.35E-05	0.00E+00	1.28E-07
547920_4178640	2.41E-12	0.00E+00	2.91E-07	1.63E-07	1.83E-08	9.75E-07	9.04E-09	3.38E-11	0.00E+00	1.35E-13	5.29E-05	0.00E+00	1.27E-07
547880_4178620	2.41E-12	0.00E+00	2.91E-07	1.63E-07	1.82E-08	9.74E-07	9.03E-09	3.38E-11	0.00E+00	1.35E-13	5.28E-05	0.00E+00	1.27E-07
548120_4179300	6.09E-12	0.00E+00	7.34E-07	4.12E-07	4.60E-08	2.46E-06	2.28E-08	8.52E-11	0.00E+00	3.41E-13	1.33E-04	0.00E+00	3.19E-07
548100_4179300	6.18E-12	0.00E+00	7.46E-07	4.18E-07	4.67E-08	2.49E-06	2.31E-08	8.65E-11	0.00E+00	3.46E-13	1.35E-04	0.00E+00	3.24E-07
548140_4179280	5.72E-12	0.00E+00	6.90E-07	3.87E-07	4.33E-08	2.31E-06	2.14E-08	8.01E-11	0.00E+00	3.20E-13	1.25E-04	0.00E+00	3.00E-07
548120_4179280	5.82E-12	0.00E+00	7.02E-07	3.94E-07	4.40E-08	2.35E-06	2.18E-08	8.15E-11	0.00E+00	3.26E-13	1.27E-04	0.00E+00	3.05E-07
548100_4179280	5.91E-12	0.00E+00	7.13E-07	4.00E-07	4.47E-08	2.38E-06	2.21E-08	8.27E-11	0.00E+00	3.31E-13	1.29E-04	0.00E+00	3.10E-07
548120_4179260	5.54E-12	0.00E+00	6.69E-07	3.75E-07	4.19E-08	2.24E-06	2.07E-08	7.76E-11	0.00E+00	3.10E-13	1.21E-04	0.00E+00	2.91E-07
548100_4179260	5.54E-12	0.00E+00	6.68E-07	3.75E-07	4.19E-08	2.24E-06	2.07E-08	7.76E-11	0.00E+00	3.10E-13	1.21E-04	0.00E+00	2.91E-07
548140_4179260	5.49E-12	0.00E+00	6.62E-07	3.72E-07	4.15E-08	2.22E-06	2.06E-08	7.68E-11	0.00E+00	3.07E-13	1.20E-04	0.00E+00	2.88E-07
548120_4179240	5.34E-12	0.00E+00	6.45E-07	3.62E-07	4.04E-08	2.16E-06	2.00E-08	7.48E-11	0.00E+00	2.99E-13	1.17E-04	0.00E+00	2.81E-07
548100_4179240	5.37E-12	0.00E+00	6.48E-07	3.64E-07	4.06E-08	2.17E-06	2.01E-08	7.52E-11	0.00E+00	3.01E-13	1.18E-04	0.00E+00	2.82E-07
547220_4179140	5.21E-12	0.00E+00	6.29E-07	3.53E-07	3.94E-08	2.10E-06	1.95E-08	7.30E-11	0.00E+00	2.92E-13	1.14E-04	0.00E+00	2.74E-07
547200_4179140	5.32E-12	0.00E+00	6.41E-07	3.60E-07	4.02E-08	2.15E-06	1.99E-08	7.44E-11	0.00E+00	2.98E-13	1.16E-04	0.00E+00	2.79E-07
547600_4179700	1.66E-11	0.00E+00	2.01E-06	1.13E-06	1.26E-07	6.71E-06	6.23E-08	2.33E-10	0.00E+00	9.32E-13	3.64E-04	0.00E+00	8.73E-07
547600_4179720	1.52E-11	0.00E+00	1.84E-06	1.03E-06	1.15E-07	6.15E-06	5.70E-08	2.13E-10	0.00E+00	8.53E-13	3.34E-04	0.00E+00	7.99E-07
547600_4179740	1.41E-11	0.00E+00	1.70E-06	9.51E-07	1.06E-07	5.67E-06	5.26E-08	1.97E-10	0.00E+00	7.87E-13	3.08E-04	0.00E+00	7.38E-07
547600_4179760	1.29E-11	0.00E+00	1.56E-06	8.76E-07	9.79E-08	5.23E-06	4.85E-08	1.81E-10	0.00E+00	7.25E-13	2.84E-04	0.00E+00	6.80E-07
547600_4179780	1.18E-11	0.00E+00	1.43E-06	8.01E-07	8.95E-08	4.78E-06	4.43E-08	1.66E-10	0.00E+00	6.63E-13	2.59E-04	0.00E+00	6.21E-07
547580_4179780	1.13E-11	0.00E+00	1.37E-06	7.67E-07	8.56E-08	4.57E-06	4.24E-08	1.59E-10	0.00E+00	6.34E-13	2.48E-04	0.00E+00	5.95E-07

Unique Identifier	PCUP												Total Hazard Index	Receptor Type Determination		
	Acetaldehyde	Acrolein	Ammonia	Benzene	1,3-Butadiene	Ethyl benzene	Formaldehyde	Hexane	Naphthalene	Propylene oxide	Toluene	Xylene				
	140	0.35	200	3	2	2000	9	7000	9	30	300	700				
	Acetaldehyde (ug/m^3)	Acrolein (ug/m^3)	Ammonia (ug/m^3)	Benzene (ug/m^3)	1,3-Butadiene (ug/m^3)	Ethyl benzene (ug/m^3)	Formaldehyde (ug/m^3)	Hexane (ug/m^3)	Naphthalene (ug/m^3)	Propylene oxide (ug/m^3)	Toluene (ug/m^3)	Xylene (ug/m^3)				
547180_4179700	2.89E-06	5.19E-07	3.41E-03	7.25E-06	3.02E-08	2.42E-06	1.03E-03	1.12E-07	1.17E-07	2.04E-06	7.97E-08	5.00E-06	0.00	Stepping Stones Preschool	School	1
547180_4179720	2.84E-06	5.09E-07	3.35E-03	7.11E-06	2.97E-08	2.37E-06	1.01E-03	1.10E-07	1.15E-07	2.00E-06	7.80E-08	4.91E-06	0.00	Stepping Stones Preschool	School	2
547160_4179700	2.81E-06	5.05E-07	3.32E-03	7.04E-06	2.94E-08	2.35E-06	1.00E-03	1.10E-07	1.14E-07	1.98E-06	7.75E-08	4.86E-06	0.00	Stepping Stones Preschool	School	3
547160_4179720	2.76E-06	4.95E-07	3.25E-03	6.91E-06	2.88E-08	2.31E-06	9.82E-04	1.07E-07	1.12E-07	1.94E-06	7.58E-08	4.77E-06	0.00	Stepping Stones Preschool	School	4
547980_4179760	1.77E-04	3.12E-05	2.07E-01	4.49E-04	1.86E-06	1.47E-04	6.37E-02	5.60E-06	6.94E-06	1.26E-04	5.04E-06	3.02E-04	0.01	pot. res.		1
547980_4179740	1.80E-04	3.18E-05	2.10E-01	4.55E-04	1.89E-06	1.49E-04	6.46E-02	5.96E-06	7.10E-06	1.27E-04	5.14E-06	3.07E-04	0.01	pot. res.		2
548000_4179760	1.70E-04	2.98E-05	1.98E-01	4.30E-04	1.78E-06	1.41E-04	6.10E-02	5.36E-06	6.64E-06	1.20E-04	4.83E-06	2.89E-04	0.01	pot. res.		3
548000_4179740	1.67E-04	2.95E-05	1.95E-01	4.22E-04	1.75E-06	1.39E-04	5.99E-02	5.56E-06	6.59E-06	1.18E-04	4.78E-06	2.85E-04	0.01	pot. res.		4
547980_4179720	1.62E-04	2.89E-05	1.90E-01	4.10E-04	1.70E-06	1.35E-04	5.83E-02	5.79E-06	6.49E-06	1.15E-04	4.67E-06	2.79E-04	0.01	pot. res.		5
547980_4179780	1.55E-04	2.71E-05	1.80E-01	3.91E-04	1.63E-06	1.28E-04	5.56E-02	4.69E-06	6.02E-06	1.10E-04	4.38E-06	2.63E-04	0.01	pot. res.		6
548020_4179760	1.61E-04	2.84E-05	1.89E-01	4.09E-04	1.70E-06	1.34E-04	5.81E-02	5.11E-06	6.32E-06	1.14E-04	4.60E-06	2.75E-04	0.01	pot. res.		7
548020_4179740	1.58E-04	2.79E-05	1.85E-01	4.00E-04	1.66E-06	1.31E-04	5.68E-02	5.30E-06	6.24E-06	1.12E-04	4.53E-06	2.70E-04	0.01	pot. res.		8
548000_4179780	1.51E-04	2.65E-05	1.76E-01	3.83E-04	1.59E-06	1.25E-04	5.44E-02	4.56E-06	5.88E-06	1.07E-04	4.28E-06	2.57E-04	0.01	pot. res.		9
548040_4179740	1.52E-04	2.70E-05	1.78E-01	3.86E-04	1.60E-06	1.27E-04	5.48E-02	5.15E-06	6.03E-06	1.08E-04	4.38E-06	2.61E-04	0.01	pot. res.		10
547560_4179660	8.62E-06	1.55E-06	1.02E-02	2.16E-05	9.02E-08	7.23E-06	3.07E-03	3.45E-07	3.53E-07	6.08E-06	2.37E-07	1.50E-05	0.00	Lucia Child Care Center	Day Care	1
547560_4179680	8.17E-06	1.46E-06	9.62E-03	2.05E-05	8.56E-08	6.82E-06	2.91E-03	3.02E-07	3.29E-07	5.77E-06	2.21E-07	1.41E-05	0.00	Lucia Child Care Center	Day Care	2
547540_4179660	7.84E-06	1.41E-06	9.27E-03	1.97E-05	8.21E-08	6.57E-06	2.80E-03	3.10E-07	3.20E-07	5.53E-06	2.16E-07	1.36E-05	0.00	Lucia Child Care Center	Day Care	3
547540_4179680	7.44E-06	1.33E-06	8.76E-03	1.86E-05	7.80E-08	6.21E-06	2.65E-03	2.74E-07	2.99E-07	5.26E-06	2.02E-07	1.28E-05	0.00	Lucia Child Care Center	Day Care	4
547480_4179400	7.83E-06	1.44E-06	9.35E-03	1.96E-05	8.16E-08	6.62E-06	2.78E-03	3.64E-07	3.31E-07	5.50E-06	2.18E-07	1.38E-05	0.00	Kirkham Child Care Center	Day Care	1
547460_4179400	7.47E-06	1.37E-06	8.92E-03	1.87E-05	7.77E-08	6.31E-06	2.65E-03	3.53E-07	3.17E-07	5.24E-06	2.08E-07	1.31E-05	0.00	Kirkham Child Care Center	Day Care	2
547240_4179660	3.36E-06	6.02E-07	3.96E-03	8.45E-06	3.52E-08	2.81E-06	1.20E-03	1.29E-07	1.36E-07	2.37E-06	9.36E-08	5.81E-06	0.00	Independence High	School	1
547240_4179680	3.26E-06	5.84E-07	3.84E-03	8.18E-06	3.41E-08	2.72E-06	1.16E-03	1.25E-07	1.32E-07	2.30E-06	9.03E-08	5.63E-06	0.00	Independence High	School	2
547220_4179660	3.24E-06	5.82E-07	3.83E-03	8.16E-06	3.40E-08	2.71E-06	1.16E-03	1.25E-07	1.32E-07	2.29E-06	9.03E-08	5.61E-06	0.00	Independence High	School	3
547220_4179680	3.15E-06	5.65E-07	3.72E-03	7.92E-06	3.30E-08	2.64E-06	1.12E-03	1.21E-07	1.28E-07	2.22E-06	8.73E-08	5.45E-06	0.00	Independence High	School	4
548260_4179640	3.82E-05	7.04E-06	4.57E-02	9.64E-05	3.97E-07	3.23E-05	1.37E-02	1.85E-06	1.63E-06	2.68E-05	1.11E-06	6.73E-05	0.00	Haight Ashbury Community Nursery School	School	1
548280_4179640	3.68E-05	6.78E-06	4.40E-02	9.29E-05	3.83E-07	3.11E-05	1.32E-02	1.77E-06	1.57E-06	2.58E-05	1.07E-06	6.48E-05	0.00	Haight Ashbury Community Nursery School	School	2
548260_4179620	3.54E-05	6.57E-06	4.25E-02	8.92E-05	3.67E-07	3.01E-05	1.26E-02	1.80E-06	1.53E-06	2.48E-05	1.03E-06	6.27E-05	0.00	Haight Ashbury Community Nursery School	School	3
548280_4179620	3.43E-05	6.35E-06	4.11E-02	8.64E-05	3.56E-07	2.91E-05	1.22E-02	1.72E-06	1.48E-06	2.40E-05	9.97E-07	6.06E-05	0.00	Haight Ashbury Community Nursery School	School	4
547420_4179500	6.95E-06	1.28E-06	8.32E-03	1.74E-05	7.23E-08	5.89E-06	2.47E-03	3.34E-07	2.96E-07	4.88E-06	1.94E-07	1.22E-05	0.00	Fifth Ave Housing	Res Hall	1
547420_4179480	7.00E-06	1.29E-06	8.39E-03	1.75E-05	7.28E-08	5.93E-06	2.49E-03	3.41E-07	2.99E-07	4.91E-06	1.95E-07	1.24E-05	0.00	Fifth Ave Housing	Res Hall	2
547420_4179520	6.83E-06	1.26E-06	8.16E-03	1.71E-05	7.11E-08	5.78E-06	2.43E-03	3.22E-07	2.90E-07	4.80E-06	1.91E-07	1.20E-05	0.00	Fifth Ave Housing	Res Hall	3
547420_4179460	7.03E-06	1.30E-06	8.42E-03	1.76E-05	7.31E-08	5.96E-06	2.50E-03	3.45E-07	3.01E-07	4.93E-06	1.96E-07	1.24E-05	0.00	Fifth Ave Housing	Res Hall	4
547420_4179540	6.64E-06	1.22E-06	7.92E-03	1.67E-05	6.92E-08	5.60E-06	2.36E-03	3.03E-07	2.80E-07	4.66E-06	1.86E-07	1.16E-05	0.00	Fifth Ave Housing	Res Hall	5
547420_4179440	7.03E-06	1.30E-06	8.42E-03	1.76E-05	7.30E-08	5.95E-06	2.50E-03	3.45E-07	3.01E-07	4.92E-06	1.96E-07	1.24E-05	0.00	Fifth Ave Housing	Res Hall	6
547420_4179560	6.43E-06	1.17E-06	7.66E-03	1.62E-05	6.71E-08	5.42E-06	2.29E-03	2.85E-07	2.69E-07	4.52E-06	1.81E-07	1.13E-05	0.00	Fifth Ave Housing	Res Hall	7
547420_4179420	6.92E-06	1.28E-06	8.29E-03	1.73E-05	7.19E-08	5.86E-06	2.46E-03	3.38E-07	2.96E-07	4.85E-06	1.93E-07	1.22E-05	0.00	Fifth Ave Housing	Res Hall	8
547420_4179400	6.79E-06	1.25E-06	8.13E-03	1.70E-05	7.06E-08	5.75E-06	2.41E-03	3.27E-07	2.89E-07	4.76E-06	1.89E-07	1.20E-05	0.00	Fifth Ave Housing	Res Hall	9
547900_4178680	2.41E-06	4.44E-07	2.88E-03	6.03E-06	2.51E-08	2.04E-06	8.56E-04	1.15E-07	1.03E-07	1.69E-06	6.68E-08	4.25E-06	0.00	Clarendon Alternative Elementary	School	1
547920_4178680	2.39E-06	4.39E-07	2.85E-03	5.97E-06	2.48E-08	2.02E-06	8.47E-04	1.14E-07	1.01E-07	1.67E-06	6.61E-08	4.20E-06	0.00	Clarendon Alternative Elementary	School	2
547880_4178660	2.36E-06	4.35E-07	2.83E-03	5.91E-06	2.46E-08	2.00E-06	8.39E-04	1.13E-07	1.01E-07	1.66E-06	6.55E-08	4.16E-06	0.00	Clarendon Alternative Elementary	School	3
547940_4178680	2.36E-06	4.34E-07	2.82E-03	5.90E-06	2.45E-08	2.00E-06	8.38E-04	1.12E-07	1.00E-07	1.66E-06	6.54E-08	4.15E-06	0.00	Clarendon Alternative Elementary	School	4
547900_4178660	2.35E-06	4.34E-07	2.82E-03	5.89E-06	2.45E-08	1.99E-06	8.36E-04	1.13E-07	1.00E-07	1.65E-06	6.52E-08	4.15E-06	0.00	Clarendon Alternative Elementary	School	5
547920_4178660	2.33E-06	4.29E-07	2.79E-03	5.84E-06	2.43E-08	1.97E-06	8.28E-04	1.11E-07	9.92E-08	1.64E-06	6.47E-08	4.11E-06	0.00	Clarendon Alternative Elementary	School	6
547880_4178640	2.31E-06	4.26E-07	2.76E-03	5.78E-06	2.40E-08	1.96E-06	8.20E-04	1.11E-07	9.84E-08	1.62E-06	6.40E-08	4.07E-06	0.00	Clarendon Alternative Elementary	School	7
547900_4178640	2.30E-06	4.23E-07	2.75E-03	5.74E-06	2.39E-08	1.94E-06	8.15E-04	1.10E-07	9.77E-08	1.61E-06	6.36E-08	4.04E-06	0.00	Clarendon Alternative Elementary	School	8
547920_4178640	2.27E-06	4.18E-07	2.72E-03	5.68E-06	2.36E-08	1.92E-06	8.06E-04	1.08E-07	9.66E-08	1.59E-06	6.29E-08	4.00E-06	0.00	Clarendon Alternative Elementary	School	9
547880_4178620	2.27E-06	4.18E-07	2.71E-03	5.67E-06	2.36E-08	1.92E-06	8.05E-04	1.08E-07	9.65E-08	1.59E-06	6.28E-08	3.99E-06	0.00	Clarendon Alternative Elementary	School	10
548120_4179300	9.71E-06	1.72E-06	1.14E-02	2.45E-05	1.02E-07	8.09E-06	3.48E-03	3.36E-07	3.87E-07	6.88E-06	2.73E-07	1.67E-05	0.00	Aldea Housing	Res Hall	1
548100_4179300	9.60E-06	1.70E-06	1.13E-02	2.42E-05	1.01E-07	8.00E-06	3.44E-03	3.31E-07	3.82E-07	6.80E-06	2.68E-07	1.65E-05	0.00	Aldea Housing	Res Hall	2
548140_4179280	9.23E-06	1.63E-06	1.08E-02	2.33E-05	9.71E-08	7.67E-06	3.31E-03	2.95E-07	3.62E-07	6.55E-06	2.60E-07	1.58E-05	0.00	Aldea Housing	Res Hall	3
548120_4179280	9.19E-06	1.61E-06	1.07E-02	2.32E-05	9.67E-08	7.62E-06	3.30E-03	2.86E-07	3.59E-07	6.52E-06	2.57E-07	1.57E-05	0.00	Aldea Housing	Res Hall	4
548100_4179280	9.07E-06	1.59E-06	1.06E-02	2.29E-05	9.55E-08	7.52E-06	3.25E-03	2.81E-07	3.54E-07	6.44E-06	2.53E-07	1.55E-05	0.00	Aldea Housing	Res Hall	5
548120_4179260	8.52E-06	1.50E-06	9.94E-03	2.15E-05	8.97E-08	7.07E-06	3.06E-03	2.61E-07	3.32E-07	6.05E-06	2.38E-07	1.45E-05	0.00	Aldea Housing	Res Hall	6
548100_4179260	8.43E-06	1.47E-06	9.82E-03	2.13E-05	8.89E-08	6.98E-06	3.03E-03	2.49E-07	3.27E-07	5.99E-06	2.35E-07	1.43E-05	0.00	Aldea Housing	Res Hall	7
548140_4179260	8.43E-06	1.49E-06	9.88E-03	2.13E-05	8.87E-08	7.02E-06	3.02E-03	2.82E-07	3.34E-07	5.98E-06	2.36E-07	1.44E-05	0.00	Aldea Housing	Res Hall	8
548120_4179240	7.74E-06	1.37E-06	9.07E-03	1.95E-05	8.14E-08	6.44E-06	2.77E-03	2.56E-07	3.06E-07	5.49E-06	2.16E-07	1.33E-05	0.00	Aldea Housing	Res Hall	9
548100_4179240	7.73E-06	1.36E-06	9.02E-03	1.95E-05	8.13E-08	6.41E-06	2.77E-03	2.41E-07	3.02E-07	5.48E-06	2.15E-07	1.32E-05	0.00	Aldea Housing	Res Hall	10
547220_4179140	3.51E-06	6.42E-07	4.18E-03	8.79E-06	3.65E-08	2.96E-06	1.25E-03	1.60E-07	1.48E-07	2.46E-06	9.75E-08	6.15E-06	0.00	ABC Bay Area Child Care	Day Care	1
547200_4179140	3.51E-06	6.43E-07	4.18E-03	8.78E-06	3.65E-08	2.96E-06	1.25E-03	1.62E-07	1.48E-07	2.46E-06	9.74E-08	6.16E-06	0.00	ABC Bay Area Child Care	Day Care	2
547600_4179700	9.47E-06	1.68E-06	1.11E-02	2.35E-05	9.95E-08	7.89E-06	3.35E-03	3.21E-07	3.76E-07	6.71E-06	2.43E-07	1.62E-05	0.00	3rd Ave Housing	Res Hall	1
547600_4179720	9.01E-06	1.59E-06	1.05E-02	2.23E-05	9.47E-08	7.49E-06	3.18E-03	2.97E-07	3.55E-07	6.39E-06	2.27E-07	1.54E-05	0.00	3rd Ave Housing	Res Hall	2
547600_4179740	8.37E-06	1.49E-06	9.82E-03	2.07E-05	8.79E-08	6.97E-06	2.95E-03	2.89E-07	3.33E-07	5.93E-06	2.10E-07	1.44E-05	0.00	3rd Ave Housing	Res Hall	3
547600_4179760	7.89E-06	1.41E-06	9.29E-03	1.95E-05	8.28E-08	6.59E-06	2.78E-03	2.86E-07	3.17E-07	5.58E-06	1.98E-07	1.36E-05	0.00	3rd Ave Housing	Res Hall	4
547600_4179780	7.46E-06	1.34E-06	8.80E-03	1.84E-05	7.81E-08	6.24E-06	2.62E-03	2.86E-07	3.03E-07	5.27E-06	1.88E-07	1.29E-05	0.00	145 Irving St	Res Hall	1
547580_4179780	7.11E-06	1.27E-06	8.37E-03	1.76E-05	7.45E-08	5.93E-06	2.50E-03	2.61E-07	2.86E-07	5.02E-06	1.78E-07	1.22E-05	0.00	145 Irving St	Res Hall	2

UCSF Parnassus Heights New Hospital

New Hospital (2031)

Operational Inhalation Acute Hazard Index for Residential Receptor

Acute Hazard Quotient = 1-hour Max Concentration / Acute REL

Pollutant Concentrations by Source

Unique Identifier	Emission Source		Fume Hoods													PCUP										Total Hazard Index	Receptor Type Determination		
	Pollutant		Arsenic and compo	Benzene	Benzyl chloride	Carbon tetrachlorid	Chloroform	Dioxane, 1,4-	Formaldehyde	Mercury and compound	Mercuric chloride	Methylene chlorid	Nickel and compo	Sulfuric acid/Oleum	Vinyl chloride	Acetaldehyde	Acrolein	Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Nitrogen Oxides	Propylene oxide	Toluene	Xylene				
	Chronic REL (ug/m^3)		0.2	27	240	1900	150	3000	55	0.6	0.6	14000	0.2	120	180000	470	2.5	3200	27	660	55	470	3100	37000	22000				
	UTM X	UTM Y	Arsenic (ug/m^3)	Benzene (ug/m^3)	Benzyl chloride (ug/m^3)	Carbon tetrachlorid (ug/m^3)	Chloroform (ug/m^3)	Dioxane, 1,4- (ug/m^3)	Formaldehyde (ug/m^3)	Mercury and compound (ug/m^3)	Mercuric chloride (ug/m^3)	Methylene chlorid (ug/m^3)	Nickel (ug/m^3)	Sulfuric acid/Oleum (ug/m^3)	Vinyl chloride (ug/m^3)	Acetaldehyde (ug/m^3)	Acrolein (ug/m^3)	Ammonia (ug/m^3)	Benzene (ug/m^3)	1,3-Butadiene (ug/m^3)	Formaldehyde (ug/m^3)	NO2 (ug/m^3)	Propylene oxide (ug/m^3)	Toluene (ug/m^3)	Xylene (ug/m^3)				
547180_4179720	547180	4179720	1.48E-09	2.20E-04	5.04E-07	6.78E-04	4.61E-02	3.25E-04	1.09E-03	0.00E+00	1.51E-10	5.89E-02	0.00E+00	1.69E-05	0.00E+00	3.03E-04	5.60E-05	3.63E-01	7.42E-04	3.14E-06	1.05E-01	1.77E-01	2.12E-04	7.48E-06	5.34E-04	0.00	Stepping Stones Preschool	School	1
547180_4179700	547180	4179700	1.59E-09	2.36E-04	5.41E-07	7.27E-04	4.95E-02	3.48E-04	1.17E-03	0.00E+00	1.62E-10	6.32E-02	0.00E+00	1.81E-05	0.00E+00	2.90E-04	5.42E-05	3.50E-01	7.12E-04	3.00E-06	1.01E-01	1.78E-01	2.02E-04	7.30E-06	5.16E-04	0.00	Stepping Stones Preschool	School	2
547160_4179720	547160	4179720	1.46E-09	2.17E-04	4.97E-07	6.67E-04	4.54E-02	3.20E-04	1.07E-03	0.00E+00	1.48E-10	5.80E-02	0.00E+00	1.66E-05	0.00E+00	2.93E-04	5.43E-05	3.51E-01	7.17E-04	3.04E-06	1.02E-01	1.74E-01	2.05E-04	7.21E-06	5.18E-04	0.00	Stepping Stones Preschool	School	3
547160_4179700	547160	4179700	1.56E-09	2.31E-04	5.30E-07	7.12E-04	4.85E-02	3.41E-04	1.14E-03	0.00E+00	1.58E-10	6.19E-02	0.00E+00	1.77E-05	0.00E+00	2.82E-04	5.30E-05	3.41E-01	6.92E-04	2.92E-06	9.83E-02	1.75E-01	1.97E-04	7.07E-06	5.03E-04	0.00	Stepping Stones Preschool	School	4
547980_4179540	547980	4179540	1.18E-09	1.75E-04	4.02E-07	5.40E-04	3.67E-02	2.58E-04	8.65E-04	0.00E+00	1.20E-10	4.69E-02	0.00E+00	1.34E-05	0.00E+00	2.07E-03	3.60E-04	2.41E+00	5.28E-03	2.19E-05	7.50E-01	9.43E-01	1.48E-03	5.99E-05	3.51E-03	0.02	pot. res.		1
547980_4179520	547980	4179520	1.54E-09	2.29E-04	5.24E-07	7.04E-04	4.79E-02	3.37E-04	1.13E-03	0.00E+00	1.56E-10	6.12E-02	0.00E+00	1.75E-05	0.00E+00	2.04E-03	3.47E-04	2.34E+00	5.25E-03	2.16E-05	7.46E-01	8.58E-01	1.46E-03	6.19E-05	3.40E-03	0.02	pot. res.		2
547980_4179560	547980	4179560	1.19E-09	1.77E-04	4.06E-07	5.46E-04	3.71E-02	2.61E-04	8.75E-04	0.00E+00	1.21E-10	4.75E-02	0.00E+00	1.36E-05	0.00E+00	1.79E-03	3.23E-04	2.12E+00	4.53E-03	1.88E-05	6.43E-01	9.41E-01	1.26E-03	5.16E-05	3.11E-03	0.01	pot. res.		3
547980_4179580	547980	4179580	1.42E-09	2.11E-04	4.83E-07	6.49E-04	4.42E-02	3.11E-04	1.04E-03	0.00E+00	1.44E-10	5.64E-02	0.00E+00	1.61E-05	0.00E+00	1.75E-03	3.24E-04	2.10E+00	4.40E-03	1.81E-05	6.24E-01	1.02E+00	1.22E-03	5.07E-05	3.09E-03	0.01	pot. res.		4
547980_4179500	547980	4179500	1.58E-09	2.35E-04	5.39E-07	7.24E-04	4.93E-02	3.47E-04	1.16E-03	0.00E+00	1.61E-10	6.30E-02	0.00E+00	1.80E-05	0.00E+00	1.62E-03	2.78E-04	1.87E+00	4.17E-03	1.71E-05	5.93E-01	7.12E-01	1.15E-03	5.02E-05	2.71E-03	0.01	pot. res.		5
547980_4179600	547980	4179600	1.68E-09	2.50E-04	5.73E-07	7.71E-04	5.24E-02	3.69E-04	1.23E-03	0.00E+00	1.71E-10	6.70E-02	0.00E+00	1.92E-05	0.00E+00	1.40E-03	2.59E-04	1.68E+00	3.52E-03	1.46E-05	4.99E-01	8.13E-01	9.84E-04	3.94E-05	2.48E-03	0.01	pot. res.		6
548020_4179760	548020	4179760	4.39E-09	6.53E-04	1.50E-06	2.01E-03	1.37E-01	9.63E-04	3.22E-03	0.00E+00	4.47E-10	1.75E-01	0.00E+00	5.00E-05	0.00E+00	1.30E-03	2.33E-04	1.53E+00	3.25E-03	1.36E-05	4.61E-01	6.82E-01	9.16E-04	3.52E-05	2.25E-03	0.01	pot. res.		7
548000_4179760	548000	4179760	4.46E-09	6.64E-04	1.52E-06	2.05E-03	1.39E-01	9.79E-04	3.28E-03	0.00E+00	4.55E-10	1.78E-01	0.00E+00	5.08E-05	0.00E+00	1.26E-03	2.28E-04	1.50E+00	3.16E-03	1.32E-05	4.49E-01	6.77E-01	8.91E-04	3.42E-05	2.20E-03	0.01	pot. res.		8
548000_4179740	548000	4179740	3.82E-09	5.68E-04	1.30E-06	1.75E-03	1.19E-01	8.37E-04	2.80E-03	0.00E+00	3.89E-10	1.52E-01	0.00E+00	4.35E-05	0.00E+00	1.28E-03	2.30E-04	1.51E+00	3.22E-03	1.34E-05	4.57E-01	6.69E-01	9.04E-04	3.53E-05	2.21E-03	0.01	pot. res.		9
547980_4179740	547980	4179740	3.91E-09	5.82E-04	1.33E-06	1.79E-03	1.22E-01	8.58E-04	2.87E-03	0.00E+00	3.98E-10	1.56E-01	0.00E+00	4.45E-05	0.00E+00	1.28E-03	2.29E-04	1.51E+00	3.19E-03	1.34E-05	4.54E-01	6.69E-01	9.00E-04	3.47E-05	2.21E-03	0.01	pot. res.		10
547560_4179660	547560	4179660	2.80E-09	4.16E-04	9.53E-07	1.28E-03	8.71E-02	6.13E-04	2.05E-03	0.00E+00	2.85E-10	1.11E-01	0.00E+00	3.18E-05	0.00E+00	7.24E-04	1.31E-04	8.57E-01	1.81E-03	7.57E-06	2.57E-01	3.88E-01	5.10E-04	1.96E-05	1.26E-03	0.01	Lucia Child Care Center	Day Care	1
547560_4179680	547560	4179680	2.71E-09	4.03E-04	9.24E-07	1.24E-03	8.45E-02	5.95E-04	1.99E-03	0.00E+00	2.76E-10	1.08E-01	0.00E+00	3.09E-05	0.00E+00	7.13E-04	1.27E-04	8.39E-01	1.79E-03	7.48E-06	2.54E-01	3.63E-01	5.04E-04	1.94E-05	1.23E-03	0.01	Lucia Child Care Center	Day Care	2
547540_4179660	547540	4179660	2.69E-09	4.01E-04	9.18E-07	1.23E-03	8.39E-02	5.91E-04	1.98E-03	0.00E+00	2.74E-10	1.07E-01	0.00E+00	3.07E-05	0.00E+00	6.71E-04	1.22E-04	7.96E-01	1.68E-03	7.01E-06	2.38E-01	3.66E-01	4.73E-04	1.83E-05	1.17E-03	0.01	Lucia Child Care Center	Day Care	3
547540_4179680	547540	4179680	2.64E-09	3.93E-04	9.00E-07	1.21E-03	8.22E-02	5.79E-04	1.94E-03	0.00E+00	2.69E-10	1.05E-01	0.00E+00	3.00E-05	0.00E+00	6.45E-04	1.15E-04	7.60E-01	1.61E-03	6.76E-06	2.29E-01	3.34E-01	4.56E-04	1.72E-05	1.11E-03	0.01	Lucia Child Care Center	Day Care	4
547460_4179400	547460	4179400	1.69E-09	2.51E-04	5.75E-07	7.72E-04	5.25E-02	3.70E-04	1.24E-03	0.00E+00	1.72E-10	6.72E-02	0.00E+00	1.92E-05	0.00E+00	4.61E-04	8.87E-05	5.64E-01	1.14E-03	4.74E-06	1.62E-01	3.11E-01	3.20E-04	1.27E-05	8.37E-04	0.00	Kirkham Child Care Center	Day Care	1
547480_4179400	547480	4179400	1.58E-09	2.35E-04	5.39E-07	7.25E-04	4.93E-02	3.47E-04	1.16E-03	0.00E+00	1.61E-10	6.30E-02	0.00E+00	1.80E-05	0.00E+00	4.65E-04	8.79E-05	5.63E-01	1.16E-03	4.80E-06	1.64E-01	2.96E-01	3.24E-04	1.28E-05	8.33E-04	0.00	Kirkham Child Care Center	Day Care	2
547240_4179660	547240	4179660	1.86E-09	2.77E-04	6.34E-07	8.52E-04	5.79E-02	4.08E-04	1.36E-03	0.00E+00	1.89E-10	7.40E-02	0.00E+00	2.12E-05	0.00E+00	3.79E-04	6.92E-05	4.51E-01	9.49E-04	3.95E-06	1.35E-01	2.13E-01	2.66E-04	1.05E-05	6.64E-04	0.00	Independence High	School	1
547220_4179660	547220	4179660	1.83E-09	2.72E-04	6.22E-07	8.36E-04	5.69E-02	4.00E-04	1.34E-03	0.00E+00	1.86E-10	7.27E-02	0.00E+00	2.08E-05	0.00E+00	3.71E-04	6.78E-05	4.42E-01	9.28E-04	3.86E-06	1.32E-01	2.09E-01	2.61E-04	1.02E-05	6.49E-04	0.00	Independence High	School	2
547240_4179680	547240	4179680	1.84E-09	2.73E-04	6.26E-07	8.42E-04	5.73E-02	4.03E-04	1.35E-03	0.00E+00	1.87E-10	7.32E-02	0.00E+00	2.09E-05	0.00E+00	3.26E-04	5.99E-05	3.89E-01	8.10E-04	3.39E-06	1.15E-01	1.89E-01	2.28E-04	8.71E-06	5.73E-04	0.00	Independence High	School	3
547220_4179680	547220	4179680	1.80E-09	2.68E-04	6.14E-07	8.25E-04	5.61E-02	3.95E-04	1.32E-03	0.00E+00	1.83E-10	7.17E-02	0.00E+00	2.05E-05	0.00E+00	3.20E-04	5.89E-05	3.83E-01	7.96E-04	3.33E-06	1.13E-01	1.86E-01	2.25E-04	8.52E-06	5.63E-04	0.00	Independence High	School	4
548260_4179620	548260	4179620	1.07E-09	1.60E-04	3.66E-07	4.92E-04	3.34E-02	2.35E-04	7.88E-04	0.00E+00	1.09E-10	4.27E-02	0.00E+00	1.22E-05	0.00E+00	3.75E-04	6.76E-05	4.44E-01	9.42E-04	3.92E-06	1.34E-01	2.04E-01	2.64E-04	1.04E-05	6.51E-04	0.00	Haight Ashbury Community Nursery School	School	1
548280_4179620	548280	4179620	1.11E-09	1.65E-04	3.78E-07	5.08E-04	3.45E-02	2.43E-04	8.13E-04	0.00E+00	1.13E-10	4.41E-02	0.00E+00	1.26E-05	0.00E+00	3.64E-04	6.60E-05	4.32E-01	9.15E-04	3.81E-06	1.30E-01	2.01E-01	2.57E-04	1.02E-05	6.34E-04	0.00	Haight Ashbury Community Nursery School	School	2
548260_4179640	548260	4179640	1.28E-09	1.90E-04	4.35E-07	5.85E-04	3.98E-02	2.80E-04	9.37E-04	0.00E+00	1.30E-10	5.08E-02	0.00E+00	1.45E-05	0.00E+00	3.45E-04	6.38E-05	4.14E-01	8.65E-04	3.59E-06	1.23E-01	2.04E-01	2.42E-04	9.64E-06	6.09E-04	0.00	Haight Ashbury Community Nursery School	School	3
548280_4179640	548280	4179640	1.30E-09	1.93E-04	4.42E-07	5.93E-04	4.04E-02	2.84E-04	9.51E-04	0.00E+00	1.32E-10	5.16E-02	0.00E+00	1.48E-05	0.00E+00	3.38E-04	6.27E-05	4.06E-01	8.46E-04	3.51E-06	1.20E-01	2.03E-01	2.37E-04	9.44E-06	5.98E-04	0.00	Haight Ashbury Community Nursery School	School	4
547420_4179540	547420	4179540	1.82E-09	2.71E-04	6.22E-07	8.35E-04	5.68E-02	4.00E-04	1.34E-03	0.00E+00	1.86E-10	7.26E-02	0.00E+00	2.08E-05	0.00E+00	7.05E-04	1.27E-04	8.33E-01	1.77E-03	7.37E-06	2.52E-01	3.74E-01	4.97E-04	1.96E-05	1.22E-03	0.01	Fifth Ave Housing	Res Hall	1
547420_4179520	547420	4179520	2.09E-09	3.11E-04	7.13E-07	9.58E-04	6.52E-02	4.59E-04	1.54E-03	0.00E+00	2.13E-10	8.33E-02	0.00E+00	2.38E-05	0.00E+00	6.88E-04	1.24E-04	8.14E-01	1.73E-03	7.20E-06	2.45E-01	3.68E-01	4.85E-04	1.92E-05	1.19E-03	0.01	Fifth Ave Housing	Res Hall	2
547420_4179500	547420	4179500	2.24E-09	3.33E-04	7.64E-07	1.03E-03	6.98E-02	4.91E-04	1.64E-03	0.00E+00	2.28E-10	8.92E-02	0.00E+00	2.55E-05	0.00E+00	6.73E-04	1.22E-04	7.98E-01	1.69E-03	7.03E-06	2.40E-01	3.67E-01	4.74E-04	1.89E-05	1.17E-03	0.01	Fifth Ave Housing	Res Hall	3
547420_4179560	547420	4179560	1.84E-09	2.74E-04	6.28E-07	8.44E-04	5.74E-02	4.04E-04	1.35E-03	0.00E+00	1.88E-10	7.34E-02	0.00E+00	2.10E-05	0.00E+00	6.70E-04	1.21E-04	7.94E-01	1.69E-03	7.00E-06	2.40E-01	3.63E-01	4.72E-04	1.90E-05	1.17E-03	0.01	Fifth Ave Housing	Res Hall	4
547420_4179480	547420	4179480	2.24E-09	3.34E-04	7.64E-07	1.03E-03	6.99E-02	4.92E-04	1.65E-03	0.00E+00	2.28E-10	8.93E-02	0.00E+00	2.55E-05	0.00E+00	6.05E-04	1.11E-04	7.21E-01	1.52E-03	6.30E-06	2.16E-01	3.42E-01	4.25E-04	1.71E-05	1.06E-03	0.01	Fifth Ave Housing	Res Hall	5
547420_4179460	547420	4179460	2.12E-09	3.15E-04	7.22E-07	9.71E-04	6.60E-02	4.65E-04	1.56E-03	0.00E+00	2.16E-10	8.44E-02	0.00E+00	2.41E-05	0.00E+00	4.91E-04	9.31E-05	5.96E-01	1.23E-03	5.06E-06	1.74E-01	3.17E-01	3.41E-04	1.41E-05	8.82E-04	0.00	Fifth Ave Housing	Res Hall	6
547420_4179440	547420	4179440	1.90E-09	2.83E-04	6.47E-07	8.70E-04	5.92E-02	4.17E-04	1.39E-03	0.00E+00	1.93E-10	7.56E-02	0.00E+00	2.16E-05	0.00E+00	4.54E-04	8.75E-05	5.56E-01	1.13E-03	4.67E-06	1.60E-01	3.08E-01	3.15E-04	1.28E-05	8.26E-04	0.00	Fifth Ave Housing	Res Hall	7
547420_4179400	547420	4179400	1.75E-09	2.61E-04	5.97E-07	8.03E-04	5.46E-02	3.84E-04	1.29E-03	0.00E+00	1.78E-10	6.98E-02	0.00E+00	2.00E-05	0.00E+00	4.49E-04	8.72E-05	5.52E-01	1.12E-03	4.61E-06	1.58E-01	3.11E-01	3.11E-04	1.26E-05	8.21E-04	0.00	Fifth Ave Housing	Res Hall	8
547420_4179420	547420	4179420	1.77E-09	2.63E-04	6.03E-07	8.11E-04	5.52E-02	3.88E-04	1.30E-03	0.00E+00	1.80E-10	7.05E-02	0.00E+00	2.02E-05	0.00E+00	4.40E-04	8.51E-05	5.40E-01	1.09E-03	4.52E-06	1.55E-01	3.02E-01	3.05E-04	1.23E-05	8.02E-04	0.00	Fifth Ave Housing	Res Hall	9
547880_4178660	547880	4178660	9.93E-10	1.48E-04	3.38E-07	4.55E-04	3.09E-02	2.18E-04	7.29E-04	0.00E+00	1.01E-10	3.95E-02	0.00E+00	1.13E-05	0.00E+00	3.51E-04	6.47E-05	4.20E-01	8.80E-04	3.65E-06	1.25E-01	2.03E-01	2.46E-04	9.77E-06	6.18E-04	0.00	Clarendon Alternative Elementary	School	1
547920_4178680	547920	4178680	9.97E-10	1.48E-04	3.40E-07	4.57E-04	3.11E-02	2.19E-04	7.32E-04	0.00E+00	1.02E-10	3.97E-02	0.00E+00	1.14E-05	0.00E+00	3.48E-04	6.45E-05	4.18E-01	8.70E-04	3.62E-06	1.23E-01	2.05E-01	2.44E-04	9.60E-06	6.16E-04	0.00	Clarendon Alternative Elementary	School	2
547880_4178640	547880	4178640	9.85E-10	1.46E-04	3.36E-07	4.51E-04	3.07E-02	2.16E-04	7.23E-04	0.00E+00	1.00E-10	3.92E-02	0.00E+00	1.12E-05	0.00E+00	3.49E-04	6.43E-05	4.17E-01	8.74E-04	3.63E-06	1.24E-01	2.02E-01	2.45E-04	9.71E-06	6.14E-04	0.00	Clarendon Alternative Elementary	School	3
547920_4178660	547920	4178660	9.88E-10	1.47E-04	3.37E-07	4.52E-04	3.08E-02	2.17E-04	7.25E-04	0.00E+00	1.01E-10	3.93E-02	0.00E+00	1.12E-05	0.00E+00	3.46E-04	6.41E-05	4.15E-01	8.64E-04	3.59E-06	1.23E-01	2.05E-01	2.42E-04	9.53E-06	6.12E-04	0.00	Clarendon Alternative Elementary	School	4
547940_4178680	547940	4178680	9.96E-10	1.48E-04	3.40E-07	4.56E-04	3.11E-02	2.19E-04	7.31E-04	0.00E+00	1.01E-10	3.97E-02	0.00E+00	1.13E-05	0.00E+00	3.45E-04	6.39E-05	4.14E-01	8.63E-04	3.59E-06	1.22E-01	2.03E-01	2.42E-04	9.52E-06	6.10E-04	0.00	Clarendon Alternative Elementary	School	5
547860_4178600	547860	4178600	9.89E-10	1.47E-04	3.37E-07	4.53E-04	3.08E-02	2.17E-04	7.26E-04	0.00E+00	1.01E-10	3.94E-02	0.00E+00	1.13E-05	0.00E+00	3.45E-04	6.37E-05	4.13E-01	8.62E-04	3.58E-06	1.22E-01	2.02E-01	2.41E-04	9.57E-06	6.09E-04	0.00	Clarendon Alternative Elementary	School	6
547920_4178640	547920	4178640	9.84E-10	1.46E-04	3.35E-07	4.51E-04	3.07E-02	2.16E-04	7.22E-04	0.00E+00	1.00E-10	3.92E-02	0.00E+00	1.12E-05	0.00E+00	3.45E-04	6.40E-05	4.14E-01	8.60E-04	3.58E-06	1.22E-01	2.05E-01	2.41E-04	9.49E-06	6.10E-04	0.00	Clarendon Alternative Elementary	School	7
547880_4178620	547880	4178620	9.71E-10	1.44E-04	3.31E-07	4.45E-04	3.03E-02	2.13E-04	7.13E-04	0.00E+00	9.88E-11	3.87E-02	0.00E+00	1.11E-05	0.00E+00	3.45E-04	6.36E-05	4.13E-01	8.64E-04	3.59E-06	1.23E-01	2.00E-01	2.42E-04	9.61E-06	6.08E-04	0.00	Clarendon Alternative Elementary	School	8
547880_4178600	547880	4178600	9.63E-10	1.43E-04	3.28E-07	4.41E-04	3.00E-02	2.11E-04	7.07E-04	0.00E+00	9.81E-11	3.84E-02	0.00E+00	1.10E-05	0.00E+00	3.43E-04	6.33E-05	4.11E-01	8.59E-04	3.57E-06	1.22E-01	1.99E-01	2.41E-04	9.55E-06	6.05E-04	0.00	Clarendon Alternative Elementary	School	9
547880_4178580	547880	4178580	9.60E-10	1.43E-04	3.27E-07	4.40E-04	2.99E-02	2.11E-04	7.05E-04	0.00E+00	9.78E-11	3.82E-02	0.00E+00	1.09E-05	0.00E+00	3.42E-04	6.31E-05	4.09E-01	8.56E-04	3.56E-06	1.21E-01	1.99E-01	2.40E-04	9.51E-06	6.03E-04	0.00	Clarendon Alternative Elementary	School	10
548100_4179280	548100	4179280	1.21E-09	1.80E-04	4.12E-07	5.54E-04	3.77E-02	2.65E-04	8.88E-04	0.00E+00	1.23E-10	4.82E-02	0.00E+00	1.38E-05	0.00E+00	6.65E-04	1.16E-04	7.72E-01	1.66E-03	7.02E-06	2.36E-01	3.01E-01	4.73E-04	1.73E-05	1.13E-03	0.01	Aldea Housing	Res Hall	1
548120_4179280	548120	4179280	1.08E-09	1.60E-04	3.67E-07	4.93E-04	3.36E-02	2.36E-04	7.90E-04	0.00E+00	1.10E-10	4.29E-02	0.00E+00	1.23E-05	0.00E+00	6.61E-04	1.14E-04	7.66E-01	1.66E-03	6.98E-06	2.36E-01	2.96E-01	4.71E-04	1.77E-05	1.12E-03	0.01	Aldea Housing	Res Hall	2
548140_4179280	548140	4179280	9.42E-10	1.40E-04	3.21E-07	4.32E-04	2.94E-02	2.07E-04	6.92E-04	0.00E+00	9.60E-11	3.75E-02	0.00E+00	1.07E-05	0.00E+00	6.55E-04	1.14E-04	7.61E-01	1.65E-03	6.91E-06	2.34E-01	3.02E-01	4.66E-04	1.78E-05	1.11E-03	0.01	Aldea Housing	Res Hall	3
548100_4179300	548100	4179300	1.24E-09	1.85E-04	4.23E-07	5.69E-04	3.87E-02	2.72E-04	9.12E-04	0.00E+00	1.26E-10	4.95E-02	0.00E+00	1.41E-05	0.00E+00	6.43E-04	1.14E-04	7.53E-01	1.61E-03	6.77E-06	2.29E-01	3.11E-01	4.56E-04	1.72E-05	1.10E-03	0.01	Aldea Housing	Res Hall	4
548120_4179300	548120	4179300	1.08E-09	1.61E-04	3.69E-07	4.95E-04	3.37E-02	2.37E-04	7.94E-04	0.00E+00	1.10E-10	4.31E-02	0.00E+00	1.23E-05	0.00E+00	6.34E-04	1.12E-04	7.43E-01	1.59E-03	6.66E-06	2.27E-01	3.11E-01	4.49E-04	1.75E-05	1.09E-03	0.01	Aldea Housing	Res Hall	5
548100_4179260	548100	4179260	1.20E-09	1.78E-04	4.09E-07	5.49E-04	3.73E-02	2.63E-04	8.80E-04	0.00E+00	1.22E-10	4.77E-02	0.00E+00	1.36E-05	0.00E+00	6.40E-04	1.11E-04	7.41E-01	1.60E-03	6.76E-06	2.28E-01	2.83E-01	4.56E-04	1.66E-05	1.08E-03	0.01	Aldea Housing	Res Hall	6
548120_4179260	548120	4179260	1.11E-09	1.65E-04	3.79E-07	5.09E-04	3.46E-02	2.44E-04	8.16E-04	0.00E+00	1.13E-10	4.43E-02	0.00E+00	1.27E-05	0.00E+00	6.27E-04	1.09E-04	7.28E-01	1.57E-03	6.62E-06	2.23E-01	2.82E-01	4.46E-04	1.64E-05	1.06E-03	0.01	Aldea Housing	Res Hall	7
548100_4179240	548100	4179240	1.25E-09	1.86E-04	4.27E-07	5.73E-04	3.90E-02	2.74E-04	9.18E-04	0.00E+00	1.27E-10	4.98E-02	0.00E+00	1.42E-05	0.00E+00	5.88E-04	1.03E-04	6.85E-01	1.47E-03	6.20E-06	2.10E-01	2.74E-01	4.18E-04	1.57E-05	9.99E-04	0.00	Aldea Housing	Res Hall	8
548080_4179240	548080	4179240	1.31E-09	1.95E-04	4.47E-07	6.01E-04	4.09E-02	2.88E-04	9.63E-04	0.00E+00	1.34E-10	5.23E-02	0.00E+00	1.49E-05	0.00E+00	5.76E-04	1.01E-04	6.72E-01	1.45E-03	6.07E-06	2.06E-01	2.73E-01	4.09E-04	1.55E-05	9.80E-04	0.00	Aldea Housing	Res Hall	9
548140_4179260	548140	4179260	1.02E-09	1.52E-04	3.48E-07	4.68E-04	3.18E-02	2.24E-04	7.50E-04	0.00E+00	1.04E-10	4.07E-02	0.00E+00	1.16E-05	0.00E+00	5.82E-04	1.03E-04	6.81E-01	1.46E-03	6.12E-06	2.07E-01	2.83E-01	4.13E-04	1.57E-05	9.95E-04	0.00	Aldea Housing	Res Hall	10
547220_4179140	547220	4179140	1.16E-09	1.72E-04	3.94E-07	5.30E-04	3.60E-02	2.54E-04	8.49E-04	0.00E+00	1.18E-10	4.61E-02	0.00E+00	1.32E-05	0.00E+00	2.83E-04	5.56E-05	3.50E-01	7.04E-04	2.89E-06	9.96E-02	2.05E-01	1.95E-04	8.03E-06	5.21E-04	0.00	ABC Bay Area Child Care	Day Care	1
547200_4179140	547200	4179140	1.11E-09	1.65E-04	3.78E-07	5.07E-04	3.45E-02	2.43E-04	8.13E-04	0.00E+00	1.13E-10	4.41E-02	0.00E+00	1.26E-05	0.00E+00	2.83E-04	5.56E-05	3.50E-01	6.99E-04	2.89E-06	9.89E-02	2.05E-01	1.95E-04	7.77E-06	5.21E-04	0.00	ABC Bay Area Child Care	Day Care	2
547600_4179700	547600	4179700	2.61E-09	3.89E-04	8.90E-07	1.20E-03	8.14E-02	5.73E-04	1.92E-03	0.00E+00	2.66E-10	1.04E-01	0.00E+00	2.97E-05	0.00E+00	8.39E-04	1.46E-04	9.74E-01	2.12E-03	8.86E-06	3.02E-01	3.86E-01	5.97E-04	2.34E-05	1.42E-03	0.01	3rd Ave Housing	Res Hall	1
547600_4179720	547600	4179720	2.21E-09	3.28E-04	7.53E-07	1.01E-03	6.88E-02	4.84E-04	1.62E-03	0.00E+00	2.25E-10	8.79E-02	0.00E+00	2.51E-05	0.00E+00	7.47E-04	1.30E-04	8.68E-01	1.89E-03	7.88E-06	2.68E-01	3.47E-01	5.32E-04	2.08E-05	1.27E-03	0.01	3rd Ave Housing	Res Hall	2
547600_4179740	547600	4179740	2.04E-09	3.03E-04	6.95E-07	9.34E-04	6.35E-02	4.47E-04	1.50E-03	0.00E+00	2.08E-10	8.12E-02	0.00E+00	2.32E-05	0.00E+00	6.71E-04	1.17E-04	7.80E-01	1.68E-03	7.08E-06	2.39E-01	3.09E-01	4.77E-04	1.79E-05	1.14E-03	0.01	3rd Ave Housing	Res Hall	3
547600_4179760	547600	4179760	2.17E-09	3.23E-04	7.40E-07	9.94E-04	6.76E-02	4.76E-04	1.59E-03	0.00E+00	2.21E-10	8.64E-02	0.00E+00	2.47E-05	0.00E+00	5.92E-04	1.03E-04	6.87E-01	1.47E-03	6.25E-06	2.10E-01	2.69E-01	4.21E-04	1.50E-05	1.00E-03	0.01	3rd Ave Housing	Res Hall	4
547600_4179780	547600	4179780	2.07E-09	3.08E-04	7.06E-07	9.48E-04	6.45E-02	4.54E-04	1.52E-03	0.00E+00	2.11E-10	8.24E-02	0.00E+00	2.36E-05	0.00E+00	5.40E-04	9.44E-05	6.29E-01	1.35E-03	5.70E-06	1.92E-01	2.55E-01	3.84E-04	1.41E-05	9.17E-04	0.00	145 Irving St	Res Hall	1
547580_4179780	547580	4179780	2.08E-09	3.10E-04	7.10E-07	9.55E-04	6.49E-02	4.57E-04	1.53E-03	0.00E+00	2.12E-10	8.30E-02	0.00E+00	2.37E-05	0.00E+00	5.28E-04	9.22E-05	6.15E-01	1.32E-03	5.57E-06	1.87E-01	2.47E-01	3.76E-04	1.35E-05	8.97E-04	0.00	145 Irving St	Res Hall	2

UCSF Parnassus Heights New Hospital
New Hospital (2031)
Operational Annual Average $PM_{2.5}$ Exposure for Residential Receptor

For fume hoods, conservatively assume the following chemicals contribute to $PM_{2.5}$ emissions:

Arsenic and compounds
Benzidine
Benzyl chloride
Cadmium and compounds
Chromium (VI)
Hydrazine
Manganese and compounds
Mercuric chloride
Nickel and compounds
Sulfates
Vinyl chloride
Copper

Pollutant Concentrations by Source

	Emission Source		EDG1	EDG2	EDG3	Delivery 1	Delivery 2	Delivery 3	Cooling Tower	Fume Hoods											PCUP	Annual $PM_{2.5}$ Concentration (ug/m^3)	Receptor Type Determination		
	Pollutant		PM2.5	PM2.5	PM2.5	PM2.5	PM2.5	PM2.5	PM2.5	Arsenic and	Benzidine	Benzyl chloride	Cadmium and	Chromium (VI)	Hydrazine	Manganese and	Mercuric chloride	Nickel and	Sulfates	Vinyl	Copper	PM2.5				
	UTM X	UTM Y	$PM_{2.5}$ (ug/m^3)	$PM_{2.5}$ (ug/m^3)	$PM_{2.5}$ (ug/m^3)	$PM_{2.5}$ (ug/m^3)	$PM_{2.5}$ (ug/m^3)	$PM_{2.5}$ (ug/m^3)	$PM_{2.5}$ (ug/m^3)	Arsenic (ug/m^3)	Benzidine (ug/m^3)	Benzyl chloride (ug/m^3)	Cadmium (ug/m^3)	Chromium (VI) (ug/m^3)	Hydrazine (ug/m^3)	ganese and compo (ug/m^3)	Mercuric chloride (ug/m^3)	Nickel (ug/m^3)	Sulfates (ug/m^3)	Vinyl chloride (ug/m^3)	Copper (ug/m^3)	$PM_{2.5}$ (ug/m^3)				
547180_4179700	547180	4179700	7.52E-06	7.50E-06	7.27E-06	1.69E-04	1.43E-04	9.88E-05	7.58E-05	3.47E-12	0.00E+00	1.18E-09	5.17E-10	6.31E-12	2.36E-08	8.83E-11	3.53E-13	0.00E+00	0.00E+00	0.00E+00	5.05E-11	2.03E-03	0.00	Stepping Stones Preschool	School	1
547180_4179720	547180	4179720	7.28E-06	7.24E-06	7.05E-06	1.67E-04	1.41E-04	9.82E-05	7.44E-05	3.41E-12	0.00E+00	1.16E-09	5.08E-10	6.20E-12	2.32E-08	8.68E-11	3.47E-13	0.00E+00	0.00E+00	0.00E+00	4.96E-11	2.00E-03	0.00	Stepping Stones Preschool	School	2
547160_4179700	547160	4179700	7.34E-06	7.31E-06	7.09E-06	1.61E-04	1.36E-04	9.45E-05	7.35E-05	3.38E-12	0.00E+00	1.15E-09	5.05E-10	6.15E-12	2.30E-08	8.61E-11	3.45E-13	0.00E+00	0.00E+00	0.00E+00	4.92E-11	1.98E-03	0.00	Stepping Stones Preschool	School	3
547160_4179720	547160	4179720	7.10E-06	7.06E-06	6.88E-06	1.59E-04	1.34E-04	9.39E-05	7.22E-05	3.33E-12	0.00E+00	1.14E-09	4.97E-10	6.06E-12	2.27E-08	8.48E-11	3.39E-13	0.00E+00	0.00E+00	0.00E+00	4.85E-11	1.94E-03	0.00	Stepping Stones Preschool	School	4
547980_4179740	547980	4179740	2.57E-04	2.23E-04	1.36E-04	2.17E-03	1.31E-03	4.57E-03	5.86E-04	7.42E-11	0.00E+00	2.53E-08	1.11E-08	1.35E-10	5.05E-07	1.89E-09	7.55E-12	0.00E+00	0.00E+00	0.00E+00	1.08E-09	1.26E-01	0.14	pot. res.		1
547980_4179760	547980	4179760	2.45E-04	2.18E-04	1.36E-04	2.08E-03	1.18E-03	6.73E-03	5.00E-04	7.24E-11	0.00E+00	2.47E-08	1.08E-08	1.32E-10	4.93E-07	1.84E-09	7.37E-12	0.00E+00	0.00E+00	0.00E+00	1.05E-09	1.24E-01	0.14	pot. res.		2
548000_4179760	548000	4179760	2.36E-04	2.06E-04	1.28E-04	1.89E-03	1.07E-03	4.76E-03	4.81E-04	6.80E-11	0.00E+00	2.32E-08	1.01E-08	1.24E-10	4.63E-07	1.73E-09	6.93E-12	0.00E+00	0.00E+00	0.00E+00	9.90E-10	1.19E-01	0.13	pot. res.		3
548000_4179740	548000	4179740	2.43E-04	2.07E-04	1.27E-04	2.05E-03	1.22E-03	3.59E-03	5.45E-04	6.90E-11	0.00E+00	2.35E-08	1.03E-08	1.25E-10	4.70E-07	1.76E-09	7.02E-12	0.00E+00	0.00E+00	0.00E+00	1.00E-09	1.17E-01	0.13	pot. res.		4
547980_4179720	547980	4179720	2.43E-04	2.08E-04	1.30E-04	2.22E-03	1.30E-03	3.38E-03	6.53E-04	7.23E-11	0.00E+00	2.46E-08	1.08E-08	1.31E-10	4.92E-07	1.84E-09	7.36E-12	0.00E+00	0.00E+00	0.00E+00	1.05E-09	1.14E-01	0.12	pot. res.		5
548020_4179760	548020	4179760	2.26E-04	1.94E-04	1.20E-04	1.70E-03	9.66E-04	3.47E-03	4.64E-04	6.43E-11	0.00E+00	2.19E-08	9.59E-09	1.17E-10	4.38E-07	1.64E-09	6.55E-12	0.00E+00	0.00E+00	0.00E+00	9.35E-10	1.13E-01	0.12	pot. res.		6
548020_4179740	548020	4179740	2.29E-04	1.92E-04	1.17E-04	1.93E-03	1.13E-03	2.96E-03	5.10E-04	6.43E-11	0.00E+00	2.19E-08	9.59E-09	1.17E-10	4.38E-07	1.64E-09	6.55E-12	0.00E+00	0.00E+00	0.00E+00	9.36E-10	1.11E-01	0.12	pot. res.		7
547980_4179780	547980	4179780	1.95E-04	1.79E-04	1.12E-04	1.78E-03	1.05E-03	5.72E-03	4.54E-04	5.86E-11	0.00E+00	2.00E-08	8.74E-09	1.07E-10	3.99E-07	1.49E-09	5.97E-12	0.00E+00	0.00E+00	0.00E+00	8.53E-10	1.08E-01	0.12	pot. res.		8
548040_4179740	548040	4179740	2.25E-04	1.86E-04	1.16E-04	1.81E-03	1.02E-03	2.76E-03	4.70E-04	6.36E-11	0.00E+00	2.17E-08	9.49E-09	1.16E-10	4.33E-07	1.62E-09	6.48E-12	0.00E+00	0.00E+00	0.00E+00	9.26E-10	1.07E-01	0.11	pot. res.		9
548000_4179780	548000	4179780	1.90E-04	1.72E-04	1.08E-04	1.63E-03	9.57E-04	4.17E-03	4.30E-04	5.65E-11	0.00E+00	1.93E-08	8.42E-09	1.03E-10	3.85E-07	1.44E-09	5.75E-12	0.00E+00	0.00E+00	0.00E+00	8.22E-10	1.05E-01	0.11	pot. res.		10
547560_4179660	547560	4179660	1.49E-05	1.70E-05	1.66E-05	8.39E-04	8.81E-04	3.81E-04	2.11E-04	9.20E-12	0.00E+00	3.14E-09	1.37E-09	1.67E-11	6.26E-08	2.34E-10	9.37E-13	0.00E+00	0.00E+00	0.00E+00	1.34E-10	6.09E-03	0.01	Lucia Child Care Center	Day Care	1
547560_4179680	547560	4179680	1.34E-05	1.50E-05	1.47E-05	8.05E-04	8.32E-04	3.84E-04	1.99E-04	8.53E-12	0.00E+00	2.91E-09	1.27E-09	1.55E-11	5.81E-08	2.17E-10	8.68E-13	0.00E+00	0.00E+00	0.00E+00	1.24E-10	5.72E-03	0.01	Lucia Child Care Center	Day Care	2
547540_4179660	547540	4179660	1.45E-05	1.61E-05	1.57E-05	7.33E-04	7.48E-04	3.43E-04	1.94E-04	8.32E-12	0.00E+00	2.84E-09	1.24E-09	1.51E-11	5.67E-08	2.12E-10	8.48E-13	0.00E+00	0.00E+00	0.00E+00	1.21E-10	5.53E-03	0.01	Lucia Child Care Center	Day Care	3
547540_4179680	547540	4179680	1.32E-05	1.45E-05	1.41E-05	7.03E-04	7.08E-04	3.44E-04	1.83E-04	7.84E-12	0.00E+00	2.67E-09	1.17E-09	1.43E-11	5.34E-08	2.00E-10	7.98E-13	0.00E+00	0.00E+00	0.00E+00	1.14E-10	5.22E-03	0.01	Lucia Child Care Center	Day Care	4
547480_4179400	547480	4179400	1.62E-05	1.83E-05	1.90E-05	4.26E-04	3.79E-04	1.77E-04	1.35E-04	5.70E-12	0.00E+00	1.94E-09	8.49E-10	1.04E-11	3.88E-08	1.45E-10	5.80E-13	0.00E+00	0.00E+00	0.00E+00	8.29E-11	5.59E-03	0.01	Kirkham Child Care Center	Day Care	1
547460_4179400	547460	4179400	1.58E-05	1.78E-05	1.85E-05	3.97E-04	3.51E-04	1.69E-04	1.32E-04	5.66E-12	0.00E+00	1.93E-09	8.43E-10	1.03E-11	3.85E-08	1.44E-10	5.76E-13	0.00E+00	0.00E+00	0.00E+00	8.23E-11	5.34E-03	0.01	Kirkham Child Care Center	Day Care	2
547240_4179660	547240	4179660	8.75E-06	8.83E-06	8.44E-06	2.02E-04	1.74E-04	1.15E-04	8.68E-05	3.87E-12	0.00E+00	1.32E-09	5.78E-10	7.04E-12	2.64E-08	9.86E-11	3.94E-13	0.00E+00	0.00E+00	0.00E+00	5.63E-11	2.37E-03	0.00	Independence High	School	1
547240_4179680	547240	4179680	8.46E-06	8.51E-06	8.18E-06	2.00E-04	1.72E-04	1.15E-04	8.54E-05	3.83E-12	0.00E+00	1.30E-09	5.70E-10	6.96E-12	2.60E-08	9.74E-11	3.90E-13	0.00E+00	0.00E+00	0.00E+00	5.56E-11	2.29E-03	0.00	Independence High	School	2
547220_4179660	547220	4179660	8.49E-06	8.55E-06	8.19E-06	1.91E-04	1.64E-04	1.09E-04	8.38E-05	3.76E-12	0.00E+00	1.28E-09	5.60E-10	6.83E-12	2.56E-08	9.57E-11	3.83E-13	0.00E+00	0.00E+00	0.00E+00	5.47E-11	2.29E-03	0.00	Independence High	School	3
547220_4179680	547220	4179680	8.22E-06	8.25E-06	7.94E-06	1.90E-04	1.62E-04	1.09E-04	8.25E-05	3.71E-12	0.00E+00	1.27E-09	5.54E-10	6.75E-12	2.53E-08	9.45E-11	3.78E-13	0.00E+00	0.00E+00	0.00E+00	5.40E-11	2.22E-03	0.00	Independence High	School	4
548260_4179640	548260	4179640	7.56E-05	6.70E-05	5.74E-05	6.13E-04	3.78E-04	4.48E-04	2.55E-04	1.54E-11	0.00E+00	5.24E-09	2.29E-09	2.80E-11	1.05E-07	3.91E-10	1.57E-12	0.00E+00	0.00E+00	0.00E+00	2.24E-10	2.75E-02	0.03	Haight Ashbury Community Nursery School	School	1
548280_4179640	548280	4179640	7.58E-05	6.81E-05	5.90E-05	5.68E-04	3.53E-04	4.15E-04	2.48E-04	1.50E-11	0.00E+00	5.11E-09	2.23E-09	2.72E-11	1.02E-07	3.81E-10	1.53E-12	0.00E+00	0.00E+00	0.00E+00	2.18E-10	2.65E-02	0.03	Haight Ashbury Community Nursery School	School	2
548260_4179620	548260	4179620	7.00E-05	6.14E-05	5.24E-05	6.11E-04	3.77E-04	4.27E-04	2.44E-04	1.41E-11	0.00E+00	4.79E-09	2.10E-09	2.56E-11	9.57E-08	3.58E-10	1.43E-12	0.00E+00	0.00E+00	0.00E+00	2.04E-10	2.56E-02	0.03	Haight Ashbury Community Nursery School	School	3
548280_4179620	548280	4179620	7.08E-05	6.29E-05	5.44E-05	5.67E-04	3.52E-04	3.98E-04	2.39E-04	1.38E-11	0.00E+00	4.71E-09	2.06E-09	2.51E-11	9.41E-08	3.52E-10	1.41E-12	0.00E+00	0.00E+00	0.00E+00	2.01E-10	2.48E-02	0.03	Haight Ashbury Community Nursery School	School	4
547420_4179480	547420	4179480	1.57E-05	1.76E-05	1.73E-05	3.74E-04	3.39E-04	1.72E-04	1.33E-04	6.19E-12	0.00E+00	2.11E-09	9.23E-10	1.13E-11	4.21E-08	1.58E-10	6.30E-13	0.00E+00	0.00E+00	0.00E+00	9.00E-11	5.02E-03	0.01	Fifth Ave Housing	Res Hall	1
547420_4179460	547420	4179460	1.56E-05	1.75E-05	1.74E-05	3.67E-04	3.32E-04	1.68E-04	1.30E-04	5.99E-12	0.00E+00	2.04E-09	8.94E-10	1.09E-11	4.08E-08	1.53E-10	6.10E-13	0.00E+00	0.00E+00	0.00E+00	8.72E-11	5.04E-03	0.01	Fifth Ave Housing	Res Hall	2
547420_4179500	547420	4179500	1.57E-05	1.76E-05	1.71E-05	3.82E-04	3.48E-04	1.78E-04	1.36E-04	6.33E-12	0.00E+00	2.16E-09	9.43E-10	1.15E-11	4.31E-08	1.61E-10	6.44E-13	0.00E+00	0.00E+00	0.00E+00	9.20E-11	4.98E-03	0.01	Fifth Ave Housing	Res Hall	3
547420_4179440	547420	4179440	1.56E-05	1.74E-05	1.75E-05	3.62E-04	3.23E-04	1.64E-04	1.28E-04	5.85E-12	0.00E+00	1.99E-09	8.72E-10	1.06E-11	3.98E-08	1.49E-10	5.95E-13	0.00E+00	0.00E+00	0.00E+00	8.51E-11	5.04E-03	0.01	Fifth Ave Housing	Res Hall	4
547420_4179520	547420	4179520	1.55E-05	1.73E-05	1.67E-05	3.86E-04	3.53E-04	1.82E-04	1.37E-04	6.33E-12	0.00E+00	2.16E-09	9.44E-10	1.15E-11	4.31E-08	1.61E-10	6.44E-13	0.00E+00	0.00E+00	0.00E+00	9.21E-11	4.89E-03	0.01	Fifth Ave Housing	Res Hall	5
547420_4179420	547420	4179420	1.53E-05	1.71E-05	1.73E-05	3.52E-04	3.11E-04	1.58E-04	1.24E-04	5.60E-12	0.00E+00	1.91E-09	8.35E-10	1.02E-11	3.81E-08	1.43E-10	5.70E-13	0.00E+00	0.00E+00	0.00E+00	8.15E-11	4.96E-03	0.01	Fifth Ave Housing	Res Hall	6
547420_4179540	547420	4179540	1.52E-05	1.68E-05	1.61E-05	3.89E-04	3.57E-04	1.86E-04	1.38E-04	6.30E-12	0.00E+00	2.15E-09	9.39E-10	1.15E-11	4.29E-08	1.60E-10	6.41E-13	0.00E+00	0.00E+00	0.00E+00	9.16E-11	4.74E-03	0.01	Fifth Ave Housing	Res Hall	7
547420_4179400	547420	4179400	1.50E-05	1.67E-05	1.71E-05	3.42E-04	3.00E-04	1.53E-04	1.21E-04	5.39E-12	0.00E+00	1.84E-09	8.03E-10	9.80E-12	3.67E-08	1.37E-10	5.49E-13	0.00E+00	0.00E+00	0.00E+00	7.84E-11	4.86E-03	0.01	Fifth Ave Housing	Res Hall	8
547420_4179560	547420	4179560	1.49E-05	1.64E-05	1.56E-05	3.95E-04	3.64E-04	1.91E-04	1.39E-04	6.28E-12	0.00E+00	2.14E-09	9.37E-10	1.14E-11	4.28E-08	1.60E-10	6.40E-13	0.00E+00	0.00E+00	0.00E+00	9.14E-11	4.58E-03	0.01	Fifth Ave Housing	Res Hall	9
547900_4178680	547900	4178680	4.81E-06	5.39E-06	5.72E-06	3.41E-05	2.51E-05	1.89E-05	3.98E-05	1.40E-12	0.00E+00	4.77E-10	2.09E-10	2.54E-12	9.52E-09	3.56E-11	1.42E-13	0.00E+00	0.00E+00	0.00E+00	2.03E-11	1.72E-03	0.00	Clarendon Alternative Elementary	School	1
547920_4178680	547920	4178680	4.75E-06	5.32E-06	5.64E-06	3.38E-05	2.48E-05	1.87E-05	3.96E-05	1.38E-12	0.00E+00	4.70E-10	2.06E-10	2.51E-12	9.39E-09	3.51E-11	1.40E-13	0.00E+00	0.00E+00	0.00E+00	2.01E-11	1.70E-03	0.00	Clarendon Alternative Elementary	School	2
547880_4178660	547880	4178660	4.74E-06	5.33E-06	5.66E-06	3.45E-05	2.54E-05	1.91E-05	3.92E-05	1.38E-12	0.00E+00	4.70E-10	2.06E-10	2.51E-12	9.38E-09	3.51E-11	1.40E-13	0.00E+00	0.00E+00	0.00E+00	2.00E-11	1.69E-03	0.00	Clarendon Alternative Elementary	School	3
547940_4178680	547940	4178680	4.70E-06	5.25E-06	5.58E-06	3.34E-05	2.46E-05	1.85E-05	3.94E-05	1.37E-12	0.00E+00	4.67E-10	2.04E-10	2.49E-12	9.32E-09	3.48E-11	1.39E-13	0.00E+00	0.00E+00	0.00E+00	1.99E-11	1.68E-03	0.00	Clarendon Alternative Elementary	School	4
547900_4178660	547900	4178660	4.71E-06	5.28E-06	5.61E-06	3.39E-05	2.49E-05	1.88E-05	3.89E-05	1.37E-12	0.00E+00	4.67E-10	2.04E-10	2.49E-12	9.32E-09	3.49E-11	1.39E-13	0.00E+00	0.00E+00	0.00E+00	1.99E-11	1.68E-03	0.00	Clarendon Alternative Elementary	School	5
547920_4178660	547920	4178660	4.66E-06	5.22E-06	5.54E-06	3.35E-05	2.46E-05	1.85E-05	3.87E-05	1.35E-12	0.00E+00	4.61E-10	2.02E-10	2.46E-12	9.21E-09	3.44E-11	1.38E-13	0.00E+00	0.00E+00	0.00E+00	1.97E-11	1.67E-03	0.00	Clarendon Alternative Elementary	School	6
547880_4178640	547880	4178640	4.65E-06	5.22E-06	5.56E-06	3.43E-05	2.52E-05	1.90E-05	3.81E-05	1.35E-12	0.00E+00	4.61E-10	2.02E-10	2.46E-12	9.21E-09	3.44E-11	1.38E-13	0.00E+00	0.00E+00	0.00E+00	1.97E-11	1.65E-03	0.00	Clarendon Alternative Elementary	School	7
547900_4178640	547900	4178640	4.60E-06	5.17E-06	5.50E-06	3.40E-05	2.50E-05	1.88E-05	3.79E-05	1.34E-12	0.00E+00	4.58E-10	2.00E-10	2.44E-12	9.15E-09	3.42E-11	1.37E-13	0.00E+00	0.00E+00	0.00E+00	1.95E-11	1.64E-03	0.00	Clarendon Alternative Elementary	School	8
547920_4178640	547920	4178640	4.55E-06	5.11E-06	5.43E-06	3.39E-05	2.49E-05	1.87E-05	3.77E-05	1.33E-12	0.00E+00	4.53E-10	1.98E-10	2.41E-12	9.04E-09	3.38E-11	1.35E-13	0.00E+00	0.00E+00	0.00E+00	1.93E-11	1.62E-03	0.00	Clarendon Alternative Elementary	School	9
547880_4178620	547880	4178620	4.57E-06	5.13E-06	5.46E-06	3.34E-05	2.46E-05	1.85E-05	3.74E-05	1.33E-12	0.00E+00	4.52E-10	1.98E-10	2.41E-12	9.03E-09	3.38E-11	1.35E-13	0.00E+00	0.00E+00	0.00E+00	1.93E-11	1.62E-03	0.00	Clarendon Alternative Elementary	School	10
548120_4179300	548120	4179300	1.08E-05	1.15E-05	1.20E-05	1.10E-04	7.79E-05	5.13E-05	9.88E-05	3.35E-12	0.00E+00	1.14E-09	4.99E-10	6.09E-12	2.28E-08	8.52E-11	3.41E-13	0.00E+00	0.00E+00	0.00E+00	4.87E-11	6.81E-03	0.01	Aldea Housing	Res Hall	1
548100_4179300	548100	4179300	1.07E-05	1.15E-05	1.20E-05	1.12E-04	7.94E-05	5.23E-05	1.00E-04	3.40E-12	0.00E+00	1.16E-09	5.07E-10	6.18E-12	2.31E-08	8.65E-11	3.46E-13	0.00E+00	0.00E+00	0.00E+00	4.94E-11	6.73E-03	0.01	Aldea Housing	Res Hall	2
548140_4179280	548140	4179280	1.10E-05	1.14E-05	1.18E-05	9.79E-05	6.96E-05	4.68E-05	9.38E-05	3.15E-12	0.00E+00	1.07E-09	4.69E-10	5.72E-12	2.14E-08	8.01E-11	3.20E-13	0.00E+00	0.00E+00	0.00E+00	4.58E-11	6.45E-03	0.01	Aldea Housing	Res Hall	3
548120_4179280	548120	4179280	1.10E-05	1.16E-05	1.19E-05	1.00E-04	7.06E-05	4.76E-05	9.52E-05	3.20E-12	0.00E+00	1.09E-09	4.77E-10	5.82E-12	2.18E-08	8.15E-11	3.26E-13	0.00E+00	0.00E+00	0.00E+00	4.66E-11	6.41E-03	0.01	Aldea Housing	Res Hall	4
548100_4179280	548100	4179280	1.09E-05	1.16E-05	1.19E-05	1.03E-04	7.21E-05	4.84E-05	9.66E-05	3.25E-12	0.00E+00	1.11E-09	4.84E-10	5.91E-12	2.21E-08	8.27E-11	3.31E-13	0.00E+00	0.00E+00	0.00E+00	4.73E-11	6.32E-03	0.01	Aldea Housing	Res Hall	5
548120_4179260	548120	4179260	1.07E-05	1.12E-05	1.15E-05	9.27E-05	6.53E-05	4.47E-05	9.12E-05	3.05E-12	0.00E+00	1.04E-09	4.54E-10	5.54E-12	2.07E-08	7.76E-11	3.10E-13	0.00E+00	0.00E+00	0.00E+00	4.43E-11	5.94E-03	0.01	Aldea Housing	Res Hall	6
548140_4179260	548140	4179260	1.03E-05	1.09E-05	1.12E-05	9.15E-05	6.48E-05	4.44E-05	8.97E-05	3.02E-12	0.00E+00	1.03E-09	4.50E-10	5.49E-12	2.06E-08	7.68E-11	3.07E-13	0.00E+00	0.00E+00	0.00E+00	4.39E-11	5.90E-03	0.01	Aldea Housing	Res Hall	7
548100_4179260	548100	4179260	1.09E-05	1.14E-05	1.17E-05	9.47E-05	6.64E-05	4.51E-05	9.23E-05	3.05E-12	0.00E+00	1.04E-09	4.54E-10	5.54E-12	2.07E-08	7.76E-11	3.10E-13	0.00E+00	0.00E+00	0.00E+00	4.43E-11	5.86E-03	0.01	Aldea Housing	Res Hall	8
548120_4179240	548120	4179240	9.93E-06	1.05E-05	1.09E-05	8.73E-05	6.15E-05	4.25E-05	8.74E-05	2.94E-12	0.00E+00	1.00E-09	4.38E-10	5.34E-12	2.00E-08	7.48E-11	2.99E-13	0.00E+00	0.00E+00	0.00E+00	4.28E-11	5.41E-03	0.01	Aldea Housing	Res Hall	9
548100_4179240	548100	4179240	1.03E-05	1.08E-05	1.11E-05	8.87E-05	6.23E-05	4.27E-05	8.88E-05	2.96E-12	0.00E+00	1.01E-09	4.41E-10	5.37E-12	2.01E-08	7.52E-11	3.01E-13	0.00E+00	0.00E+00	0.00E+00	4.30E-11	5.38E-03	0.01	Aldea Housing	Res Hall	10
547220_4179140	547220	4179140	8.40E-06	9.24E-06	9.90E-06	1.40E-04	1.13E-04	7.18E-05	6.76E-05	2.87E-12	0.00E+00	9.78E-10	4.28E-10	5.21E-12	1.95E-08	7.30E-11	2.92E-13	0.00E+00	0.00E+00	0.00E+00	4.17E-11	2.50E-03	0.00	ABC Bay Area Child Care	Day Care	1
547200_4179140	547200	4179140	8.40E-06	9.23E-06	9.88E-06	1.37E-04	1.11E-04	7.03E-05	6.78E-05	2.92E-12	0.00E+00	9.97E-10	4.36E-10	5.32E-12	1.99E-08	7.44E-11	2.98E-13	0.00E+00	0.00E+00	0.00E+00	4.25E-11	2.50E-03	0.00	ABC Bay Area Child Care	Day Care	2
547600_4179700	547600	4179700	1.20E-05	1.35E-05	1.35E-05	9.76E-04	1.03E-03	4.75E-04	2.09E-04	9.15E-12	0.00E+00	3.12E-09	1.36E-09	1.66E-11	6.23E-08	2.33E-10	9.32E-13	0.00E+00	0.00E+00	0.00E+00	1.33E-10	6.56E-03	0.01	3rd Ave Housing	Res Hall	1
547600_4179720	547600	4179720	1.08E-05	1.19E-05	1.20E-05	9.00E-04	9.24E-04	4.69E-04	1.92E-04	8.37E-12	0.00E+00	2.85E-09	1.25E-09	1.52E-11	5.70E-08	2.13E-10	8.53E-13	0.00E+00	0.00E+00	0.00E+00	1.22E-10	6.21E-03	0.01	3rd Ave Housing	Res Hall	2
547600_4179740	547600	4179740	9.94E-06	1.08E-05	1.10E-05	8.24E-04	8.23E-04	4.57E-04	1.77E-04	7.73E-12	0.00E+00	2.63E-09	1.15E-09	1.41E-11	5.26E-08	1.97E-10	7.87E-13	0.00E+00	0.00E+00	0.00E+00	1.12E-10	5.78E-03	0.01	3rd Ave Housing	Res Hall	3
547600_4179760	547600	4179760	9.33E-06	1.01E-05	1.04E-05	7.52E-04	7.33E-04	4.42E-04	1.64E-04	7.12E-12	0.00E+00	2.43E-09	1.06E-09	1.29E-11	4.85E-08	1.81E-10	7.25E-13	0.00E+00	0.00E+00	0.00E+00	1.04E-10	5.47E-03	0.01	3rd Ave Housing	Res Hall	4
547600_4179780	547600	4179780	8.92E-06	9.65E-06	9.92E-06	6.78E-04	6.45E-04	4.18E-04	1.52E-04	6.51E-12	0.00E+00	2.22E-09	9.71E-10	1.18E-11	4.43E-08	1.66E-10	6.63E-13	0.00E+00	0.00E+00	0.00E+00	9.47E-11	5.19E-03	0.01	145 Irving St	Res Hall	1
547580_4179780	547580	4179780	9.04E-06	9.70E-06	9.92E-06	6.13E-04	5.79E-04	3.74E-04	1.46E-04	6.23E-12	0.00E+00	2.12E-09	9.29E-10	1.13E-11	4.24E-08	1.59E-10	6.34E-13	0.00E+00	0.00E+00	0.00E+00	9.06E-11	4.93E-03	0.01	145 Irving St	Res Hall	2

Appendix BIO
Biological Resources

TABLE BIO-1
SPECIAL-STATUS SPECIES WITH POTENTIAL TO OCCUR AT THE NHPH SITE

Name	Listing Status	General Habitat Requirements	Potential for Species Occurrence at the Hospital Site
Invertebrates			
Western bumble bee (*Bombus occidentalis*)	--/CaE	Found in any area with sufficient flowers for nutrition, and underground burrows for nest for the queen.	**Low.** The hospital site and Medical Center Way provide poor habitat.
San Bruno elfin butterfly (*Callophrys mossii bayensis*)	FE/--	Coastal, mountainous areas with grassy ground cover, mainly in the vicinity of San Bruno Mountain, San Mateo County. Colonies are located on steep, north-facing slopes within the fog belt. Larval host plant is *Sedum spathulifolium*.	**Low.** Host plant not present within hospital site.
Monarch butterfly (*Danaus plexippus plexippus)*	CaE/-- overwintering sites protected	Monarch butterfly breeding and larval habitat is on milkweed plants in open fields and meadows. During winter colonies stay in eucalyptus, Monterey cypress and other trees in California and at high altitudes in Mexico.	**Moderate (overwintering).** Suitable overwintering habitat is present in eucalyptus trees along Medical Center Way. Species has been recorded wintering in eucalyptus groves in San Francisco including Golden Gate Park, the Presidio, Fort Mason, and Telegraph Hill.
Bay checkerspot butterfly (*Euphydryas editha bayensis*)	FT/--	Found on shallow, serpentine-derived soil. The primary larvae host plant is dwarf plantain (*Plantago erecta*). When this plant dries, purple owl's clover (*Castilleja densiflora* or *C. exserta*) is the secondary host plant.	**Low.** Host plant not present within hospital site.
Mission blue butterfly (*Icaricia icarioides missionensis*)	FE/--	Host plants are silver lupine (*Lupinus albifrons*), summer lupine (*Lupinus formosus*), and varicolor lupine *(Lupinus variicolor*). Historical distribution encompassed coastal scrub/grassland habitat of the northern San Francisco Peninsula and Marin County. Remaining populations found in only a few locations: Marin Headlands, Skyline ridges, San Bruno Mountain, and at Twin Peaks.	**Low.** Host plant not present within hospital site.
Callippe silverspot butterfly (*Speyeria callippe callippe*)	FE/--	Hostplant is *Viola pedunculata*. Most adults found on East-facing slopes; males congregate on hilltops in search of females.	**Low.** Host plant not present within hospital site.
Amphibians			
California giant salamander (*Dicamptodon ensatus*)	--/SSC	Vernal or temporary pools in annual grasslands, or open stages of woodlands. Typically adults use mammal burrows.	**Not Present.** Suitable aquatic habitat is not present on the hospital site.
California red-legged frog (*Rana draytonii*)	FT/SSC	Streams, freshwater pools, and ponds with overhanging vegetation. Also found in woods adjacent to streams. Requires permanent or ephemeral water sources such as reservoirs and slow moving streams and needs pools of >0.5 m depth for breeding.	**Not Present.** Suitable aquatic habitat is not present ion the hospital site.
Foothill yellow-legged frog (*Rana boylii*)	--/CE	Partly-shaded, shallow streams & riffles with a rocky substrate in a variety of habitats; requires at least some cobble-sized substrate for egg-laying.	**Not Present.** Suitable aquatic habitat is not present on the hospital site.
Reptiles			
Western pond turtle (*Actinemys marmorata*)	--/SSC	Ponds, marshes, rivers, streams, and irrigation ditches with aquatic vegetation <6,000' in elevation. Require basking sites and upland habitat for egg laying (sandy banks and open, grassy fields)	**Not Present.** Suitable aquatic habitat is not present on the hospital site.

TABLE BIO-1 (CONTINUED)
SPECIAL-STATUS SPECIES WITH POTENTIAL TO OCCUR AT THE NHPH SITE

Name	Listing Status	General Habitat Requirements	Potential for Species Occurrence at the Hospital Site
Birds			
Short-eared owl (*Asio flammeus*)	--/SSC	Found in swamp lands, both fresh and salt; lowland meadows; irrigated alfalfa fields. Tule patches/tall grass needed for nesting/daytime seclusion. Nests on dry ground in depression concealed in vegetation.	**Low.** Suitable marsh or meadow habitat is not present on the hospital site.
Burrowing owl (*Athene cunicularia*)	--/SSC	Nests and forages in low-growing grasslands with burrowing mammals.	**Not Present.** Suitable open habitat is not present on the hospital site.
Western snowy plover (*Charadrius alexandrines nivosus*)	FT/SSC	Sandy beaches, salt pond levees & shores of large alkali lakes. Needs sandy, gravelly or friable soils for nesting.	**Not Present.** Shoreline habitat is not present on the hospital site.
Northern harrier (*Circus hudsonius*)	--/SSC	Nests on ground in shrubby vegetation, usually at marsh edge; nest built of a large mound of sticks in wet areas.	**Not Present.** Suitable marsh habitat is not present on the hospital site.
Yellow rail (*Coturnicops noveboracensis*)	--/SSC	Nests in shallow marshes and wet meadows in north-central North American; winters near coast in drier marshes, deep grass and rice fields.	**Low.** Suitable open habitat is not present on the hospital site.
White-tailed kite (*Elanus leucurus*)	--/CFP	Nests in shrubs and trees adjacent to grasslands, forages over grasslands and agricultural lands	**Low.** Suitable open habitat not present on the hospital site.
American peregrine falcon (*Falco peregrinus anatum*)	BCC/CFP	Nest consists of a scrape or a depression on rock, cliff or building ledge over an open site. Catches prey in flight, including small birds, bats or mammals.	**Moderate.** May nest on tall buildings and forage in surrounding area.
California black rail (*Laterallus jamaicensis*)	BCC/ST/CFP	Found in salt, brackish and freshwater marsh with dense vegetation for nesting habitat.	**Not Present.** Suitable marsh habitat is not present on the hospital site.
Saltmarsh common yellowthroat (*Geothlypis trichas sinuosa*)	BCC/SSC	Requires thick, continuous cover down to water surface for foraging; tall grasses, tule patches, willows for nesting.	**Not Present.** Suitable marsh habitat is not present on the hospital site.
Alameda song sparrow (*Melospiza melodia pusillula*)	BCC/SSC	Salt marshes. Inhabits *Sarcocornia* marshes; nests low in *Grindelia* bushes (high enough to escape high tides) and in *Sarcocornia*.	**Not Present.** Suitable marsh habitat is not present ion the hospital site.
San Pablo song sparrow (*Melospiza melodia samuelis*)	BCC/SSC	Inhabits tidal sloughs in the *Salicornia* marshes; nests in *Grindelia* bordering slough channels.	**Not Present.** Suitable marsh habitat is not present on the hospital site.
Bank swallow (*Riparia riparia*)	--/FT	Requires vertical banks/cliffs with fine-textured/sandy soils near streams, rivers, lakes, ocean to dig nesting holes.	**Low.** Suitable nesting habitat not found on the hospital site, but may fly over.
Ridgway's rail [California clapper rail] (*Rallus obsoletus*)	FE/SE/CFP	Found in salt and brackish marsh with well-defined tidal channels and dense growth of pickleweed; feeds on invertebrates in mud-bottomed sloughs.	**Not Present.** Suitable marsh habitat is not present on the hospital site.
California least tern (*Sternula antillarum browni*)	FE/SE/CFP	Breeds on shores of San Francisco Bay; nests are situated on barren to sparsely vegetated places near water, normally on sandy or gravelly substrates or abandoned salt flats.	**Not Present.** Suitable sandy or gravelly habitat is not present on the hospital site.
Yellow-headed blackbird (*Xanthocephalus xanthocephalus*)	--/SSC	Nests in cattail marshes with nests attached to marsh vegetation. Colonial nesters, often sharing their habitat closely with red-winged blackbird (*Agelaius phoeniceus*).	**Not Present.** Suitable marsh habitat is not present on the hospital site.

TABLE BIO-1 (CONTINUED)
SPECIAL-STATUS SPECIES WITH POTENTIAL TO OCCUR AT THE NHPH SITE

Name	Listing Status	General Habitat Requirements	Potential for Species Occurrence at the Hospital Site
Birds (cont.)			
Northern spotted owl (*Strix occidentalis caurina*)	FT/ST	In California, the northern spotted owl inhabits a mix of old and younger forests, featuring dense canopy closure of mature trees, abundant logs, standing snags, and live trees with broken tops.	**Not Present.** San Francisco is outside this species' known range.
Mammals			
Pallid bat (*Antrozous pallidus*)	--/SSC	Grasslands, shrublands, woodlands, and forests at lower elevations Common in arid regions with rocky outcroppings, particularly near water. Roosts in rock crevices, buildings, and under bridges. Very sensitive to disturbance.	**Low**. Suitable roosting habitat present in disused buildings on campus. This species was not detected during 2009 surveys in San Francisco parks (Krauel, 2009). Not expected to breed but may be present on a transient basis.
Hoary bat (*Lasiurus cinereus*)	--/--/WBWG Medium	Prefers open habitats or habitat mosaics, with access to trees for cover & open areas or habitat edges for feeding. Roosts in dense foliage of medium to large trees. Feeds primarily on moths. Requires water.	**Moderate**. Suitable roosting habitat present in large trees near campus, and has been recorded within 1 mile (CDFW, 2021). Not expected to breed but may be present on a transient basis.
Western red bat (*Lasiurus blossevillii*)	WBWG High	Roosts primarily in trees, 2-40 ft above ground, from sea level up through mixed conifer forests. Prefers habitat edges & mosaics with trees that are protected from above & open below with open areas for foraging.	**Moderate**. Suitable roosting habitat present in trees of Mt. Sutro Open Space Reserve. Known to roost in trees of Golden Gate Park (Krauel, 2009).
Townsend's big-eared bat (*Corynorhinus townsendii*)	--/SSC	Roosts in caves and cave-like habitats, with colonies occurring in areas dominated by exposed, cavity forming rock and/or historic mining districts. They prefer open roosting areas, not cracks or crevices, in forests, chaparral, grassland, desert or scrub areas.	**Low.** Suitable roosting habitat is present on walls and ceilings of disused buildings, but species is sensitive to human disturbance. Recorded in Twin Peaks in 2005.
Big free-tailed bat (*Nyctinomops macrotis*)	--/SSC	Roosts in buildings, caves, and occasionally in holes in trees, also in crevices in high cliffs or rock outcrops. Resident in southwestern U.S., occasional records in the region.	**Low.** Species is not resident in northern California.
San Pablo vole (*Microtus californicus sanpabloensis*)	--/SSC	Constructs burrow in soft soil. Feeds on grasses, sedges and herbs. Forms a network of runways leading from the burrow	**Not Present.** UCSF is not within species' range.
Salt marsh harvest mouse (*Reithrodontomys raviventris*)	FE/SE/CFP	Pickleweed is primary habitat, but may occur in other marsh vegetation types and in adjacent upland areas. Does not burrow, builds loosely organized nests. Requires higher areas for flood escape.	**Not Present**. Suitable habitat is not present at the hospital site.
Salt-marsh wandering shrew (*Sorex vagrans halicoetes*)	--/SSC	Medium high marsh 6-8 ft above sea level where abundant driftwood is scattered among pickleweed.	**Not Present**. Suitable habitat is not present at the hospital site.
San Francisco dusky-footed woodrat (*Neotoma fuscipes annectens)*	--/SSC	Forest habitats of moderate canopy and moderate to dense understory. Constructs nests of shredded grass, leaves, and other material. May be limited by availability of nest-building materials	**Low.** Species is unlikely to nest along margins of Open Space near the hospital site.
American badger (*Taxidea taxus*)	--/SSC	Herbaceous, shrub, and open stages of most habitats with dry, friable soils.	**Low.** Suitable open habitat not found at the hospital site.

TABLE BIO-1 (CONTINUED)
SPECIAL-STATUS SPECIES WITH POTENTIAL TO OCCUR AT THE NHPH SITE

Name	Listing Status	General Habitat Requirements	Potential for Species Occurrence at the Hospital Site
Plants			
Franciscan onion (*Allium peninsulare* var. *franciscanum*)	--/--/1B.2	Cismontane woodland, valley and foothill grassland, on clay, volcanic, often serpentinite soils. May – June. 52 – 305 m.	**Low.** Suitable soils not found at the hospital site.
Napa false indigo (*Amorpha californica var. napensis*)	--/--/1B.2	Observations recorded in Monterey County and San Francisco Bay Area. Broadleafed upland forest, chaparral, or cismontane woodland. Perennial deciduous shrub. April - July. 30 – 735m	**Low.** May occur in Open Space on Mt. Sutro.
Bent-flowered fiddleneck (*Amsinckia lunaris*)	--/--/1B.2	Observed in cismontane woodland, valley and foothill grassland, or coastal bluff scrub. March - June. 3 – 500m	**Low.** UCSF is outside species' known distribution.
Franciscan manzanita (*Arctostaphylos franciscana*)	FE/--/1B.1	Serpentine outcrops in chaparral. February - April. 30 – 215m	**Low.** UCSF is outside species' known distribution.
Mt. Tamalpais manzanita (*Arctostaphylos montana* ssp. *montana*)	--/--/1B.3	Observations recorded in Marin and Humboldt County. Chaparral, valley and foothill grassland. Perennial evergreen shrub. February - April. 150 – 680m	**Not Present.** UCSF is outside of species' known distribution.
Presidio manzanita (*Arctostaphylos montana* ssp. *ravenii*)	FE/SE/1B.1	Chaparral, coastal prairie, and coastal scrub in open and rocky serpentine slopes. February - March. 45 – 215 m	**Not Present.** UCSF is outside of species' known distribution.
Marin manzanita (*Arctostaphylos virgata*)	--/--/1B.2	Chaparral, mixed evergreen forest, redwood forest, closed-cone pine forest in Marin County on sandstone or granite. Perennial evergreen shrub. Endemic to CA. January - March. 1-800 m	**Not Present.** Campus site is outside of species' known distribution.
Marsh sandwort (*Arenaria paludicola*)	FE/SE/1B.1	Freshwater or brackish marsh, wetlands and riparian areas. May to August. 3 – 170 m.	**Not Present.** Suitable habitat not present at hospital site.
Alkali-milk vetch (*Astragalus tener* var. *tener*)	--/--/1B.2	Alkali playa and flats, valley, annual, and foothill grassland, vernal pools, low ground, and flooded lands. March – June. 1-170 m	**Not Present.** Suitable habitat not present at hospital site.
Thurber's reed grass (*Calamagrostis crassiglumis*)	--/--/2B.1	Freshwater wetlands, wetland-riparian. Perennial rhizomatous herb May - August. 10-60 m	**Not Present.** Suitable habitat not present at hospital site.
Tiburon mariposa –lily (*Calochortus tiburonensis*)	--/--/1B.1	Valley and foothill grassland on open, rocky, slopes in serpentine grassland. March – June. 50-150 m	**Not Present.** Endemic to Ring Mtn. Preserve on the Tiburon Peninsula.
Bristly sedge (*Carex comosa*)	--/--/2B.1	Lake margins, freshwater wetlands, edges of water. May-September -5-1620 m	**Not Present.** Local occurrence is historical. Suitable habitat not present at hospital site.
Northern meadow sedge (*Carex praticola*)	--/--/2B.2	Moist to wet meadows and seeps. Perennial herb. May – July. 0-3200 m	**Not Present.** Local occurrence is historical. Suitable habitat not present at hospital site.

TABLE BIO-1 (CONTINUED)
SPECIAL-STATUS SPECIES WITH POTENTIAL TO OCCUR AT THE NHPH SITE

Name	Listing Status	General Habitat Requirements	Potential for Species Occurrence at the Hospital Site
Plants (cont.)			
Tiburon paintbrush (*Castilleja affinis* var. *neglecta*)	FE/ST/1B.2	Open serpentine grassland slopes. Perennial herb (hemiparasitic). April – June. 60-400 m	**Not Present.** Suitable habitat not present at hospital site.
Pappose tarplant (*Centromadia parryi* ssp. *parryi*)	--/--/1B.2	Chaparral, coastal prairie, meadows and seeps, marshes and swamps (salt), valley and foothill grassland (mesic), often alkaline. May – November. 0 - 420 m.	**Not Present.** Suitable habitat not present at hospital site.
Point Reyes bird's-beak (*Chloropyron maritimum* ssp. *palustre*)	--/--/1B.2	Recorded from San Luis Obispo County north to Humboldt County. Coastal salt marsh, wetland-riparian. Annual herb (hemiparasitic). June – October. 0 – 10 m.	**Not Present.** Suitable habitat not present at hospital site.
San Francisco Bay spineflower (*Chorizanthe cuspidata* var. *cuspidata*)	--/--/1B.2	Observed as far south as Monterey County, but most recordings are in the San Francisco Bay Area. Coastal Strand, Coastal Prairie, Northern Coastal Scrub. Annual herb.	**Not Present.** Suitable habitat not present at hospital site.
San Francisco Bay spineflower (*Chorizanthe robusta* var. *robusta*)	FE/--/1B.1	Dune, openings in coastal strands, maritime coastal scrub, valley and foothill grassland, in sandy or gravelly areas. Annual herb. April to September. 3 – 300 m.	**Not Present.** Suitable habitat is not present at hospital site.
Franciscan thistle (*Cirsium andrewsii*)	--/--/1B.2	Found in mesic, sometimes serpentinite. Broadleafed upland forest, coastal bluff scrub, coastal prairie, and coastal scrub in mesic areas, sometimes serpentinite. Perennial herb. March – July. 0 – 150 m.	**Not Present.** Suitable habitat is not present at hospital site.
Mt. Tamalpais thistle (*Cirsium hydrophilum* var. *vaseyi*)	--/--/1B.2	Observations recorded in San Francisco and Marin County in mixed evergreen forest, chaparral, wetland-riparian seeps, sometimes serpentinite. Perennial herb. May – August. 240 – 620 m.	**Low.** May occur in Open Space on Mt. Sutro.
Compact cobwebby thistle (*Cirsium occidentale* var. *compactum*)	--/--/1B.2	Coastal strand, coastal prairie, chaparral, northern coastal scrub. Perennial herb. April – June. 5 – 150 m.	**Low.** Suitable habitat is minimal in the vicinity of the hospital site.
Presidio clarkia (*Clarkia franciscana*)	FE/SE/1B.1	Serpentine outcrops in grassland or scrub. May – June. 20-305 m.	**Not Present.** Suitable habitat is not present at hospital site.
Round-headed Chinese houses (*Collinsia corymbosa*)	--/--/1B.2	Coastal strand, dunes. Annual herb. April – June. 0 -20 m.	**Not Present.** Suitable habitat is not present at hospital site.
San Francisco collinsia (*Collinsia multicolor*)	--/--/1B.2	Northern coastal scrub, closed-cone pine forest, sometimes serpentinite. March – May. 30 -250 m.	**Low.** Local records are historical (early 1900s); suitable habitat is limited at hospital site.
Western leatherwood (*Dirca occidentalis*)	--/--/1B.2	Broadleafed upland forest, chaparral, closed-cone coniferous forest, cismontane woodland, north coast coniferous forest, riparian forest, riparian woodland. On brushy slopes, mesic sites; mostly in mixed evergreen & foothill woodland communities. 25-425 m.	**Low.** May occur in Open Space on Mt. Sutro.
Tiburon buckwheat *(Eriogonum luteolum* var. *caninum*)	--/--/1B.2	Observations recorded in the San Francisco Bay Area up to Mendocino County. Coastal prairie, chaparral, and valley grassland. Annual herb. May-September. 0-700m	**Not Present.** Suitable habitat is not present at hospital site.

TABLE BIO-1 (CONTINUED)
SPECIAL-STATUS SPECIES WITH POTENTIAL TO OCCUR AT THE NHPH SITE

Name	Listing Status	General Habitat Requirements	Potential for Species Occurrence at the Hospital Site
Plants (cont.)			
Minute pocket moss (*Fissidens pauperculus*)	--/--/1B.2	Observations recorded along the west coast of California from Santa Cruz County to Del Norte, and east to Butte County. Moss grows on damp soil along the coast and dry streambeds/ streambanks in coniferous forests. 10 -1024 m.	**Not Present.** Suitable habitat is not present at hospital site.
Marin checker lily (*Fritillaria lanceolata var. tristulis*)	--/--/1B.2	Perennial bulbiferous herb. Observations recorded in San Mateo and Marin County in canyons to riparian areas in northern coastal scrub, evergreen woodlands, and serpentine rock outcrops. February – May. 15-150m	**Low.** May occur in Open Space on Mt. Sutro. Local records from Twin Peaks in 2016.
Fragrant fritillary *Fritillaria liliacea*	--/--/1B.2	Coastal scrub, valley and foothill grassland, coastal prairie. Often on serpentine; usually on clay soils, in grassland. February- April. 3-410 m.	**Not Present.** Suitable habitat is not present at hospital site.
Blue coast gilia (*Gilia capitata ssp. chamissonis*)	--/--/1B.1	Coastal dunes, coastal scrub. Annual herb, blooms. April – July. 2 – 200 m.	**Low.** Local occurrences are historical and suitable habitat is not present at hospital site.
Diablo helianthella (*Helianthella castanea*)	--/--/1B.2	South Bay, East Bay, and North Bay in chaparral, foothill woodland, northern coastal scrub, riparian woodland and valley grassland, usually in rocky soils in partial shade. Perennial herb. Blooms March – June. 60 -1300 m.	**Not Present.** Suitable habitat is not present at hospital site.
Congested-headed hayfield tarplant (*Hemizonia congesta* ssp. *congesta*)	--/--/1B.2	Recorded observations have been made as far south as Los Angeles County, but primarily found in the Bay Area, and along the west coast of California up to Del Norte. Also in El Dorado County. Grassy valleys and hills, often in fallow fields; sometimes along roadsides. April – November. 20-560 m.	**Low**. Suitable habitat at hospital site is limited.
Marin western flax (*Hesperolinon congestum*)	FT/ST/1B.1	Alameda, San Mateo, San Francisco, and Marin County with an additional observation recorded in Colusa County in chaparral and valley grassland. Annual herb. 60-370 m.	**Not Present.** Suitable habitat is not present at hospital site.
Santa Cruz tarplant (*Holocarpha macradenia*)	FT/SE/1B.1	Monterey and Santa Cruz County, as well as the North Bay and East Bay in coastal prairie and valley grassland. Annual herb. June – October. 10-220 m.	**Not Present.** Suitable habitat is not present at hospital site.
Thin-lobed horkelia (*Horkelia tenuiloba*)	--/--/1B.2	San Luis Obispo north to Mendocino County and east to Colusa County in chaparral, valley and foothill grassland, and sandy, mesic openings in upland forest. Perennial herb. 50 – 500 m.	**Not Present.** Suitable habitat is not present at hospital site.
Small groundcone (*Kopsiopsis hookeri*)	--/--/2B.3	Recorded in counties along the west coast of California including; Santa Cruz, Marin, and Lake County to Del Norte County in redwood forest. Found in open woods, generally on *Gaultheria shallon.* Perennial rhizomatous herb (parasitic). April – August. 120-1435m	**Low**. Scattered redwood trees present at hospital site, but species has not been observed in San Francisco.
San Francisco lessingia (*Lessingia germanorum*)	FE/SE/1B.1	Northern coastal scrub, dunes. Annual herb. July – November. 25 – 110 m.	**Not Present.** Suitable habitat is not present at hospital site.

TABLE BIO-1 (CONTINUED)
SPECIAL-STATUS SPECIES WITH POTENTIAL TO OCCUR AT THE NHPH SITE

Name	Listing Status	General Habitat Requirements	Potential for Species Occurrence at the Hospital Site
Plants (cont.)			
Tamalpais lessingia (*Lessingia micradenia var. micradenia*)	--/--/1B.2	Marin and Lake County and chaparral and valley grassland. Usually on serpentine, in serpentine grassland or serpentine chaparral. Often on roadsides. Annual herb. June – October. 60-305 m	**Not Present.** Suitable habitat is not present at hospital site.
Marsh microseris (*Microseris paludosa*)	--/--/1B.2	Found along the west coast from San Luis Obispo County to Mendocino County. Occurs in northern coastal scrub and closed-cone pine forest. Perennial herb. April – June. 5-300m	**Low.** Local occurrences are historical and habitat is limited at hospital site.
White-rayed pentachaeta (*Pentachaeta bellidiflora*)	FE/SE/1B.1	Annual herb. Along the west coast from Monterey County to Marin County – none recorded in SF County, in valley grassland. March – May. 35-610m.	**Not Present.** Campus site is outside of species' range.
Choris' popcorn-flower (*Plagiobothrys chorisianus* var. *chorisianus*)	--/--/1B.2	Mesic sites in chaparral, coastal scrub, coastal prairie. 15-100 m.	**Not Present.** Suitable chaparral, scrub and coastal prairie habitat is not present at hospital site.
Hairless popcornflower (*Plagiobothrys glaber*)	--/--/1A	South and East Bay, and Marin County in coastal salt marsh, wetland-riparian meadows, salt-marsh, coastal. Occurs almost always under natural conditions in wetlands. Annual herb. March – May. 5-125m.	**Not Present.** Presumed extinct in California.
North Coast semaphore grass (*Pleuropogon hooverianus*)	--/ST/1B.1	North Bay to Mendocino County. Farthest north in Del Norte County in mixed evergreen forest, north coastal coniferous forest, freshwater wetlands, wetland-riparian in meadows and vernal-pools. Usually occurs in wetlands, but occasionally found in non-wetlands. Perennial rhizomatous grass. April-June. 10 -671 m.	**Not Present.** Campus site is outside of species' range.
Oregon polemonium (*Polemonium carneum*)	--/--/2B.2	Coastal prairie and scrub in lower montane coniferous forest. April – September. 0-1830m	**Not Present.** Suitable habitat is not present at hospital site.
Adobe sanicle (*Sanicula maritima*)	--/--/1B.1	Occurs in chaparral, coastal prairie, meadows and seeps, and grassland in clay, serpentinite. Perennial herb. February – May. 30-240m.	**Not Present.** Local occurrences are historical and suitable habitat is not present at hospital site.
Marin checkerbloom (*Sidalcea hickmanii* ssp.*virdis*)	--/--/1B.2	Serpentine soils in chaparral habitats. May – June. 50-430m.	**Not Present.** Suitable habitat is not present at hospital site.
San Francisco campion (*Silene verecunda* ssp. *verecunda*)	--/--/1B.2	Sandy habitats in coastal bluff scrub, chaparral, coastal prairie, coastal scrub, and grassland. February – August. 30-645m	**Not Present.** Suitable habitat is not present at hospital site.
Santa Cruz microseris (*Stebbinsoseris decipiens*)	--/--/1B.2	Monterey, Santa Cruz, and Marin County Coastal Prairie, Chaparral, Mixed Evergreen Forest, Closed-cone Pine Forest, Northern Coastal Scrub. Weak affinity to serpentine soil. Annual herb. April – May. 10-500m	**Not Present.** Campus site likely outside of species' range.

TABLE BIO-1 (CONTINUED)
SPECIAL-STATUS SPECIES WITH POTENTIAL TO OCCUR AT THE NHPH SITE

Name	Listing Status	General Habitat Requirements	Potential for Species Occurrence at the Hospital Site
Plants (cont.)			
Mt. Tamalpais jewelflower (*Streptanthus batrachopus*)	--/--/1B.3	Only found in the North Bay regions from Marin County to Mendocino and east to Colusa County. Chaparral, closed-cone pine forest. Annual herb. April – July. 335-670 m.	**Not Present.** Campus site is outside of species' range.
Tiburon jewelflower (*Streptanthus glandulosus* ssp. *niger*)	FE/SE/1B.1	Shallow, rocky serpentine slopes in grassland. May-June. 30-150m.	**Not Present.** Suitable habitat is not present at hospital site.
Two-fork clover (*Trifolium amoenum*)	FE/--/1B.1	South Bay (Santa Clara/San Mateo), East Bay and North Bay in valley grassland, wetland-riparian. Sometimes on serpentine soil, open sunny sites, swales. Most recently sighted on roadside and eroding cliff face. Annual herb. April-June. 5-415m.	**Not Present.** Suitable habitat is not present at hospital site.
Saline clover (*Trifolium hydrophilum*)	--/--/1B.2	Mesic, alkaline sites. April-June. 1-335 m.	**Not Present.** Suitable habitat is not present at hospital site.
San Francisco owl's-clover (*Triphysaria floribunda*)	--/--/1B.2	Usually serpentinite conditions in coastal prairie and scrub, and grassland. April-June. 10-160 m.	**Not Present.** Suitable habitat is not present at hospital site.
Coastal triquetrella (*Triquetrella californica*)	--/--/1B.2	Grows within 30m of the coast in coastal scrub, grasslands and in open gravels on roadsides, hillsides, rocky slopes, and fields. On gravel or thin soil over outcrops. Moss. 10-100 m.	**Moderate.** Known occurrences in local area and limited suitable habitat present.

STATUS CODES:

USFWS (U.S. Fish and Wildlife Service)
FE = Listed as Endangered by the Federal Government
FT = Listed as Threatened by the Federal Government.
FC = Listed as Candidate
BCC = USFWS Bird of Conservation Concern

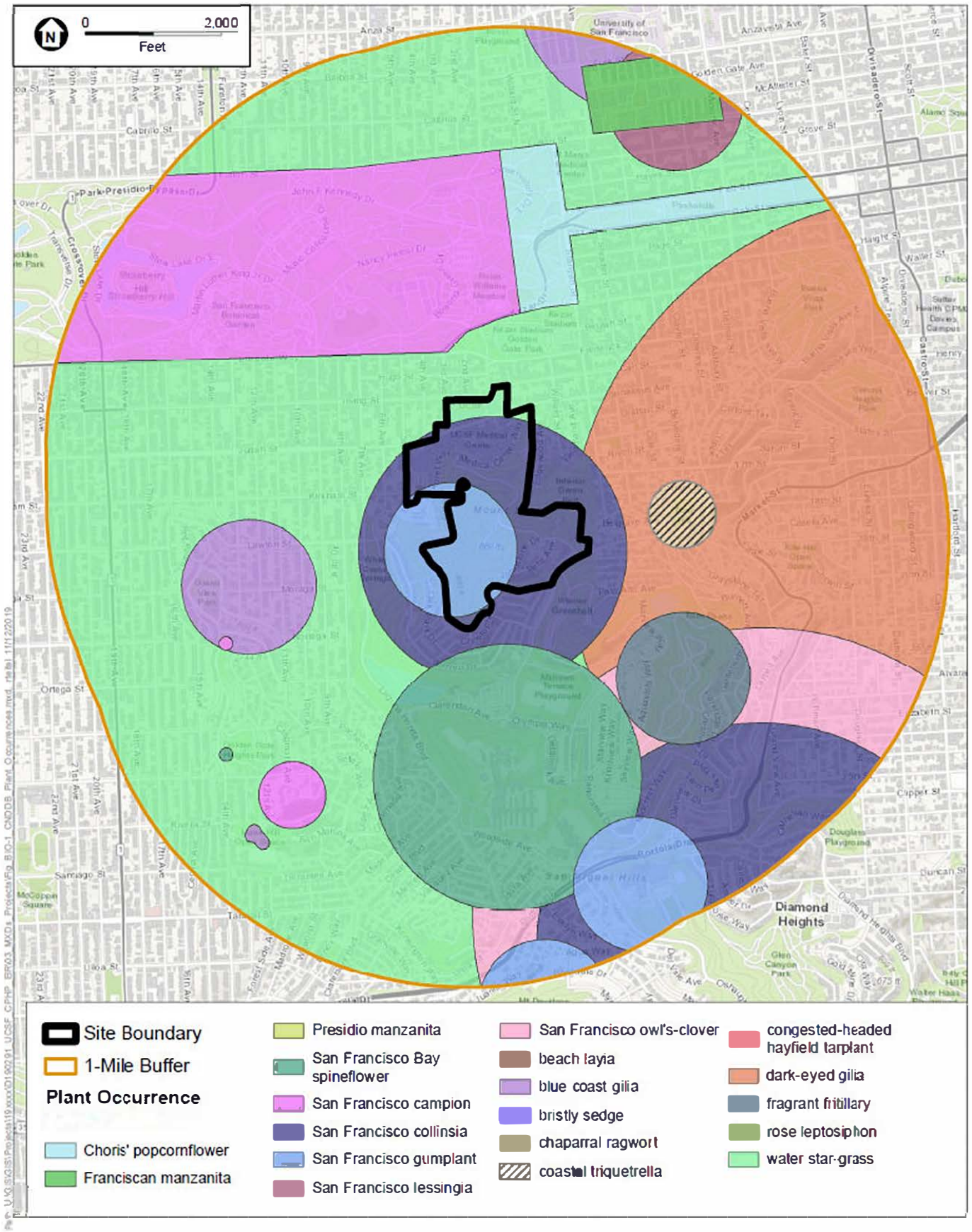
CDFW (California Department of Fish and Wildlife)
SE = Listed as Endangered by the State of California
ST = Listed as Threatened by the State of California
CaE = Candidate Endangered by the State of California
CaT = Candidate Threatened by the State of California
CFP = California Fully Protected species
SSC = Species of Special Concern
WBWG = Western Bat Working Group

California Rare Plant Rank
Rank 1A=Plants presumed extinct in California
Rank 1B=Plants rare, Threatened, or Endangered in California and elsewhere
Rank 2= Plants rare, Threatened, or Endangered in California but more common elsewhere
Rank 3= Plants about which more information is needed
Rank 4= Plants of limited distribution
An extension reflecting the level of threat to each species is appended to each rarity category as follows:
.1 – Seriously endangered in California
.2 – Fairly endangered in California
.3 – Not very endangered in California

POTENTIAL TO OCCUR CATEGORIES:

Not Present = The hospital site and/or immediate vicinity does not support suitable habitat for a particular species. Campus site may be outside of the species' known range.
Low Potential = The hospital site and/or immediate vicinity only provides limited habitat. The species' known range may be outside of the plan area.
Moderate Potential = The hospital site and/or immediate vicinity provide suitable habitat.
High Potential = The hospital site and/or immediate vicinity provides ideal habitat conditions or the species has been observed.

SOURCES: CDFW 2021; CNPS 2021; USFWS 2021

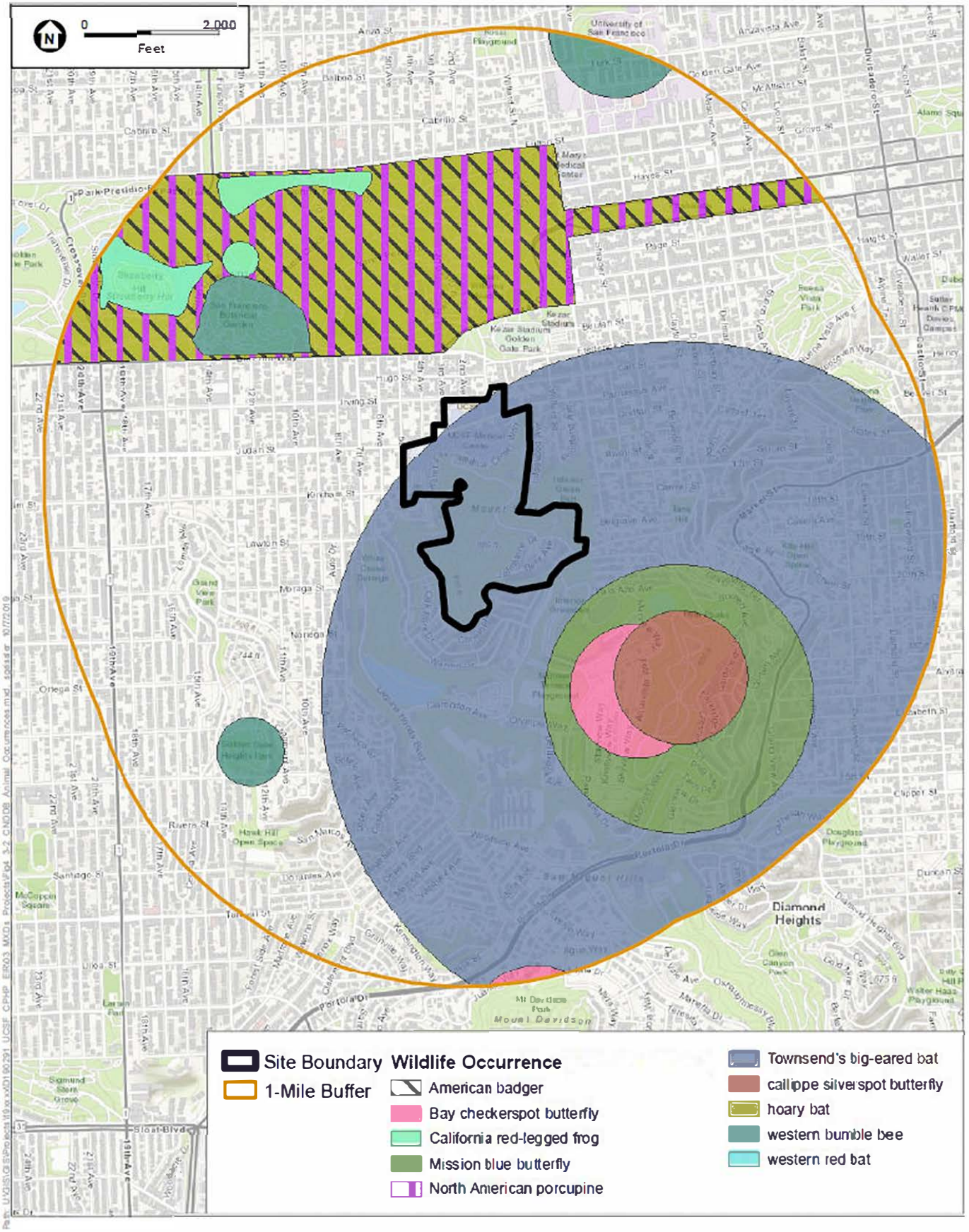


SOURCE: ESRI, CNDDB, 2021.

UCSF New Hospital at Parnassus Heights EIR

Figure BIO-1
CNDDB Plant Occurrences

ESA



SOURCE: ESRI, CNDDB, 2021

UCSF New Hospital at Parnassus Heights EIR

Figure BIO-2
CNDDB Wildlife Occurences

ESA

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Appendix GHG
Greenhouse Gas Emissions Appendix

GHG Inventories

UCSF NHPH GHG Inventory

Year 2030

Mobile source from CalEEMod
(based on Adavant daily VMT of 53619 translated to annual VMT of 19570938)

	MT/Year		
CO2	**CH4**	**N2O**	**eCO2**
5,550.2031	0.4832	0.2731	5,643.6574

Electricity
UCSF Net Zero electricity in 2030

	MT/Year		
CO2	**CH4**	**N2O**	**eCO2**
0.00	-	-	0.00

Natural Gas from CUP
Based on UCSF Inventory and Projections

Increase in Annual Natural Gas Demand (Therms) =	3718172.027	
CO2 Factor (Metric ton CO2/therm)	0.005306	Table 1.1 (Natural Gas, US Weighted Average) of the 2019 Climate Registry Default Emissions Factors.
Annual CO2 Emissions=	19728.62078	
Methane Factor (Metric tons per therm)	0.00000009	Table 1.5 (Natural Gas; Combined Cycled) of the 2019 Climate Registry Default Emissions Factors
Annual CH4 Emissions =	0.334635482	
N2O Factor (Metric tons per therm)	0.00000028	Table 1.5 (Natural Gas; Combined Cycled) of the 2019 Climate Registry Default Emissions Factors
Annual N2O Emissions =	1.041088168	

GWP CH4 =	25	IPCC 4th Assessment Report
GWP N2O=	298	IPCC 4th Assessment Report

	MT/Year		
CO2	**CH4**	**N2O**	**eCO2**
19728.62	0.33	1.04	20047.23

Water and Wastewater from CalEEMod
(based on default demand for 855,000 gsf of hospital use)

	MT/Year		
CO2	**CH4**	**N2O**	**eCO2**
35.8283	3.6799	0.0869	153.7193

Solid Waste calculated in CalEEMod
(based on default demand for 855,000 gsf of hospital use)

	MT/Year		
CO2	**CH4**	**N2O**	**eCO2**
434.0759	25.6532	0.0000	1,075.4046

Construction

CO2	CH4	N2O	eCO2
NA	NA	NA	292.23

Generators
(from Custom AQ Calculations for HRA)

CO2	CH4	N2O	eCO2
NA	NA	NA	237.00

Total NHPH GHG = 27,449.24

Annual Summary, Gas Use (therms)

	January	February	March	April	May	June	July	August	September	October	November	December	Annual Total	Percent Change Compared to 2018	*Notes*
2018	840,737	775,602	844,333	828,367	850,202	818,372	857,735	863,685	828,227	840,103	800,174	868,030	10,015,566	0%	
2019	840,737	775,602	844,333	828,367	850,202	818,372	857,735	863,685	828,227	840,103	800,174	868,030	10,015,566	0%	
2020	840,737	775,602	844,333	828,367	850,202	818,372	857,735	863,685	828,227	840,103	800,174	868,030	10,015,566	0%	
2021	840,737	775,602	844,333	828,367	850,202	818,372	857,735	863,685	828,227	840,103	800,174	868,030	10,015,566	0%	
2022	788,010	732,891	798,118	786,053	805,300	775,726	812,929	819,235	783,280	798,098	756,534	816,663	9,472,838	-5%	LPPI and UC Hall Offline
2023	791,063	733,882	798,455	786,053	805,300	775,726	812,929	819,235	783,280	798,099	756,876	818,253	9,479,151	-5%	Long Cooling Online
2024	791,063	733,882	798,455	786,053	805,300	775,726	812,929	819,235	783,280	798,099	756,876	818,253	9,479,151	-5%	
2025	846,628	782,287	852,141	836,106	857,560	826,661	863,982	871,891	834,085	848,380	805,595	875,190	10,100,504	1%	RAB Online
2026	846,628	782,287	852,141	836,106	857,560	826,661	863,982	871,891	834,085	848,380	805,595	875,190	10,100,504	1%	
2027	846,628	782,287	852,141	836,106	857,560	826,661	863,982	871,891	834,085	848,380	805,595	875,190	10,100,504	1%	
2028	846,628	782,287	852,141	836,106	857,560	826,661	863,982	871,891	834,085	848,380	805,595	875,190	10,100,504	1%	
2029	846,628	782,287	852,141	836,106	857,560	826,661	863,982	871,891	834,085	848,380	805,595	875,190	10,100,504	1%	
2030	1,172,951	1,060,999	1,146,521	1,113,919	1,146,532	1,119,784	1,185,236	1,197,737	1,144,446	1,139,699	1,091,902	1,214,012	13,733,738	37%	NHPH Online
											Increase due to NHPH =		**3,718,172**		

GHG Emissions - Construction

Construction

From CalEEMod	Year	CO2e (MT)
	2022	103.4490
	2023	415.3783
	2024	1,133.2266
	2025	663.7167
	2026	1,825.8623
	2027	1,423.2442
	2028	648.0048
	2030	85.7473
	2031	839.5950
	2032	819.6440
	2033	808.9890
Total		8766.857
Amortized 30 years		292.2286

Appendix HYD

Modeling to Evaluate NHPH Impacts on Downstream Flooding, Sewer Capacity, and Combined Sewer Discharges (CSDs)

Subject:	**Modeling to evaluate NHPH impacts on downstream flooding, sewer capacity, and combined sewer discharges (CSDs)**
Project:	UCSF New Hospital at Parnassus Heights (NHPH)
Prepared By:	Beth Goldstein, PE
Reviewed By:	Final
Date:	December 3, 2021
Reference:	200011

1 Introduction

UCSF is proposing to construct and operate a New Hospital at its Parnassus Heights campus site. The proposed NHPH would be located at a site that is currently developed with a building (LPPI) which would be demolished ahead of project construction. The proposed NHPH also includes other improvements, including a diesel storage tank site, a medical gas storage tank site, widening of Medical Center Way, modifications to the hillside adjacent to the New Hospital, and an overhead pedestrian bridge and an underground tunnel across Parnassus Avenue near the New Hospital.

The section relies in part on the results of a storm drainage design report prepared by Arup in support of the NHPH. The stormwater drainage study area included the NHPH site and the adjacent upstream area within the campus site that contributes storm flows through the NHPH site. Under the NHPH, with the proposed New Hospital and related improvements, Arup estimated there would be a small improvement in surface permeability within the watershed study area (a decrease in impervious surfaces of about 0.1 acres). The proposed NHPH would also increase the daily population on the campus site, and thus, would increase daily diurnal wastewater flows from the campus site. The increased combined flows under the NHPH would be added to the existing combined flows that are currently discharged from the campus site to the San Francisco Public Utilities Commission's (the "SFPUC'") combined sewer system (CSS). To avoid an increase in combined sewer discharges from the campus site that could result in downstream flooding or other water quality impacts, the proposed NHPH has been designed with 150,000 gallons of on-campus stormwater storage capacity.

2 Purpose

The purpose of this memorandum is to document the results of modeling of the San Francisco's (the City's) CSS that was performed to determine the impacts, if any, to the system downstream of the proposed NHPH project. Specifically, the analysis was conducted to determine whether the proposed project, as designed, would:

a. Avoid increasing the likelihood of surcharges by exceeding the capacity of the pipes in the City's CSS;

b. Avoid increasing the extent or duration of ponding or overland flow; and

c. Avoid discharges to the City's CSS that could increase the frequency or volume of combined sewer discharges to the receiving waters.

3 Modeling Criteria

Potential Impact	Hydrologic Input[1]	Output from Proposed Project Runs
Exceed the capacity[2] of pipes downstream of NHPH	5-year, 3-hour storm	Review nodes (representing manholes) downstream of NHPH to identify any significant change in maximum hydraulic grade line (HGL)[3]
Increase flooding or ponding downstream of NHPH	100-year, 24-hour storm	Review nodes downstream of NHPH to identify any significant change in flood volume
Increase frequency or volume of CSDs to the receiving waters	Typical Year[4]	Calculate changes in predicted frequency and volume of combined sewer discharge (CSD) to receiving waters

4 Model Inputs

The modeling was done using InfoWorks ICM 8.0. The model network was developed using the Northeast only version of the City-wide model (CCSF19_NE). The Northeast network includes the Northshore and Channel basins (the project study area is located in the Channel basin). The Northshore and Channel basins are hydraulically connected, hence the need to include them both on the model extents. There is only one hydraulic connection between the Northeast and Southeast networks. So given no change in the predicted flow exiting the Northeast network in any scenario, there would be no change predicted in the Southeast (Islais Creek, Yosemite, and Sunnydale basins). Likewise, there are no hydraulic connections between the Northeast and the Oceanside basins (Richmond, Sunset, Lake Merced). Figure 1 identifies the Northshore and Channel basins and presents both the Northeast model extents and the NHPH project study area.

A scenario representing changes to the project study area proposed by the NHPH project was created using ICM snapshot files provided by engineers of the proposed project, Arup. The snapshot files included the proposed changes in pipe network, land use, and sanitary flows, as well as the proposed 150,000 gallons of on-campus stormwater storage. Details of these proposed changes were provided by Arup.[5] The baseline and proposed project scenario were both run with the three hydrologic inputs presented in Section 3.

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[1] See section 4 for additional model inputs.

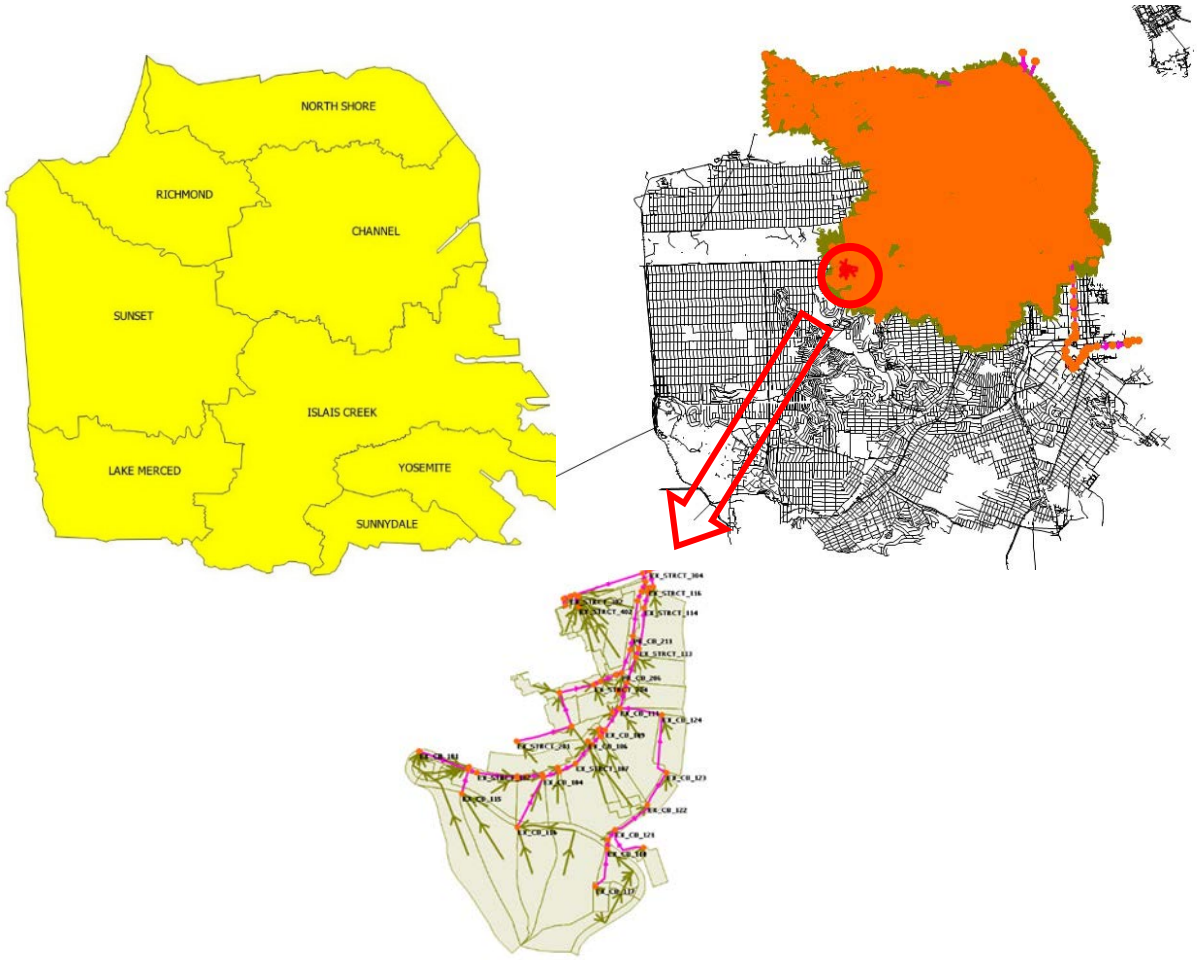
[2] According to the SF Subdivision Regulations, the design capacity is determined by the difference between ground elevation and maximum hydraulic grade line (HGL), otherwise known as "freeboard", with 3 feet being the minimum required (and no less than 2 feet preferred).

[3] An increase in maximum HGL could exceed the design capacity of a pipe, increasing the likelihood of surcharge.

[4] One year of typicalized rainfall was used to predict average annual frequency and volume of CSD.

[5] Arup, "UCSF NHPH Combined Sewer System Modeling Updates", November 1, 2021

Figure 1. Extent of Northeast Model and Study Area



5 Results

The 5- and 100-year design storm results were reviewed for the pipes and manholes downstream of the NHPH. These are shown in Figure 2.

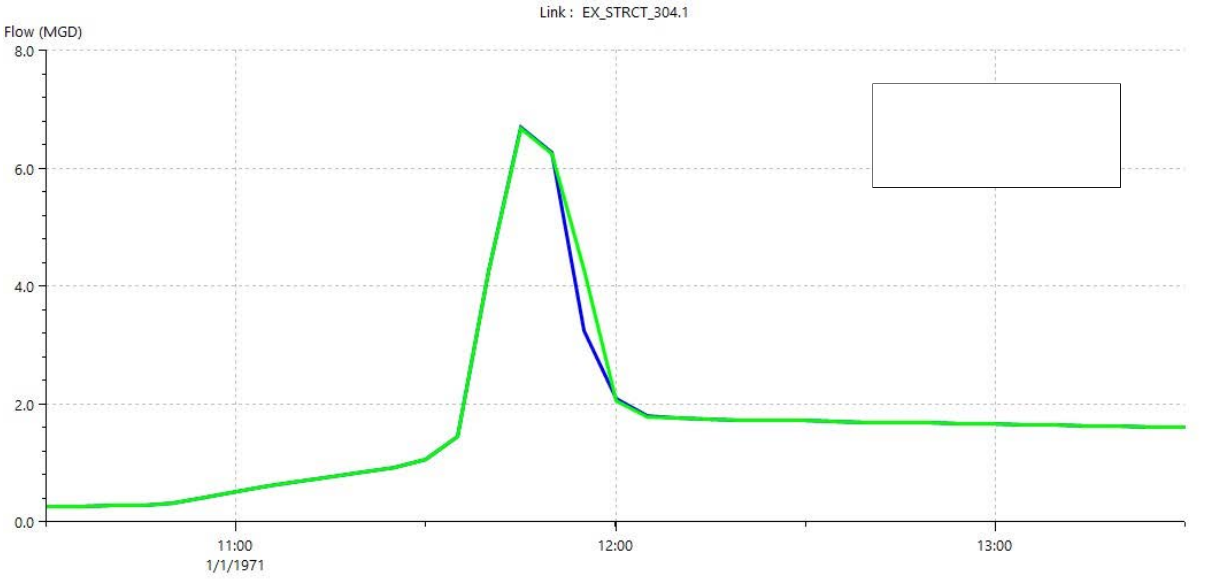
Figure 2. Pipes Downstream of NHPH

5.1 5-year Storm | Capacity

The predicted peak flow (MGD) and total flow (MG) from the 5-year, 3-hour storm for the Baseline (blue trace) and the proposed NHPH Project scenario (green trace), for the pipe just downstream of the NHPH site are shown in Figure 3. While the total flow from the NHPH study area would increase slightly for the proposed NHPH project simulation from 0.210 MG under existing conditions to 0.213 MG with the NHPH project, the peak flows would decrease from current conditions from 6.686 to 6.682 MGD, due to the storage included in the project. However, the increase in total flow would not significantly impact the capacity of any of the pipes downstream (see detailed results in Appendix A, Table A.1).

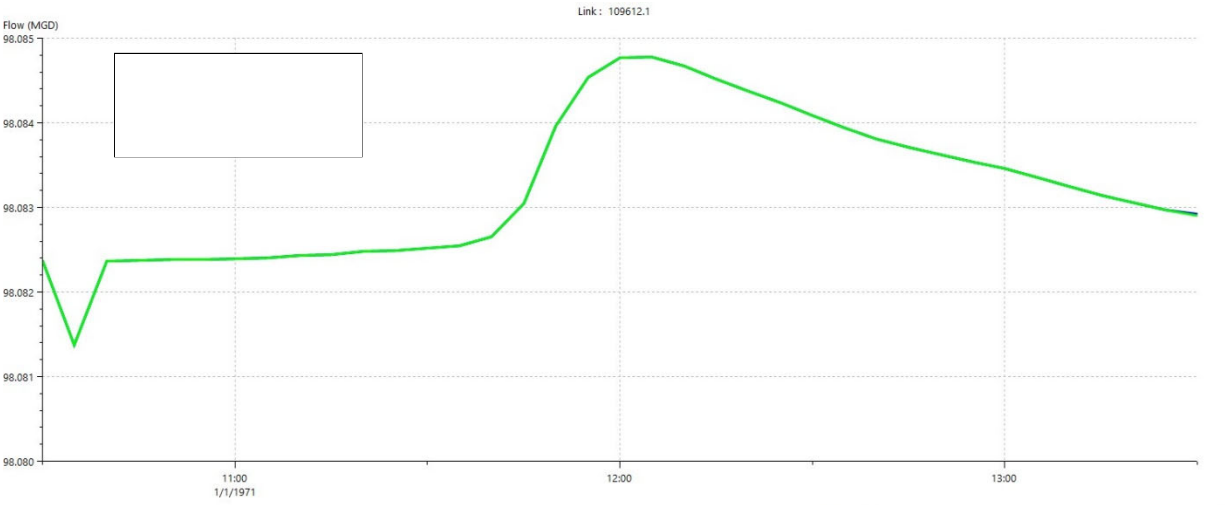
Figure 4 shows no change in either peak or total flows from the Northeast basin predicted for the 5-year, 3-hour storm.

Figure 3. Results of 5-year 3-hour Storm Simulation Immediately Downstream of Project Study Area



	Flow (MGD)		
	Min	Max	Volume (US Mgal)
...SF Parnassus>2019_1D LOS - NE!!!!!>D05y03h	0.260	6.686	0.210
...19_1D LOS - NE!!!!!>proposed NHPH D05y03h	0.260	6.682	0.213

Figure 4. Results of 5-year 3-hour Storm Simulation Downstream of Northeast Basins



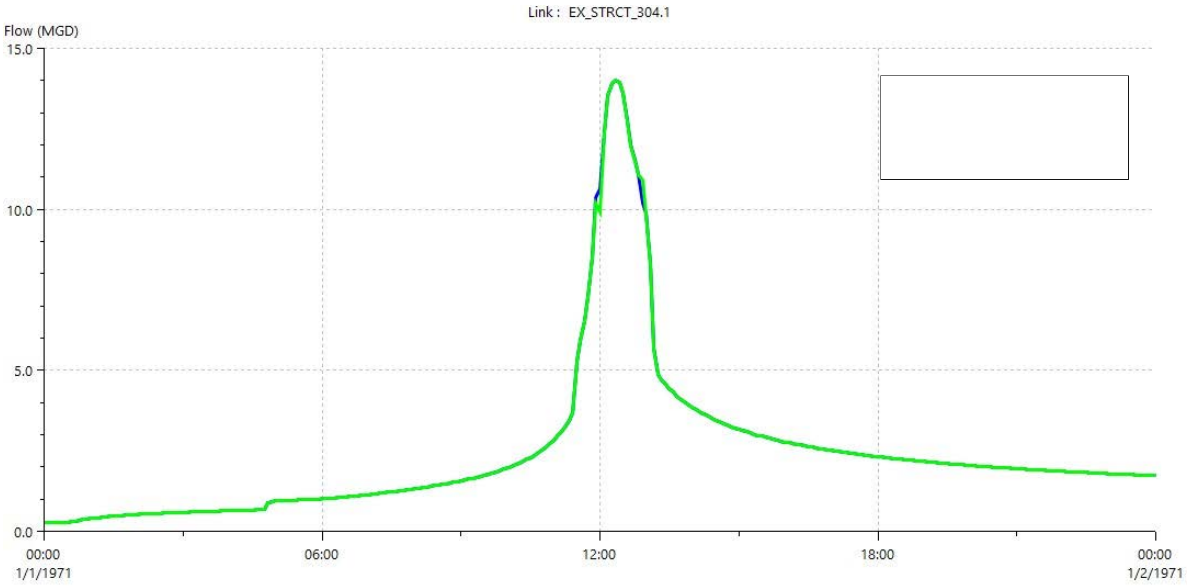
	Flow (MGD)		
	Min	Max	Volume (US Mgal)
...lopment Studies>UCSF Parnassus>2019_1D LOS - NE!!!!!>D05y03h	98.081	98.085	12.260
...UCSF Parnassus>2019_1D LOS - NE!!!!!>proposed NHPH D05y03h	98.081	98.085	12.260

5.2 100-year Storm | Flooding

The predicted peak flow (MGD) and total flow (MG) from the 100-year, 24-hour storm for the Baseline (blue trace) and proposed NHPH Project scenario (green trace), for the pipe just downstream of the NHPH site are shown in Figure 5. Both the peak and total flows are predicted to decrease from current conditions. There would be no increase in flood volume predicted for either scenario (see detailed results in Appendix A, Table A.2).

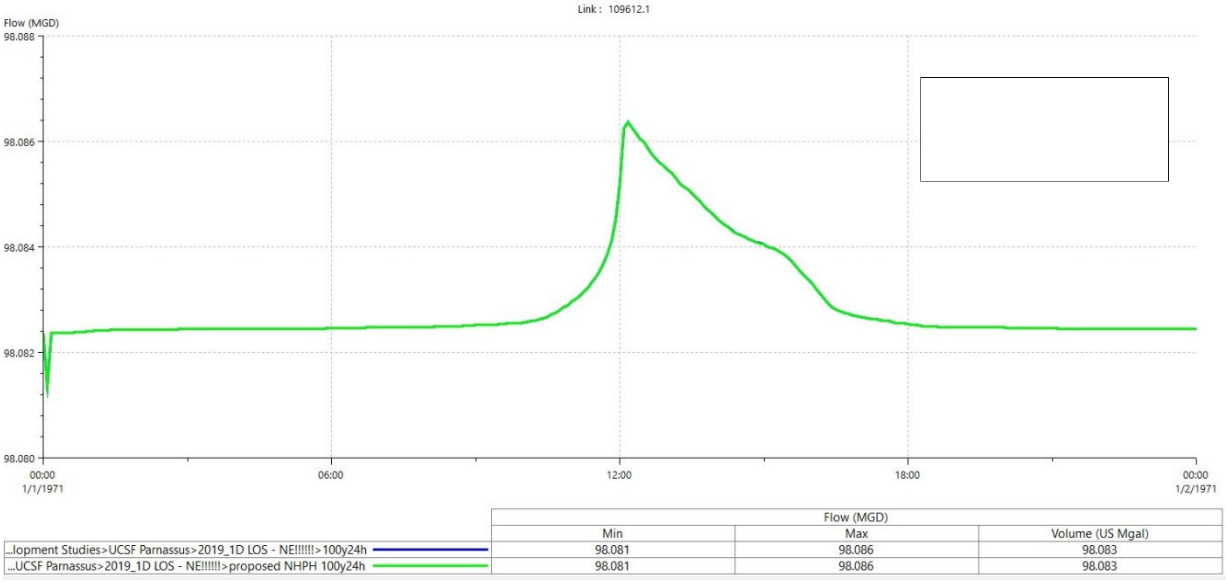
Figure 6 shows no change in either peak or total flows from the Northeast basin predicted for the 100-year, 24-hour storm.

Figure 5. Results of 100-year 24-hour Storm Simulation Immediately Downstream of Project Study Area



	Flow (MGD)		
	Min	Max	Volume (US Mgal)
...CSF Parnassus>2019_1D LOS - NE!!!!!!>100y24h	0.260	14.003	2.407
...019_1D LOS - NE!!!!!!>proposed NHPH 100y24h	0.260	14.001	2.406

Figure 6. Results of 100-year 24-hour Storm Simulation Downstream of Northeast Basins



5.3 Typical Year | CSDs

The results of the typical year runs are shown in the table below. The upper section of the table presents the number of CSDs from the outfalls to the receiving waters under current and with project conditions. The lower portion of the table presents the volume discharged during the CSD events. The runs predict no measurable increase in frequency or volume of CSD at the outfalls in either the North Shore or Channel basins.

CSD Frequency (count)

	North Shore						Channel								
	Baker	Pierce	Laguna	Beach	Sansome	Jackson	Howard	Brannan	3rd Street	4th Street (N)	5th Street	6th Street (N)	Division Street	6th Street (S)	4th Street (S)
Baseline	1	1	0	0	2	0	222	0	0	0	311	306	311	0	0
Proposed	1	1	0	0	2	0	222	0	0	0	311	306	311	0	0

CSD Volume (MG)

	North Shore						Channel								
	Baker	Pierce	Laguna	Beach	Sansome	Jackson	Howard	Brannan	3rd Street	4th Street (N)	5th Street	6th Street (N)	Division Street	6th Street (S)	4th Street (S)
Baseline	0.0827	2.37	0	0	16.1	0	64.3	0	0	0	68.3	129	1514	0	0
Proposed	0.0827	2.37	0	0	16.0	0	64.3	0	0	0	68.3	129	1514	0	0

APPENDIX A. DETAILED MODEL RESULTS

Table A.1 Comparison of Predicted Maximum HGL for 5-year 3-hour Storm

BASELINE			PROPOSED PROJECT			CHANGE IN HGL
Node ID	Max Level (ft AD)		Node ID	Max Level (ft AD)		Base v Proposed (ft)
15985	178.861		15985	178.86		0.00
16807	256.573		16807	256.572		0.00
16808	230.639		16808	230.638		0.00
16811	221.07		16811	221.069		0.00
17117	7.64		17117	7.639		0.00
17118	7.523		17118	7.522		0.00
17308	7.297		17308	7.296		0.00
17309	7.293		17309	7.292		0.00
17379	7.362		17379	7.361		0.00
17380	7.439		17380	7.438		0.00
17394	-3.01		17394	-3.01		0.00
18006	327.39		18006	327.39		0.00
18007	327.53		18007	327.53		0.00
18286	100.489		18286	100.487		0.00
18324	7.737		18324	7.736		0.00
18329	11.868		18329	11.867		0.00
18450	7.219		18450	7.218		0.00
18454	7.463		18454	7.462		0.00
18461	11.295		18461	11.294		0.00
18463	11.333		18463	11.332		0.00
18477	7.579		18477	7.578		0.00
31269	7.691		31269	7.69		0.00
31271	7.608		31271	7.607		0.00
31328	11.501		31328	11.5		0.00
31329	11.678		31329	11.677		0.00
32357	7.299		32357	7.298		0.00
108094	12.35		108094	12.349		0.00
192372	234.52		192372	234.518		0.00
197000	232.797		197000	232.795		0.00
197432	7.486		197432	7.485		0.00
197433	7.594		197433	7.593		0.00
208913	7.409		208913	7.408		0.00
250026	7.32		250026	7.319		0.00
251757	299.92		251757	299.919		0.00
253807	300.632		253807	300.632		0.00

BASELINE			PROPOSED PROJECT			CHANGE IN HGL
Node ID	Max Level (ft AD)		Node ID	Max Level (ft AD)		Base v Proposed (ft)
264475	8.632		264475	8.632		0.00
264476	8.079		264476	8.079		0.00
264573	19.516		264573	19.516		0.00
271180	7.501		271180	7.5		0.00
271199	7.341		271199	7.34		0.00
279098	219.617		279098	219.617		0.00
300531	31.384		300531	31.384		0.00
300810	-3.798		300810	-3.798		0.00
350025	7.319		350025	7.318		0.00

APPENDIX A. DETAILED MODEL RESULTS

Table A.2 Comparison of Predicted Flood Volume for 100-year 24-hour Storm

BASELINE			PROPOSED PROJECT	
Node ID	Max Flood volume (US Mgal)		Node ID	Max Flood volume (US Mgal)
106271	0		106271	0
106516	0.0545		106516	0.0545
106517	0.0197		106517	0.0196
106518	0.0094		106518	0.0094
106519	0.0021		106519	0.0021
108094	0.6728		108094	0.6728
11626	0.0007		11626	0.0007
11681	0.0006		11681	0.0006
11684	0.0284		11684	0.0284
11687	0.0003		11687	0.0003
11699	0		11699	0
11704	0.006		11704	0.006
11705	0.0116		11705	0.0116
12571	0.0028		12571	0.0028
12572	0.0046		12572	0.0046
12590	0.0005		12590	0.0005
12600	0.0511		12600	0.0511
12602	0		12602	0
12604	0.0003		12604	0.0003
12605	0.0025		12605	0.0025
12615	0.0001		12615	0.0001
12624	0.094		12624	0.094
12626	0.0068		12626	0.0068
12652	0.0283		12652	0.0283
12653	0.0022		12653	0.0022
15980	0.0394		15980	0.0394
15985	0.599		15985	0.599
16796	0.0004		16796	0.0004
16808	0.1004		16808	0.1004
16811	0.2913		16811	0.2913
16814	0.0093		16814	0.0093
16817	0.0067		16817	0.0067
17042	0.0596		17042	0.0596
17050	0.0083		17050	0.0083

BASELINE			PROPOSED PROJECT	
Node ID	Max Flood volume (US Mgal)		Node ID	Max Flood volume (US Mgal)
17117	0.2629		17117	0.2629
17118	0.3259		17118	0.3259
17120	0.1244		17120	0.1243
17121	0.1944		17121	0.1944
17122	0.1453		17122	0.1452
17129	0.0919		17129	0.0918
17308	0.211		17308	0.211
17309	0.1936		17309	0.1936
17313	0.107		17313	0.107
17315	0.0169		17315	0.0169
17379	0.2786		17379	0.2786
17380	0.3995		17380	0.3995
17394	0.0084		17394	0.0084
18006	0.6276		18006	0.6272
18007	0.6408		18007	0.6404
18286	1.4619		18286	1.4619
18287	0.4442		18287	0.4441
18288	0.4917		18288	0.4916
18324	0.2106		18324	0.2106
18352	0.004		18352	0.004
18356	0.0487		18356	0.0487
18357	0.1389		18357	0.139
18381	0.0043		18381	0.0043
18386	0.0028		18386	0.0028
18413	0.1377		18413	0.1376
18426	0.0066		18426	0.0066
18450	0.249		18450	0.249
18453	0.1528		18453	0.1528
18454	0.2504		18454	0.2504
18461	0.3871		18461	0.3871
18463	0.4225		18463	0.4225
18464	0.0051		18464	0.0051
18465	0.0883		18465	0.0883
18477	0.2237		18477	0.2237
192372	0.0618		192372	0.0618
192492	0.0409		192492	0.0409
196982	0.0357		196982	0.0357

BASELINE			PROPOSED PROJECT	
Node ID	Max Flood volume (US Mgal)		Node ID	Max Flood volume (US Mgal)
196992	0		196992	0
197000	0.085		197000	0.085
197432	0.3394		197432	0.3394
197433	0.2698		197433	0.2698
203058	0.0096		203058	0.0096
203072	0.0053		203072	0.0053
208082	0		208082	0
208085	0.0003		208085	0.0003
208913	0.2858		208913	0.2858
248813	0.1155		248813	0.1155
250026	0.291		250026	0.291
300810	0.002		300810	0.002
31269	0.2524		31269	0.2524
31270	0.1717		31270	0.1717
31271	0.2076		31271	0.2076
31328	0.5785		31328	0.5785
31329	0.6094		31329	0.6094
32061	0.0172		32061	0.0172
32111	0.0004		32111	0.0004
32114	0.0012		32114	0.0012
32357	0.2218		32357	0.2218
350025	0.2941		350025	0.2941
18329	0.6284		18329	0.6285
18373	0.1272		18373	0.1272
16807	0.145		16807	0.1449
253656	0.0466		253656	0.0465
18001	0.001		18001	0.001
251757	0.0271		251757	0.0271
253717	0.0252		253717	0.025
253716	0.0761		253716	0.0757
254227	0.0002		254227	0.0002
16978	0.0002		16978	0.0002
253807	0.0329		253807	0.0329
271199	0.3178		271199	0.3178
271180	0.2577		271180	0.2577
271181	0.1007		271181	0.1007
279098	0.0998		279098	0.0998

BASELINE			PROPOSED PROJECT		
Node ID	Max Flood volume (US Mgal)		Node ID	Max Flood volume (US Mgal)	
295014	0.188		295014	0.188	
300531	0		300531	0	
264476	0		264476	0	
264475	0		264475	0	
264573	0		264573	0	
	16.44			**16.44**	**TOTAL FLOOD VOLUME (MG)**

Appendix NOI
Noise and Vibration Appendix

RCNM Outputs for Construction Noise

Traffic Noise Model

HUD DNL Noise Model

Stationary Source Noise Modeling

RCNM Outputs for Construction Noise

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 08/03/2021
Case Description: UCSF NHPH - MCW/Site Preparation

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
100 Block Edgewood Ave.	Residential	54.0	53.0	53.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16	85.0		206.0	0.0
Gradall	No	40		83.4	206.0	0.0

Results

Noise Limits (dBA)

Noise Limit Exceedance (dBA)

Equipment	Calculated (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Crane	72.7	64.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Gradall	71.1	67.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	72.7	69.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

**** Receptor #2 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Hillway Ave.	Residential	58.0	53.0	53.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16	85.0		200.0	0.0
Gradall	No	40		83.4	200.0	0.0

Results

Noise Limit Exceedance (dBA)

Noise Limits (dBA)

Equipment	Calculated (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Crane	68.5	60.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Gradall	71.4	67.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	71.4	68.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 08/03/2021
Case Description: UCSF NHPH - Drainage/Utilities/Subgrade

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
100 Block Edgewood Ave.	Residential	54.0	53.0	53.0

Description	Impact Device	Usage (%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Generator	No	50		80.6	206.0	0.0
Gradall	No	40		83.4	206.0	0.0

Results

Noise Limits (dBA)

Noise Limit Exceedance (dBA)

Equipment	Calculated (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Generator	68.3	65.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Gradall	71.1	67.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	71.1	69.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

**** Receptor #2 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Hillway Ave.	Residential	58.0	53.0	53.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Generator	No	50		80.6	200.0	0.0
Gradall	No	40		83.4	200.0	0.0

Results

Noise Limits (dBA)

Noise Limit Exceedance (dBA)

Calculated (dBA)

Equipment	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Generator	68.6	65.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Gradall	71.4	67.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	71.4	69.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 08/03/2021
Case Description: UCSF NHPH - Grading/Excavation

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
100 Block Edgewood Ave.	Residential	54.0	53.0	53.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Auger Drill Rig	No	20		84.4	206.0	0.0
Tractor	No	40	84.0		206.0	0.0

Results

Noise Limits (dBA)

Noise Limit Exceedance (dBA)

Equipment	Calculated (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Auger Drill Rig	72.1	65.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	71.7	67.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	72.1	69.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

**** Receptor #2 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Hillway Ave.	Residential	58.0	53.0	53.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Auger Drill Rig	No	20		84.4	200.0	0.0
Tractor	No	40	84.0		200.0	0.0

Results

Noise Limits (dBA)

Noise Limit Exceedance (dBA)

Calculated (dBA)

Equipment	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Auger Drill Rig	72.3	65.3	N/A	N/A	N/A	N/A
Tractor	72.0	68.0	N/A	N/A	N/A	N/A
Total	72.3	69.9	N/A	N/A	N/A	N/A

Equipment	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Auger Drill Rig	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	N/A	N/A	N/A	N/A	N/A	N/A
Total	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 08/03/2021
Case Description: UCSF NHPH - Building Construction

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
100 Block Edgewood Ave.	Residential	54.0	53.0	53.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Auger Drill Rig	No	20		84.4	206.0	0.0
Concrete Saw	No	20		89.6	206.0	0.0

Results

Noise Limits (dBA)

Noise Limit Exceedance (dBA)

Equipment	Calculated (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Auger Drill Rig	72.1	65.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Concrete Saw	77.3	70.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	77.3	71.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

**** Receptor #2 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Hillway Ave.	Residential	58.0	53.0	53.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Auger Drill Rig	No	20		84.4	200.0	0.0
Concrete Saw	No	20		89.6	200.0	0.0

Results

Noise Limits (dBA)

Noise Limit Exceedance (dBA)

Calculated (dBA)

Equipment	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Auger Drill Rig	72.3	65.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Concrete Saw	77.5	70.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	77.5	71.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 08/05/2021
Case Description: UCSF NHPH - Paving

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
100 Block Edgewood Ave.	Residential	54.0	53.0	53.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Backhoe	No	40		77.6	206.0	0.0
Scraper	No	40		83.6	206.0	0.0

Results

Noise Limits (dBA)

Noise Limit Exceedance (dBA)

Equipment	Calculated (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Backhoe	65.3	61.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper	71.3	67.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	71.3	68.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

**** Receptor #2 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Hillway Ave.	Residential	58.0	53.0	53.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Backhoe	No	40		77.6	200.0	0.0
Scraper	No	40		83.6	200.0	0.0

Results

Noise Limits (dBA)

Noise Limit Exceedance (dBA)

Equipment	Calculated (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Backhoe	65.5	61.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper	71.5	67.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	71.5	68.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 08/05/2021
Case Description: UCSF NHPH - Diesel Fuel Tank

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
100 Block Edgewood Ave.	Residential	54.0	53.0	53.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Auger Drill Rig	No	20		84.4	350.0	0.0
Auger Drill Rig	No	20		84.4	350.0	0.0

Results

Noise Limits (dBA)

Noise Limit Exceedance (dBA)

Night	Day	Calculated (dBA) Evening	Night	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq	Lmax
Equipment		Lmax Leq	Lmax Leq	Lmax Leq						
Auger Drill Rig		67.5 60.5		N/A N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A N/A	N/A N/A	N/A N/A						
Auger Drill Rig		67.5 60.5		N/A N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A N/A	N/A N/A	N/A N/A						
Total		67.5 63.5		N/A N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A N/A	N/A N/A	N/A N/A						

**** Receptor #2 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Hillway Ave.	Residential	58.0	53.0	53.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Auger Drill Rig	No	20		84.4	750.0	0.0
Auger Drill Rig	No	20		84.4	750.0	0.0

Results

Noise Limits (dBA)

Noise Limit Exceedance (dBA)

Calculated (dBA)

Equipment	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Auger Drill Rig	60.8	53.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Auger Drill Rig	60.8	53.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	60.8	56.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 08/05/2021
Case Description: UCSF NHPH - M/L Rennovations Bridge Tunnel Connection

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
100 Block Edgewood Ave.	Residential	54.0	53.0	53.0

Description	Impact Device	Usage (%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	400.0	0.0
Generator	No	50		80.6	400.0	0.0

Results

Noise Limits (dBA)

Noise Limit Exceedance (dBA)

Night	Day	Calculated (dBA) Evening	Night	Day Evening	Night

Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane	62.5	54.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	62.6	59.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	62.6	60.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

**** Receptor #2 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Hillway Ave.	Residential	58.0	53.0	53.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	400.0	0.0
Generator	No	50		80.6	400.0	0.0

Results

Noise Limits (dBA)

Noise Limit Exceedance (dBA)

Calculated (dBA)

Equipment	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Crane	62.5	54.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	62.6	59.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	62.6	60.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Traffic Noise Model

Existing

ROAD SEGMENT			TOTAL # VEHICLES	VEHICLE TYPE %						VEHICLE SPEED						NOISE LEVEL (dBA)			CALCULATED NOISE LEVEL (15 meters from	Receptor Dist. from Roadway	Adjusted Noise Level	Distance from Roadway to 65 dBA	Distance from Roadway to 65 dBA
Calveno Peak				Auto		MT		HT		Auto	k/h	MT	k/h	HT	k/h	Auto	MT	HT					
	from:	to:		%	Auto	%	MT	%	HT										roadway center)	Center (m.)	(dBA)	(m.)	(ft)
Kirkham	7th	5th	354	97	343.38	2	7.08	1	3.54	25	40	25	40	25	40	55.5	50.3	54.9	58.8	40	54.6	3.6	11.9
5th	Kirkham	Judah	297	97	288.09	2	5.94	1	2.97	25	40	25	40	25	40	54.7	49.5	54.1	58.1	40	53.8	3.0	10.0
7th	Kirkham	Judah	1043	97	1011.7	2	20.86	1	10.43	25	40	25	40	25	40	60.2	54.9	59.6	63.5	40	59.3	10.7	35.1
Judah	7th	5th	681	95	646.95	3	20.43	2	13.62	25	40	25	40	25	40	58.2	54.9	60.7	63.3	40	59.1	10.2	33.5
Parnassus	5th	3rd	904	95	858.8	3	27.12	2	18.08	25	40	25	40	25	40	59.4	56.1	62.0	64.6	40	60.3	13.6	44.5
Parnassus	3rd	Hillway	878	95	834.1	3	26.34	2	17.56	25	40	25	40	25	40	59.3	56.0	61.8	64.4	40	60.2	13.2	43.2
Parnassus	Hillway	Stanyan	643	95	610.85	3	19.29	2	12.86	25	40	25	40	25	40	58.0	54.6	60.5	63.1	40	58.8	9.6	31.7
Stanyan	Parnassus	Fredrick	713	95	677.35	3	21.39	2	14.26	25	40	25	40	25	40	58.4	55.1	60.9	63.5	40	59.3	10.7	35.1
Irving	Stanyan	Arguello	321	95	304.95	3	9.63	2	6.42	25	40	25	40	25	40	54.9	51.6	57.5	60.1	40	55.8	4.8	15.8
Irving	Arguello	4th	391	95	371.45	3	11.73	2	7.82	25	40	25	40	25	40	55.8	52.4	58.3	60.9	40	56.7	5.9	19.2
Lincoln	Arguello	4th	3776	95	3587.2	3	113.3	2	75.52	35	56	35	56	35	56	69.9	64.6	69.5	73.3	40	69.1	102.0	334.7
Clarendon	Johnstone	Laguna Hnda	683	97	662.51	2	13.66	1	6.83	35	56	35	56	35	56	62.5	55.4	59.1	64.7	40	60.4	14.0	45.8

Assumptions: PM peak hour traffic data from Fehr & Peers

Existing + Project NHPH

ROAD SEGMENT			TOTAL # VEHICLES	VEHICLE TYPE %						VEHICLE SPEED						NOISE LEVEL (dBA)			CALCULATED NOISE LEVEL (15 meters from	Receptor Dist. from Roadway	Adjusted Noise Level	Distance from Roadway to 65 dBA	Distance from Roadway to 65 dBA
Calveno Peak				Auto		MT		HT		Auto	k/h	MT	k/h	HT	k/h	Auto	MT	HT					
	from:			%	Auto	%	MT	%	HT										roadway center)	Center (m.)	(dBA)	(m.)	(ft)
Kirkham	7th	5th	402	97	389.94	2	8.04	1	4.02	25	40	25	40	25	40	56.0	50.8	55.4	59.4	40	55.1	4.1	13.5
5th	Kirkham	Judah	311	97	301.67	2	6.22	1	3.11	25	40	25	40	25	40	54.9	49.7	54.3	58.3	40	54.0	3.2	10.5
7th	Kirkham	Judah	1142	97	1107.7	2	22.84	1	11.42	25	40	25	40	25	40	60.5	55.3	60.0	63.9	40	59.7	11.7	38.4
Judah	7th	5th	790	95	750.5	3	23.7	2	15.8	25	40	25	40	25	40	58.9	55.5	61.4	64.0	40	59.7	11.9	38.9
Parnassus	5th	3rd	1038	95	986.1	3	31.14	2	20.76	25	40	25	40	25	40	60.0	56.7	62.6	65.2	40	60.9	15.6	51.1
Parnassus	3rd	Hillway	1041	95	988.95	3	31.23	2	20.82	25	40	25	40	25	40	60.1	56.7	62.6	65.2	40	60.9	15.6	51.2
Parnassus	Hillway	Stanyan	731	95	694.45	3	21.93	2	14.62	25	40	25	40	25	40	58.5	55.2	61.0	63.6	40	59.4	11.0	36.0
Stanyan	Parnassus	Fredrick	780	95	741	3	23.4	2	15.6	25	40	25	40	25	40	58.8	55.4	61.3	63.9	40	59.7	11.7	38.4
Irving	Stanyan	Arguello	340	95	323	3	10.2	2	6.8	25	40	25	40	25	40	55.2	51.8	57.7	60.3	40	56.1	5.1	16.7
Irving	Arguello	4th	421	95	399.95	3	12.63	2	8.42	25	40	25	40	25	40	56.1	52.8	58.7	61.2	40	57.0	6.3	20.7
Lincoln	Arguello	4th	3864	95	3670.8	3	115.9	2	77.28	35	56	35	56	35	56	70.0	64.7	69.6	73.4	40	69.2	104.4	342.5
Clarendon	Johnstone	Laguna Hnda	507	97	491.79	2	10.14	1	5.07	35	56	35	56	35	56	61.2	54.1	57.8	63.4	40	59.1	10.4	34.0

Assumptions: PM peak hour traffic data from Fehr & Peers

Cumulative + Project

ROAD SEGMENT			TOTAL # VEHICLES	VEHICLE TYPE %						VEHICLE SPEED						NOISE LEVEL (dBA)			CALCULATED NOISE LEVEL (15 meters from roadway center)	Receptor Dist. from Roadway Center (m.)	Adjusted Noise Level (dBA)	Distance from Roadway to 65 dBA (m.)	Distance from Roadway to 65 dBA (ft)
Calveno Peak from:				Auto	%	MT	%	HT	%	Auto	k/h	MT	k/h	HT	k/h	Auto	MT	HT					
Kirkham	7th	5th	650	Auto	97	630.5	2	13	1	6.5	25	40	25	40	25	40	58.1	52.9	57.5	61.5	40	57.2	6.7	21.9
5th	Kirkham	Judah	392	Auto	97	380.24	2	7.84	1	3.92	25	40	25	40	25	40	55.9	50.7	55.3	59.3	40	55.0	4.0	13.2
7th	Kirkham	Judah	1,494	Auto	97	1449.2	2	29.88	1	14.94	25	40	25	40	25	40	61.7	56.5	61.1	65.1	40	60.8	15.3	50.3
Judah	7th	5th	1,121	Auto	95	1065	3	33.63	2	22.42	25	40	25	40	25	40	60.4	57.0	62.9	65.5	40	61.2	16.8	55.2
Parnassus	5th	3rd	1,436	Auto	95	1364.2	3	43.08	2	28.72	25	40	25	40	25	40	61.4	58.1	64.0	66.6	40	62.3	21.5	70.7
Parnassus	3rd	Hillway	1,528	Auto	95	1451.6	3	45.84	2	30.56	25	40	25	40	25	40	61.7	58.4	64.3	66.8	40	62.6	22.9	75.2
Parnassus	Hillway	Stanyan	1,037	Auto	95	985.15	3	31.11	2	20.74	25	40	25	40	25	40	60.0	56.7	62.6	65.2	40	60.9	15.6	51.1
Stanyan	Parnassus	Fredrick	1,000	Auto	95	950	3	30	2	20	25	40	25	40	25	40	59.9	56.5	62.4	65.0	40	60.7	15.0	49.2
Irving	Stanyan	Arguello	466	Auto	95	442.7	3	13.98	2	9.32	25	40	25	40	25	40	56.6	53.2	59.1	61.7	40	57.4	7.0	22.9
Irving	Arguello	4th	681	Auto	95	646.95	3	20.43	2	13.62	25	40	25	40	25	40	58.2	54.9	60.7	63.3	40	59.1	10.2	33.5
Lincoln	Arguello	4th	4,287	Auto	95	4072.7	3	128.6	2	85.74	35	56	35	56	35	56	70.4	65.1	70.1	73.9	40	69.6	115.8	380.0
Clarendon	Johnstone	Laguna Hnda	789	Auto	97	765.33	2	15.78	1	7.89	35	56	35	56	35	56	63.1	56.0	59.7	65.3	40	61.1	16.1	52.9

Assumptions: PM peak hour traffic data from Fehr & Peers

HUD DNL Noise Model

DNL Calculator

The Day/Night Noise Level Calculator is an electronic assessment tool that calculates the Day/Night Noise Level (DNL) from roadway and railway traffic. For more information on using the DNL calculator, view the **Day/Night Noise Level Calculator Electronic Assessment Tool Overview (/programs/environmental-review/daynight-noise-level-electronic-assessment-tool/)**.

Guidelines

- To display the Road and/or Rail DNL calculator(s), click on the "Add Road Source" and/or "Add Rail Source" button(s) below.
- All Road and Rail input values must be positive non-decimal numbers.
- All Road and/or Rail DNL value(s) must be calculated separately before calculating the Site DNL.
- All checkboxes that apply must be checked for vehicles and trains in the tables' headers.
- **Note #1:** Tooltips, containing field specific information, have been added in this tool and may be accessed by hovering over all the respective data fields (site identification, roadway and railway assessment, DNL calculation results, roadway and railway input variables) with the mouse.
- **Note #2:** DNL Calculator assumes roadway data is always entered.

DNL Calculator

Site ID	UCSF Medical Center Way with NHPH
Record Date	08/10/2021
User's Name	C. Sanchez

Road # 1 Name:	**Medical Center Way**

Road #1

Vehicle Type	**Cars** ☑	**Medium Trucks** ☑	**Heavy Trucks** ☑
Effective Distance	180	180	180
Distance to Stop Sign	150	150	150
Average Speed	15	15	15
Average Daily Trips (ADT)	742	474	134
Night Fraction of ADT	15	15	15
Road Gradient (%)			7
Vehicle DNL	32	40	61
Calculate Road #1 DNL	61	Reset	

Add Road Source | Add Rail Source

Airport Noise Level

Stationary Source Noise Modeling

Maximum Sound Power Level (dB re 10-12 W)										
AHU TAG			*Octave Band Center Frequency							
			63	125	250	500	1k	2k	4k	8k
Sample from recent project	Supply		91	79	91	81	74	74	71	65
*values will vary per unit and with ongoing selections	Return		86	82	78	75	70	71	66	59
	OSA Inlet		86	80	78	76	68	66	65	58
	Relief		83	78	80	73	66	64	63	55
	Case R.	N/A	75	68	72	66	54	49	44	37

Sound Power Level	63	125	250	500	1000	2000	4000	8000	A-weighted	Unwaighted
Supply (intake)	91	79	91	81	74	74	71	65	85	94
Return (exhaust)	86	82	78	75	70	71	66	59	78	88
Combined	92	84	91	82	75	76	72	66	86	95
Louver		3	7	9	12	10	9	7		
After Louver	92	81	84	73	63	66	63	59	78	93

Sound Power Level to Sound Pressure Level

$$Lp = Lw - \left|10log\left(Q/_{4\pi r^2}\right)\right|$$

frequency	**31.5**	**63**	**125**	**250**	**500**	**1000**	**2000**	**4000**	**8000**	**Overall**	**Hz**					
swl		**92.2**	**80.8**	**84.2**	**73.0**	**63.5**	**65.8**	**63.2**	**59.0**	93	dB					
spl		84.2	72.8	76.2	65.0	55.5	57.8	55.2	51.0	85	dB	@	**3.28** 8.0	feet	Q=	2
a weighting	-39.4	-26.2	-16.1	-8.6	-3.2	0.0	1.2	1.0	-1.1		dB					
spl	-39.4	58.0	56.7	67.6	61.8	55.5	59.0	56.2	49.9	70	dBA					

Q=1 Near center of room
Q=2 At center of floor
Q=4 Center of edge between floor and wall
Q=8 Corner between two walls and floor

# of HVAC	Total dBA		distance (ft)	dBA at receiver
17	82	@	200	47

Engineering Noise Control

ENC 11.5 page565

kW = 22.371 (based on 30HP converted to kW)

Propeller-type cooling towers:		Lw
A	Fan power up to 75 kW: Lw = 100 + 8LOG(kW)	110.7975
B	Fan power greater than 75 kW: Lw = 96 + 10LOG(kW) (subtract 8 dB if the fan is operated at half its rated speed.)	109.4969

Centrifugal type cooling towers:

C	Fan power up to 60 kW: Lw = 85 + 11LOG(kW)	99.84654
D	Fan power greater than 60 kW: Lw = 93 + 7LOG(kW)	102.4478

Cooling Tower Definition

Manufacturer	Marley	Fan Motor Speed	1800 rpm
Product	NC OSHPD	Required Fan Motor Output per cell *	29.32 BHp
Model	NC8409SAE4	Required Fan Motor Output total *	117.28 BHp
Cells	4	Fan Motor Capacity per cell	30.00 Hp
CTI Certified	Yes	Fan Motor Output per cell	30.00 BHp
Fan	12 ft, 5 Blades, Low Sound	Fan Motor Output total	120.00 BHp
Fan Speed	273 rpm, 10292 fpm	Air Flow per cell	172000 cfm
Fans per cell	1	Air Flow total	688000 cfm
Fill Type	MX75	Static Lift	12 ft
		Distribution Head Loss	0 ft
		ASHRAE 90.1 Performance	79.8 gpm/Hp
Model Group	Standard Low Sound (A)		

* Required Fan Motor Output assumes VFD operation

	31.5	63	125	250	500	1000	2000	4000	8000	Awt	
Propeller-type cooling towers:	8	5	5	8	11	15	18	21	29		Table 11.7
Centrifugal type cooling towers:	6	6	8	10	11	13	12	18	25		Table 11.7
A	102.8	105.8	105.8	102.8	99.8	95.8	92.8	89.8	81.8	102.0	
B	101.5	104.5	104.5	101.5	98.5	94.5	91.5	88.5	80.5	100.7	
C	93.8	93.8	91.8	89.8	88.8	86.8	87.8	81.8	74.8	93.1	
D	96.4	96.4	94.4	92.4	91.4	89.4	90.4	84.4	77.4	95.7	

Table 11.8 Approximate corrections (dB) to average sound pressure level for directinal effects of cooling towers (directivity effects at distances greater than 6 meter from the tower.)

	31.5	63	125	250	500	1000	2000	4000	8000
Centrifugal fan blow through type									
Front	3	3	2	3	4	3	3	4	4
Side	0	0	0	-2	-3	-4	-5	-5	-5
Rear	0	0	-1	-2	-3	-4	-5	-6	-6
Top	-3	-3	-2	0	1	2	3	4	5
Axial flow, blow through type									
Front	2	2	4	6	6	5	5	5	5
Side	1	1	1	-2	-5	-5	-5	-5	-4
Rear	-3	-3	-4	-7	-7	-7	-8	-11	-3
Top	-5	-5	-5	-5	-2	0	0	2	4
Induced draft, propeller type									
Front	0	0	0	1	2	2	2	3	3
Side	-2	-2	-2	-3	-4	-4	-5	-6	-6
Top	3	3	3	3	2	2	2	1	1
Underflow forced draft propeller type									
Any side	-1	-1	-1	-2	-2	-3	-3	-4	-4
Top	2	2	2	3	3	4	4	5	5

										A-weighted Sound Power Level
per CELL	103.5	106.5	106.5	104.5	101.5	98.5	95.5	93.5	85.5	104.3

Sound Power Level to Sound Pressure Level

$$Lp = Lw - \left|10log\left(Q/_{4\pi r^2}\right)\right|$$

frequency	31.5	63	125	250	500	1000	2000	4000	8000	Overall	Hz				
swl	103.5	106.5	106.5	104.5	101.5	98.5	95.5	93.5	85.5	112	dB				
spl	95.5	98.5	98.5	96.5	93.5	90.5	87.5	85.5	77.5	104	dB	@	3.28	feet	Q=
													8.0		
a weighting	-39.4	-26.2	-16.1	-8.6	-3.2	0.0	1.2	1.0	-1.1		dB				
spl	56.1	72.3	82.4	87.9	90.3	90.5	88.7	86.5	76.4	96	dBA				

Q=1	Near center of room
Q=2	At center of floor
Q=4	Center of edge between floor and wall
Q=8	Corner between two walls and floor

# of Cooling Tower	Total dBA		distance (ft)	dBA at receiver
5	103	@	350	63

Appendix SHDW
Shadow Appendix

PREVISION DESIGN

FAN 1

UCSF HOSPITAL PROJECT

Net New Shadowfan Diagram
factoring in existing shadow

FULL YEAR

ALL AREAS AFFECTED BY NET NEW SHADOW FROM THE PROPOSED PROJECT

Publicly Accessible Open Spaces (Ownership)
1. Golden Gate Park (RPD)
2. Richard Gamble Memorial Park (RPD)
3. Grattan Playground (RPD)
4. Interior Greenbelt (RPD)
5. Mount Sutro Open Space Preserve (UCSF)

SFUSD SCHOOLS
1. Independence High School
2. Grattan Elementary School

- Proposed Hospital Project
- Near Term Cumulative (2030)
- Long Term Cumulative (2050)
- Net New Shadow Fan of Proposed Hospital Project

occasional shadow — frequent shadow

PREVISION DESIGN

B1.1

UCSF HOSPITAL PROJECT

Shading diagrams on the Summer Solstice

6:46 AM

SUMMER SOLSTICE
JUNE 21

Publicly Accessible Open Spaces (Ownership)
1. Golden Gate Park (RPD)
2. Richard Gamble Memorial Park (RPD)
3. Grattan Playground (RPD)
4. Interior Greenbelt (RPD)
5. Mount Sutro Open Space Preserve (UCSF)

SFUSD SCHOOLS
1. Independence High School
2. Grattan Elementary School

- Proposed Hospital Project
- Near Term Cumulative (2030)
- Long Term Cumulative (2050)
- Net New Project Shadow
- 2030 Net New Shadow Profiles
- 2030-2050 Net New Shadow

N

PREVISION DESIGN

B1.2

UCSF HOSPITAL PROJECT

Shading diagrams on the Summer Solstice

7:00 AM

SUMMER SOLSTICE
JUNE 21

Publicly Accessible Open Spaces (Ownership)
1. Golden Gate Park (RPD)
2. Richard Gamble Memorial Park (RPD)
3. Grattan Playground (RPD)
4. Interior Greenbelt (RPD)
5. Mount Sutro Open Space Preserve (UCSF)

SFUSD SCHOOLS
1. Independence High School
2. Grattan Elementary School

- Proposed Hospital Project
- Near Term Cumulative (2030)
- Long Term Cumulative (2050)
- Net New Project Shadow
- 2030 Net New Shadow Profiles
- 2030-2050 Net New Shadow

PREVISION DESIGN

B1.3

UCSF HOSPITAL PROJECT

Shading diagrams on the Summer Solstice

8:00 AM

SUMMER SOLSTICE
JUNE 21

Publicly Accessible Open Spaces (Ownership)
1. Golden Gate Park (RPD)
2. Richard Gamble Memorial Park (RPD)
3. Grattan Playground (RPD)
4. Interior Greenbelt (RPD)
5. Mount Sutro Open Space Preserve (UCSF)

SFUSD SCHOOLS
1. Independence High School
2. Grattan Elementary School

- Proposed Hospital Project
- Near Term Cumulative (2030)
- Long Term Cumulative (2050)
- Net New Project Shadow
- 2030 Net New Shadow Profiles
- 2030-2050 Net New Shadow

PREVISION DESIGN

B1.4

UCSF HOSPITAL PROJECT

Shading diagrams on the Summer Solstice

9:00 AM

SUMMER SOLSTICE
JUNE 21

ROBIN WILLIAMS MEADOW
KORET PLAYGROUND
KEZAR DRIVE
BASEBALL FIELDS
KEZAR STADIUM
MLK JR. DRIVE
LINCOLN WAY
FREDERICK STREET
ARGUELLO BOULEVARD
CARL STREET
PARNASSUS AVENUE
IRVING STREET
JUDAH STREET
KIRKHAM STREET
HUGO STREET
2ND AVENUE
3RD AVENUE
4TH AVENUE
5TH AVENUE
6TH AVENUE
7TH AVENUE
8TH AVENUE
HTH AVENUE
WILLARD STREET
EDGEWOOD AVENUE
SHRADER STREET
STANYAN STREET
OLIVE STREET
WOODLAND STREET
N

Publicly Accessible Open Spaces (Ownership)
1. Golden Gate Park (RPD)
2. Richard Gamble Memorial Park (RPD)
3. Grattan Playground (RPD)
4. Interior Greenbelt (RPD)
5. Mount Sutro Open Space Preserve (UCSF)

SFUSD SCHOOLS
1. Independence High School
2. Grattan Elementary School

- Proposed Hospital Project
- Near Term Cumulative (2030)
- Long Term Cumulative (2050)
- Net New Project Shadow
- 2030 Net New Shadow Profiles
- 2030-2050 Net New Shadow

PREVISION DESIGN

B1.5

UCSF HOSPITAL PROJECT

Shading diagrams on the Summer Solstice

10:00 AM

SUMMER SOLSTICE
JUNE 21

Publicly Accessible Open Spaces (Ownership)
1. Golden Gate Park (RPD)
2. Richard Gamble Memorial Park (RPD)
3. Grattan Playground (RPD)
4. Interior Greenbelt (RPD)
5. Mount Sutro Open Space Preserve (UCSF)

SFUSD SCHOOLS
1. Independence High School
2. Grattan Elementary School

- Proposed Hospital Project
- Near Term Cumulative (2030)
- Long Term Cumulative (2050)
- Net New Project Shadow
- 2030 Net New Shadow Profiles
- 2030-2050 Net New Shadow

PREVISION DESIGN

B1.6

UCSF HOSPITAL PROJECT

Shading diagrams on the Summer Solstice

11:00 AM

SUMMER SOLSTICE
JUNE 21

Publicly Accessible Open Spaces (Ownership)
1. Golden Gate Park (RPD)
2. Richard Gamble Memorial Park (RPD)
3. Grattan Playground (RPD)
4. Interior Greenbelt (RPD)
5. Mount Sutro Open Space Preserve (UCSF)

SFUSD SCHOOLS
1. Independence High School
2. Grattan Elementary School

- Proposed Hospital Project
- Near Term Cumulative (2030)
- Long Term Cumulative (2050)
- Net New Project Shadow
- 2030 Net New Shadow Profiles
- 2030-2050 Net New Shadow

PREVISION DESIGN

B1.7

UCSF HOSPITAL PROJECT

Shading diagrams on the Summer Solstice

12:00 PM

SUMMER SOLSTICE
JUNE 21

Publicly Accessible Open Spaces (Ownership)
1. Golden Gate Park (RPD)
2. Richard Gamble Memorial Park (RPD)
3. Grattan Playground (RPD)
4. Interior Greenbelt (RPD)
5. Mount Sutro Open Space Preserve (UCSF)

SFUSD SCHOOLS
1. Independence High School
2. Grattan Elementary School

- Proposed Hospital Project
- Near Term Cumulative (2030)
- Long Term Cumulative (2050)
- Net New Project Shadow
- 2030 Net New Shadow Profiles
- 2030-2050 Net New Shadow

PREVISION DESIGN

B1.8

UCSF HOSPITAL PROJECT

Shading diagrams on the Summer Solstice

1:00 PM

SUMMER SOLSTICE
JUNE 21

Publicly Accessible Open Spaces (Ownership)
1. Golden Gate Park (RPD)
2. Richard Gamble Memorial Park (RPD)
3. Grattan Playground (RPD)
4. Interior Greenbelt (RPD)
5. Mount Sutro Open Space Preserve (UCSF)

SFUSD SCHOOLS
1. Independence High School
2. Grattan Elementary School

- Proposed Hospital Project
- Near Term Cumulative (2030)
- Long Term Cumulative (2050)
- Net New Project Shadow
- 2030 Net New Shadow Profiles
- 2030-2050 Net New Shadow

PREVISION DESIGN

B1.9

UCSF HOSPITAL PROJECT

Shading diagrams on the Summer Solstice

2:00 PM

SUMMER SOLSTICE
JUNE 21

Publicly Accessible Open Spaces (Ownership)
1. Golden Gate Park (RPD)
2. Richard Gamble Memorial Park (RPD)
3. Grattan Playground (RPD)
4. Interior Greenbelt (RPD)
5. Mount Sutro Open Space Preserve (UCSF)

SFUSD SCHOOLS
1. Independence High School
2. Grattan Elementary School

- Proposed Hospital Project
- Near Term Cumulative (2030)
- Long Term Cumulative (2050)
- Net New Project Shadow
- 2030 Net New Shadow Profiles
- 2030-2050 Net New Shadow

PREVISION DESIGN

B1.10

UCSF HOSPITAL PROJECT

Shading diagrams on the Summer Solstice

3:00 PM

SUMMER SOLSTICE
JUNE 21

Publicly Accessible Open Spaces (Ownership)
1. Golden Gate Park (RPD)
2. Richard Gamble Memorial Park (RPD)
3. Grattan Playground (RPD)
4. Interior Greenbelt (RPD)
5. Mount Sutro Open Space Preserve (UCSF)

SFUSD SCHOOLS
1. Independence High School
2. Grattan Elementary School

- Proposed Hospital Project
- Near Term Cumulative (2030)
- Long Term Cumulative (2050)
- Net New Project Shadow
- 2030 Net New Shadow Profiles
- 2030-2050 Net New Shadow

PREVISION DESIGN

B1.11

UCSF HOSPITAL PROJECT

Shading diagrams on the Summer Solstice

4:00 PM

SUMMER SOLSTICE
JUNE 21

Publicly Accessible Open Spaces (Ownership)
1. Golden Gate Park (RPD)
2. Richard Gamble Memorial Park (RPD)
3. Grattan Playground (RPD)
4. Interior Greenbelt (RPD)
5. Mount Sutro Open Space Preserve (UCSF)

SFUSD SCHOOLS
1. Independence High School
2. Grattan Elementary School

- Proposed Hospital Project
- Near Term Cumulative (2030)
- Long Term Cumulative (2050)
- Net New Project Shadow
- 2030 Net New Shadow Profiles
- 2030-2050 Net New Shadow

PREVISION DESIGN

B1.12

UCSF HOSPITAL PROJECT

Shading diagrams on the Summer Solstice

5:00 PM

SUMMER SOLSTICE
JUNE 21

Publicly Accessible Open Spaces (Ownership)
1. Golden Gate Park (RPD)
2. Richard Gamble Memorial Park (RPD)
3. Grattan Playground (RPD)
4. Interior Greenbelt (RPD)
5. Mount Sutro Open Space Preserve (UCSF)

SFUSD SCHOOLS
1. Independence High School
2. Grattan Elementary School

- Proposed Hospital Project
- Near Term Cumulative (2030)
- Long Term Cumulative (2050)
- Net New Project Shadow
- 2030 Net New Shadow Profiles
- 2030-2050 Net New Shadow

PREVISION DESIGN

B1.13

UCSF HOSPITAL PROJECT

Shading diagrams on the Summer Solstice

6:00 PM

SUMMER SOLSTICE
JUNE 21

Publicly Accessible Open Spaces (Ownership)
1. Golden Gate Park (RPD)
2. Richard Gamble Memorial Park (RPD)
3. Grattan Playground (RPD)
4. Interior Greenbelt (RPD)
5. Mount Sutro Open Space Preserve (UCSF)

SFUSD SCHOOLS
1. Independence High School
2. Grattan Elementary School

- Proposed Hospital Project
- Near Term Cumulative (2030)
- Long Term Cumulative (2050)
- Net New Project Shadow
- 2030 Net New Shadow Profiles
- 2030-2050 Net New Shadow

PREVISION DESIGN

B1.14

UCSF HOSPITAL PROJECT

Shading diagrams on the Summer Solstice

7:00 PM

SUMMER SOLSTICE
JUNE 21

Publicly Accessible Open Spaces (Ownership)
- 1 Golden Gate Park (RPD)
- 2 Richard Gamble Memorial Park (RPD)
- 3 Grattan Playground (RPD)
- 4 Interior Greenbelt (RPD)
- 5 Mount Sutro Open Space Preserve (UCSF)

SFUSD SCHOOLS
- 1 Independence High School
- 2 Grattan Elementary School

- Proposed Hospital Project
- Near Term Cumulative (2030)
- Long Term Cumulative (2050)
- Net New Project Shadow
- 2030 Net New Shadow Profiles
- 2030-2050 Net New Shadow

N

PREVISION DESIGN

B1.15

UCSF HOSPITAL PROJECT

Shading diagrams on the Summer Solstice

7:36 PM

SUMMER SOLSTICE
JUNE 21

Publicly Accessible Open Spaces (Ownership)
1. Golden Gate Park (RPD)
2. Richard Gamble Memorial Park (RPD)
3. Grattan Playground (RPD)
4. Interior Greenbelt (RPD)
5. Mount Sutro Open Space Preserve (UCSF)

SFUSD SCHOOLS
1. Independence High School
2. Grattan Elementary School

- Proposed Hospital Project
- Near Term Cumulative (2030)
- Long Term Cumulative (2050)
- Net New Project Shadow
- 2030 Net New Shadow Profiles
- 2030-2050 Net New Shadow

N

PREVISION DESIGN

C1.1

UCSF HOSPITAL PROJECT

Shading diagrams near the Fall/Spring Equinoxes

7:57 AM

APPROX. FALL EQUINOX (SPRING SIMILAR)
SEPTEMBER 20

Publicly Accessible Open Spaces (Ownership)
1. Golden Gate Park (RPD)
2. Richard Gamble Memorial Park (RPD)
3. Grattan Playground (RPD)
4. Interior Greenbelt (RPD)
5. Mount Sutro Open Space Preserve (UCSF)

SFUSD SCHOOLS
1. Independence High School
2. Grattan Elementary School

- Proposed Hospital Project
- Near Term Cumulative (2030)
- Long Term Cumulative (2050)
- Net New Project Shadow
- 2030 Net New Shadow Profiles
- 2030-2050 Net New Shadow

PREVISION DESIGN

C1.2

UCSF HOSPITAL PROJECT

Shading diagrams near the Fall/Spring Equinoxes

8:00 AM

APPROX. FALL EQUINOX (SPRING SIMILAR)
SEPTEMBER 20

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PREVISION DESIGN

C1.3

UCSF HOSPITAL PROJECT

Shading diagrams near the Fall/Spring Equinoxes

9:00 AM

APPROX. FALL EQUINOX (SPRING SIMILAR)
SEPTEMBER 20

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- Proposed Hospital Project
- Near Term Cumulative (2030)
- Long Term Cumulative (2050)
- Net New Project Shadow
- 2030 Net New Shadow Profiles
- 2030-2050 Net New Shadow

N

PREVISION DESIGN

C1.4

UCSF HOSPITAL PROJECT

Shading diagrams near the Fall/Spring Equinoxes

10:00 AM

APPROX. FALL EQUINOX (SPRING SIMILAR) SEPTEMBER 20

Publicly Accessible Open Spaces (Ownership)
- 1 Golden Gate Park (RPD)
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SFUSD SCHOOLS
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- Proposed Hospital Project
- Near Term Cumulative (2030)
- Long Term Cumulative (2050)
- Net New Project Shadow
- 2030 Net New Shadow Profiles
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PREVISION DESIGN

C1.5

UCSF HOSPITAL PROJECT

Shading diagrams near the Fall/Spring Equinoxes

11:00 AM

APPROX. FALL EQUINOX (SPRING SIMILAR)
SEPTEMBER 20

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- Long Term Cumulative (2050)
- Net New Project Shadow
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PREVISION DESIGN

C1.6

UCSF HOSPITAL PROJECT

Shading diagrams near the Fall/Spring Equinoxes

12:00 PM

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SEPTEMBER 20

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PREVISION DESIGN

C1.7

UCSF HOSPITAL PROJECT

Shading diagrams near the Fall/Spring Equinoxes

1:00 PM

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SEPTEMBER 20

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PREVISION DESIGN

C1.8

UCSF HOSPITAL PROJECT

Shading diagrams near the Fall/Spring Equinoxes

2:00 PM

APPROX. FALL EQUINOX (SPRING SIMILAR)
SEPTEMBER 20

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PREVISION DESIGN

C1.9

UCSF HOSPITAL PROJECT

Shading diagrams near the Fall/Spring Equinoxes

3:00 PM

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SEPTEMBER 20

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PREVISION DESIGN

C1.10

UCSF HOSPITAL PROJECT

Shading diagrams near the Fall/Spring Equinoxes

4:00 PM

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PREVISION DESIGN

C1.11

UCSF HOSPITAL PROJECT

Shading diagrams near the Fall/Spring Equinoxes

5:00 PM

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PREVISION DESIGN

C1.12

UCSF HOSPITAL PROJECT

Shading diagrams near the Fall/Spring Equinoxes

6:00 PM

APPROX. FALL EQUINOX (SPRING SIMILAR)
SEPTEMBER 20

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PREVISION DESIGN

C1.13

UCSF HOSPITAL PROJECT

Shading diagrams near the Fall/Spring Equinoxes

6:09 PM

APPROX. FALL EQUINOX (SPRING SIMILAR)
SEPTEMBER 20

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PREVISION DESIGN

D1.1

UCSF HOSPITAL PROJECT

Shading diagrams on the Winter Solstice

8:19 AM

WINTER SOLSTICE
DECEMBER 20

Publicly Accessible Open Spaces (Ownership)
1. Golden Gate Park (RPD)
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PREVISION DESIGN

D1.2

UCSF HOSPITAL PROJECT

Shading diagrams on the Winter Solstice

9:00 AM

WINTER SOLSTICE
DECEMBER 20

Publicly Accessible Open Spaces (Ownership)
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N

PREVISION DESIGN

D1.3

UCSF HOSPITAL PROJECT

Shading diagrams on the Winter Solstice

10:00 AM

WINTER SOLSTICE
DECEMBER 20

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N

PREVISION DESIGN

D1.4

UCSF HOSPITAL PROJECT

Shading diagrams on the Winter Solstice

11:00 AM

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DECEMBER 20

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PREVISION DESIGN

D1.5

UCSF HOSPITAL PROJECT

Shading diagrams on the Winter Solstice

12:00 PM

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DECEMBER 20

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PREVISION DESIGN

D1.6

UCSF HOSPITAL PROJECT

Shading diagrams on the Winter Solstice

1:00 PM

WINTER SOLSTICE
DECEMBER 20

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N

PREVISION DESIGN

D1.7

UCSF HOSPITAL PROJECT

Shading diagrams on the Winter Solstice

2:00 PM

WINTER SOLSTICE
DECEMBER 20

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PREVISION DESIGN

D1.8

UCSF HOSPITAL PROJECT

Shading diagrams on the Winter Solstice

3:00 PM

WINTER SOLSTICE
DECEMBER 20

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N

PREVISION DESIGN

D1.9

UCSF HOSPITAL PROJECT

Shading diagrams on the Winter Solstice

3:54 PM

WINTER SOLSTICE
DECEMBER 20

Publicly Accessible Open Spaces (Ownership)
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PROJECT: UCSF Hospital Project
OPEN SPACE: Golden Gate Park

PREVISION DESIGN

JUNE 21

Summer solstice

Analysis hours: 6:46 AM-7:36 PM (PDT)

Analysis Time	EXISTING SHADOW (PARTIAL AREA ONLY)			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
6:46 AM	633,376.06	69,671.37	1.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 AM	462,181.30	106,301.70	1.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 AM	349,162.42	87,290.61	0.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 AM	273,405.04	68,351.26	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	222,318.18	55,579.55	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	184,439.49	46,109.87	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	156,788.75	39,197.19	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	137,338.01	34,334.50	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	121,537.58	30,384.40	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	109,669.63	27,417.41	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	100,376.30	25,094.08	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	92,687.70	23,171.93	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	85,704.48	21,426.12	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	78,509.65	19,627.41	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	71,843.84	17,960.96	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	66,095.03	16,523.76	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	60,839.98	15,209.99	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	55,355.68	13,838.92	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	50,276.97	12,569.24	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	45,991.81	11,497.95	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	41,741.92	10,435.48	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	37,421.49	9,355.37	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	33,330.31	8,332.58	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	29,697.63	7,424.41	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	27,616.77	6,904.19	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	25,888.59	6,472.15	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	27,634.40	6,908.60	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	29,098.06	7,274.51	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	31,655.04	7,913.76	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	33,876.98	8,469.24	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	36,963.00	9,240.75	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	40,472.24	10,118.06	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	45,074.82	11,268.71	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	49,659.77	12,414.94	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	54,544.50	13,636.12	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	59,535.03	14,883.76	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	65,125.14	16,281.28	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	71,685.13	17,921.28	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	79,056.31	19,764.08	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	86,674.37	21,668.59	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	95,191.79	23,797.95	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	105,296.30	26,324.08	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	115,876.94	28,969.24	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	128,820.59	32,205.15	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	143,139.72	35,784.93	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	159,433.91	39,858.48	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	179,096.27	44,774.07	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	207,346.58	51,836.64	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	245,084.19	61,271.05	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 PM	300,967.61	75,241.90	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 PM	405,045.84	121,513.75	0.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:36 PM	669,350.23	120,483.04	1.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Golden Gate Park

PREVISION DESIGN

JUNE 28

Mirror date: June 14
Analysis hours: 6:48 AM-7:36 PM (PDT)

Analysis Time	EXISTING SHADOW (PARTIAL AREA ONLY)			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
6:48 AM	629,708.10	62,970.81	1.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 AM	483,148.60	106,292.69	1.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 AM	360,183.92	90,045.98	0.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 AM	281,305.25	70,326.31	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	228,490.22	57,122.56	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	188,618.84	47,154.71	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	159,645.52	39,911.38	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	139,365.96	34,841.49	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	123,371.56	30,842.89	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	111,115.65	27,778.91	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	101,381.46	25,345.37	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	93,393.08	23,348.27	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	86,603.84	21,650.96	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	79,373.73	19,843.43	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	72,831.37	18,207.84	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	67,012.02	16,753.00	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	61,510.08	15,377.52	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	55,990.52	13,997.63	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	50,770.73	12,692.68	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	46,855.90	11,713.97	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	42,270.95	10,567.74	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	38,003.43	9,500.86	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	33,771.17	8,442.79	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	30,297.19	7,574.30	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	27,987.09	6,996.77	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	26,047.30	6,511.83	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	27,440.42	6,860.11	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	28,956.98	7,239.25	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	31,655.04	7,913.76	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	33,824.08	8,456.02	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	36,892.46	9,223.12	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	40,101.92	10,025.48	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	44,898.48	11,224.62	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	49,483.42	12,370.86	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	54,279.98	13,569.99	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	58,970.73	14,742.68	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	64,384.49	16,096.12	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	71,138.47	17,784.62	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	78,456.74	19,614.19	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	85,969.00	21,492.25	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	94,380.61	23,595.15	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	104,185.33	26,046.33	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	114,818.88	28,704.72	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	127,762.53	31,940.63	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	141,975.85	35,493.96	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	158,128.96	39,532.24	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	177,914.76	44,478.69	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	205,071.74	51,267.93	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	240,252.37	60,063.09	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 PM	294,813.20	73,703.30	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 PM	396,704.77	119,011.43	0.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:36 PM	664,588.94	119,626.01	1.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Golden Gate Park

PREVISION DESIGN

JULY 5

Mirror date: June 7
Analysis hours: 6:52 AM-7:36 PM (PDT)

Analysis Time	EXISTING SHADOW (PARTIAL AREA ONLY)			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
6:52 AM	622,160.58	37,329.63	1.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 AM	517,712.02	98,365.28	1.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 AM	377,430.37	94,357.59	0.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 AM	294,337.07	73,584.27	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	237,325.06	59,331.26	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	195,143.57	48,785.89	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	163,771.97	40,942.99	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	142,822.30	35,705.58	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	125,822.74	31,455.69	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	113,125.97	28,281.49	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	103,427.05	25,856.76	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	95,050.71	23,762.68	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	87,820.61	21,955.15	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	80,467.06	20,116.77	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	74,118.68	18,529.67	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	67,946.64	16,986.66	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	62,338.90	15,584.73	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	56,678.26	14,169.56	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	51,793.53	12,948.38	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	47,526.00	11,881.50	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	43,082.14	10,770.53	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	38,567.73	9,641.93	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	34,370.74	8,592.69	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	31,020.21	7,755.05	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	28,586.66	7,146.66	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	26,541.07	6,635.27	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	27,916.55	6,979.14	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	29,538.92	7,384.73	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	31,954.83	7,988.71	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	33,947.52	8,486.88	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	37,174.61	9,293.65	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	40,207.73	10,051.93	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	45,021.92	11,255.48	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	49,395.25	12,348.81	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	54,068.37	13,517.09	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	58,794.39	14,698.60	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	64,402.13	16,100.53	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	70,926.85	17,731.71	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	78,015.88	19,503.97	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	86,233.51	21,558.38	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	94,362.97	23,590.74	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	103,621.03	25,905.26	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	114,466.19	28,616.55	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	127,374.57	31,843.64	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	141,922.95	35,480.74	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	158,058.43	39,514.61	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	177,438.63	44,359.66	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	204,683.78	51,170.95	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	241,310.43	60,327.61	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 PM	295,254.06	73,813.52	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 PM	397,498.32	119,249.49	0.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:36 PM	655,419.06	117,975.43	1.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Golden Gate Park

PREVISION DESIGN

JULY 12

Mirror date: May 31
Analysis hours: 6:56 AM-7:33 PM (PDT)

Analysis Time	EXISTING SHADOW (PARTIAL AREA ONLY)			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
6:56 AM	610,892.20	18,326.77	1.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 AM	561,903.83	84,285.57	1.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 AM	402,506.49	100,626.62	0.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 AM	311,001.58	77,750.40	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	247,694.08	61,923.52	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	202,973.24	50,743.31	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	170,384.87	42,596.22	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	147,160.37	36,790.09	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	129,173.28	32,293.32	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	116,000.38	29,000.10	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	105,807.70	26,451.92	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	97,096.30	24,274.08	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	89,337.17	22,334.29	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	82,107.06	20,526.77	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	75,582.34	18,895.58	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	69,198.68	17,299.67	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	63,291.16	15,822.79	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	57,806.86	14,451.71	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	53,239.55	13,309.89	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	48,495.90	12,123.97	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	44,052.03	11,013.01	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	39,572.89	9,893.22	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	35,234.83	8,808.71	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	31,972.46	7,993.12	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	29,538.92	7,384.73	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	27,369.88	6,842.47	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	28,639.56	7,159.89	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	30,173.75	7,543.44	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	32,695.47	8,173.87	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	34,758.70	8,689.67	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	37,791.82	9,447.95	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	40,701.49	10,175.37	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	45,339.34	11,334.83	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	49,730.30	12,432.58	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	54,632.67	13,658.17	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	59,305.78	14,826.45	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	64,966.43	16,241.61	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	71,138.47	17,784.62	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	78,156.96	19,539.24	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	86,127.71	21,531.93	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	95,174.15	23,793.54	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	104,396.95	26,099.24	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	115,012.85	28,753.21	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	127,709.62	31,927.41	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	142,240.37	35,560.09	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	158,834.34	39,708.58	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	178,620.14	44,655.03	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	207,134.96	51,783.74	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	244,608.06	61,152.02	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 PM	301,320.30	75,330.07	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 PM	409,048.85	114,533.68	0.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:33 PM	640,288.74	96,043.31	1.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Golden Gate Park

PREVISION DESIGN

JULY 19

Mirror date: May 24
Analysis hours: 7:01 AM-7:30 PM (PDT)

Analysis Time	EXISTING SHADOW (PARTIAL AREA ONLY)			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:01 AM	600,646.61	78,084.06	1.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:16 AM	423,174.00	101,561.76	0.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 AM	334,349.53	80,243.89	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	261,043.32	65,260.83	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	213,430.44	53,357.61	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	177,438.63	44,359.66	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	152,133.27	38,033.32	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	133,581.88	33,395.47	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	119,368.55	29,842.14	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	108,858.45	27,214.61	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	99,759.10	24,939.77	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	91,382.76	22,845.69	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	84,187.92	21,046.98	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	77,363.41	19,340.85	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	70,768.14	17,692.04	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	64,807.72	16,201.93	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	59,006.00	14,751.50	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	54,562.13	13,640.53	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	49,642.13	12,410.53	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	45,127.73	11,281.93	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	40,789.66	10,197.42	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	36,486.87	9,121.72	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	33,012.89	8,253.22	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	31,143.65	7,785.91	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	28,904.08	7,226.02	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	30,173.75	7,543.44	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	31,461.07	7,865.27	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	34,035.69	8,508.92	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	36,116.55	9,029.14	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	39,061.49	9,765.37	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	41,600.85	10,400.21	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	46,238.69	11,559.67	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	50,594.39	12,648.60	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	55,532.02	13,883.01	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	60,416.75	15,104.19	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	65,759.97	16,439.99	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	71,967.28	17,991.82	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	79,021.04	19,755.26	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	86,780.18	21,695.04	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	95,914.80	23,978.70	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	105,754.79	26,438.70	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	116,106.19	29,026.55	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	128,996.93	32,249.23	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	143,668.76	35,917.19	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	161,497.13	40,374.28	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	181,900.14	45,475.03	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	211,719.91	52,929.98	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	252,384.83	63,096.21	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 PM	313,452.76	78,363.19	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 PM	431,250.56	107,812.64	1.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 PM	621,331.76	80,773.13	1.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Golden Gate Park

PREVISION DESIGN

JULY 26

Mirror date: May 17
Analysis hours: 7:07 AM-7:25 PM (PDT)

Analysis Time	EXISTING SHADOW (PARTIAL AREA ONLY)			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:07 AM	586,979.95	35,218.80	1.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 AM	481,526.23	91,489.98	1.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 AM	361,083.28	90,270.82	0.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	281,428.69	70,357.17	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	227,061.84	56,765.46	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	186,344.00	46,586.00	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	159,151.76	39,787.94	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	138,836.93	34,709.23	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	123,495.00	30,873.75	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	112,614.58	28,153.64	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	102,845.12	25,711.28	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	93,992.65	23,498.16	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	86,304.05	21,576.01	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	79,038.68	19,759.67	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	72,355.24	18,088.81	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	66,394.81	16,598.70	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	61,086.86	15,271.71	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	55,990.52	13,997.63	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	51,246.86	12,811.72	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	46,467.94	11,616.99	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	42,253.32	10,563.33	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	38,038.70	9,509.67	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	34,829.24	8,707.31	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	32,360.42	8,090.10	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	30,579.35	7,644.84	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	31,937.19	7,984.30	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	33,347.95	8,336.99	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	35,746.22	8,936.56	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	38,038.70	9,509.67	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	40,913.10	10,228.28	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	43,470.09	10,867.52	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	47,631.81	11,907.95	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	52,128.58	13,032.15	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	56,995.68	14,248.92	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	61,792.23	15,448.06	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	67,170.73	16,792.68	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	73,501.48	18,375.37	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	80,749.21	20,187.30	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	88,085.13	22,021.28	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	97,695.87	24,423.97	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	107,624.04	26,906.01	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	118,275.22	29,568.80	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	131,606.83	32,901.71	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	146,772.41	36,693.10	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	164,918.21	41,229.55	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	186,661.42	46,665.36	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	218,826.57	54,706.64	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	263,088.92	65,772.23	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 PM	334,896.19	83,724.05	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 PM	467,894.84	98,257.92	1.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:25 PM	604,226.39	54,380.38	1.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Golden Gate Park

PREVISION DESIGN

AUGUST 2

Mirror date: May 10
Analysis hours: 7:12 AM-7:18 PM (PDT)

Analysis Time	EXISTING SHADOW (PARTIAL AREA ONLY)			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:12 AM	647,906.80	12,958.14	1.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 AM	541,447.93	81,217.19	1.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 AM	411,394.22	102,848.56	0.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	332,321.57	83,080.39	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	285,978.37	71,494.59	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	251,750.00	62,937.50	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	227,714.31	56,928.58	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	209,497.97	52,374.49	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	195,355.18	48,838.80	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	187,790.03	46,947.51	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	177,209.39	44,302.35	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	172,430.46	43,107.62	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	160,051.11	40,012.78	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	158,799.07	39,699.77	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	144,091.98	36,023.00	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	147,565.96	36,891.49	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	128,291.56	32,072.89	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	137,108.76	34,277.19	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	114,184.04	28,546.01	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	124,782.31	31,195.58	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	100,993.51	25,248.38	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	111,380.17	27,845.04	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	87,309.21	21,827.30	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	99,829.64	24,957.41	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	79,444.27	19,861.07	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	94,010.28	23,502.57	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	74,806.42	18,701.61	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	89,143.19	22,285.80	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	69,904.06	17,476.01	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	82,212.87	20,553.22	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	69,075.24	17,268.81	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	75,176.74	18,794.19	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	68,264.06	17,066.01	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	74,153.95	18,538.49	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	70,556.53	17,639.13	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	75,670.51	18,917.63	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	77,663.19	19,415.80	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	83,341.47	20,835.37	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	90,659.75	22,664.94	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	100,129.42	25,032.36	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	110,357.37	27,589.34	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	122,348.77	30,587.19	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	135,168.97	33,792.24	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	150,651.98	37,662.99	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	169,820.57	42,455.14	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	196,307.44	49,076.86	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	230,676.89	57,669.22	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	282,610.20	70,652.55	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 PM	367,237.68	91,809.42	0.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 PM	529,544.71	79,431.71	1.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:18 PM	582,500.81	17,475.02	1.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Golden Gate Park

PREVISION DESIGN

AUGUST 9

Mirror date: May 3
Analysis hours: 7:19 AM-7:10 PM (PDT)

Analysis Time	EXISTING SHADOW (PARTIAL AREA ONLY)			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:19 AM	556,842.76	50,115.85	1.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 AM	432,855.29	90,899.61	1.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	333,185.66	83,296.41	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	261,748.70	65,437.18	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	208,845.50	52,211.37	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	175,481.21	43,870.30	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	152,662.30	38,165.57	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	134,481.23	33,620.31	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	120,691.13	30,172.78	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	109,510.92	27,377.73	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	99,582.75	24,895.69	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	91,488.56	22,872.14	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	83,852.87	20,963.22	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	76,834.38	19,208.59	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	71,085.56	17,771.39	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	65,142.77	16,285.69	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	59,623.20	14,905.80	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	54,756.11	13,689.03	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	50,135.90	12,533.97	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	45,533.32	11,383.33	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	41,777.19	10,444.30	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	38,303.21	9,575.80	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	36,098.91	9,024.73	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	35,393.54	8,848.38	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	36,557.41	9,139.35	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	38,373.75	9,593.44	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	40,772.03	10,193.01	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	43,152.67	10,788.17	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	46,238.69	11,559.67	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	49,007.29	12,251.82	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	52,410.73	13,102.68	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	57,101.48	14,275.37	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	62,003.85	15,500.96	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	66,959.11	16,739.78	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	72,990.08	18,247.52	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	78,985.77	19,746.44	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	86,057.17	21,514.29	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	93,587.06	23,396.76	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	103,726.84	25,931.71	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	113,990.06	28,497.51	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	129,208.55	32,302.14	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	144,532.84	36,133.21	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	164,459.71	41,114.93	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	188,089.81	47,022.45	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	221,559.90	55,389.98	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	262,277.73	65,569.43	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	310,472.55	105,560.67	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:10 PM	522,102.99	109,641.63	1.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Golden Gate Park

PREVISION DESIGN

AUGUST 16

Mirror date: April 26
Analysis hours: 7:25 AM-7:02 PM (PDT)

Analysis Time	EXISTING SHADOW (PARTIAL AREA ONLY)			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:25 AM	548,554.59	21,942.18	1.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 AM	489,373.54	83,193.50	1.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	365,103.92	91,275.98	0.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	285,502.24	71,375.56	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	228,578.39	57,144.60	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	188,742.28	47,185.57	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	161,320.79	40,330.20	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	140,706.18	35,176.54	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	125,099.73	31,274.93	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	113,143.61	28,285.90	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	103,303.61	25,825.90	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	94,627.49	23,656.87	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	87,203.41	21,800.85	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	79,955.67	19,988.92	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	73,818.90	18,454.72	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	67,364.70	16,841.18	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	61,704.06	15,426.02	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	56,766.43	14,191.61	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	51,599.55	12,899.89	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	47,420.20	11,855.05	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	43,910.95	10,977.74	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	40,913.10	10,228.28	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	38,550.09	9,637.52	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	38,021.06	9,505.27	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	39,149.66	9,787.42	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	41,442.14	10,360.53	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	43,946.22	10,986.56	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	46,362.13	11,590.53	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	49,342.35	12,335.59	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	52,393.10	13,098.27	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	55,972.88	13,993.22	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	60,169.87	15,042.47	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	65,283.85	16,320.96	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	70,926.85	17,731.71	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	77,081.26	19,270.31	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	83,376.74	20,844.19	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	90,395.23	22,598.81	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	98,471.79	24,617.95	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	107,888.56	26,972.14	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	118,716.08	29,679.02	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	132,012.42	33,003.10	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	146,895.85	36,723.96	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	165,941.00	41,485.25	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	188,389.59	47,097.40	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	222,494.53	55,623.63	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	271,359.45	67,839.86	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	350,008.87	94,502.40	0.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:02 PM	535,452.23	74,963.31	1.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Golden Gate Park

PREVISION DESIGN

AUGUST 23

Mirror date: April 19
Analysis hours: 7:31 AM-6:52 PM (PDT)

Analysis Time	EXISTING SHADOW (PARTIAL AREA ONLY)			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:31 AM	545,539.11	60,009.30	1.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	408,484.55	93,951.45	0.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	311,336.63	77,834.16	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	248,840.32	62,210.08	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	201,015.83	50,253.96	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	169,820.57	42,455.14	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	147,953.91	36,988.48	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	130,725.11	32,681.28	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	118,275.22	29,568.80	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	107,606.41	26,901.60	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	98,383.62	24,595.90	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	90,095.45	22,523.86	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	82,653.73	20,663.43	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	76,076.10	19,019.02	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	69,710.08	17,427.52	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	63,890.73	15,972.68	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	58,582.77	14,645.69	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	53,415.89	13,353.97	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	49,924.28	12,481.07	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	46,379.77	11,594.94	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	43,099.77	10,774.94	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	41,248.16	10,312.04	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	41,265.79	10,316.45	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	42,976.33	10,744.08	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	44,686.87	11,171.72	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	47,314.39	11,828.60	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	49,783.21	12,445.80	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	53,080.84	13,270.21	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	56,131.59	14,032.90	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	59,552.67	14,888.17	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	63,784.92	15,946.23	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	69,445.56	17,361.39	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	74,612.44	18,653.11	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	81,578.03	20,394.51	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	88,596.52	22,149.13	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	96,214.58	24,053.65	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	104,502.75	26,125.69	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	113,972.43	28,493.11	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	125,099.73	31,274.93	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	138,660.59	34,665.15	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	155,642.51	38,910.63	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	177,015.41	44,253.85	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	205,195.18	51,298.79	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	244,608.06	61,152.02	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	308,920.72	77,230.18	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	417,495.73	79,324.19	0.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:52 PM	516,036.76	30,962.21	1.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Golden Gate Park

PREVISION DESIGN

AUGUST 30

Mirror date: April 12
Analysis hours: 7:37 AM-6:42 PM (PDT)

Analysis Time	EXISTING SHADOW (PARTIAL AREA ONLY)			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:37 AM	721,054.29	43,263.26	1.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	759,920.51	144,384.90	1.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	654,960.56	163,740.14	1.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	576,170.06	144,042.52	1.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	521,080.19	130,270.05	1.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	490,801.93	122,700.48	1.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	465,990.33	116,497.58	1.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	461,687.53	115,421.88	1.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	447,050.98	111,762.75	1.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	452,958.50	113,239.63	1.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	433,454.86	108,363.71	1.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	440,279.37	110,069.84	1.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	413,898.31	103,474.58	0.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	420,370.13	105,092.53	0.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	387,217.46	96,804.36	0.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	392,472.51	98,118.13	0.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	352,618.77	88,154.69	0.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	357,291.88	89,322.97	0.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	313,999.43	78,499.86	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	318,743.08	79,685.77	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	272,964.18	68,241.04	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	280,952.56	70,238.14	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	244,837.31	61,209.33	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	263,582.68	65,895.67	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	225,880.33	56,470.08	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	244,590.43	61,147.61	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	201,104.00	50,276.00	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	214,999.91	53,749.98	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	171,002.08	42,750.52	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	175,057.99	43,764.50	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	145,837.79	36,459.45	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	146,243.38	36,560.84	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	130,548.76	32,637.19	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	134,269.62	33,567.40	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	126,916.07	31,729.02	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	129,508.33	32,377.08	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	127,127.69	31,781.92	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	130,654.57	32,663.64	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	137,267.47	34,316.87	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	148,976.71	37,244.18	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	166,646.38	41,661.59	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	192,639.49	48,159.87	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	229,283.77	57,320.94	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	276,561.60	69,140.40	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	362,599.84	83,397.96	0.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:42 PM	494,857.84	54,434.36	1.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Golden Gate Park

PREVISION DESIGN

SEPTEMBER 6

Mirror date: April 5
Analysis hours: 7:44 AM-6:31 PM (PDT)

Analysis Time	EXISTING SHADOW (PARTIAL AREA ONLY)			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:44 AM	555,044.05	72,155.73	1.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	393,812.73	98,453.18	0.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	303,224.81	75,806.20	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	239,017.96	59,754.49	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	195,460.99	48,865.25	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	164,953.48	41,238.37	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	144,532.84	36,133.21	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	128,767.69	32,191.92	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	116,741.03	29,185.26	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	106,266.19	26,566.55	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	97,660.60	24,415.15	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	89,266.63	22,316.66	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	81,666.20	20,416.55	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	74,965.13	18,741.28	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	69,075.24	17,268.81	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	63,238.25	15,809.56	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	59,323.42	14,830.85	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	55,373.31	13,843.33	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	52,040.41	13,010.10	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	48,830.95	12,207.74	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	48,442.99	12,110.75	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	49,271.81	12,317.95	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	51,088.15	12,772.04	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	53,080.84	13,270.21	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	55,902.34	13,975.59	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	58,371.16	14,592.79	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	62,003.85	15,500.96	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	65,759.97	16,439.99	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	69,674.81	17,418.70	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	73,624.92	18,406.23	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	79,179.75	19,794.94	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	85,334.16	21,333.54	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	92,687.70	23,171.93	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	100,940.60	25,235.15	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	110,286.84	27,571.71	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	119,527.26	29,881.82	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	130,725.11	32,681.28	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	146,313.92	36,578.48	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	167,863.15	41,965.79	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	194,755.61	48,688.90	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	224,222.70	56,055.67	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	266,703.97	66,675.99	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	340,821.35	92,021.77	0.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:31 PM	490,184.72	68,625.86	1.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Golden Gate Park

PREVISION DESIGN

SEPTEMBER 13

Mirror date: March 29
Analysis hours: 7:50 AM-6:21 PM (PDT)

Analysis Time	EXISTING SHADOW (PARTIAL AREA ONLY)			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:50 AM	576,117.16	46,089.37	1.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	462,234.20	97,069.18	1.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	342,214.47	85,553.62	0.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	263,688.48	65,922.12	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	214,594.31	53,648.58	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	176,556.91	44,139.23	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	152,873.91	38,218.48	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	135,080.80	33,770.20	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	122,225.32	30,556.33	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	110,974.58	27,743.64	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	101,610.71	25,402.68	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	92,934.59	23,233.65	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	85,210.72	21,302.68	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	78,139.32	19,534.83	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	71,491.15	17,872.79	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	66,641.69	16,660.42	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	62,550.51	15,637.63	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	58,547.50	14,636.88	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	55,020.62	13,755.16	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	52,498.91	13,124.73	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	52,534.17	13,133.54	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	54,050.73	13,512.68	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	55,972.88	13,993.22	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	58,089.01	14,522.25	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	60,698.90	15,174.73	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	63,344.06	15,836.02	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	67,770.30	16,942.57	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	71,297.18	17,824.29	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	75,476.53	18,869.13	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	79,567.71	19,891.93	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	85,157.81	21,289.45	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	92,229.21	23,057.30	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	99,653.29	24,913.32	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	108,241.24	27,060.31	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	118,575.00	29,643.75	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	129,067.47	32,266.87	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	141,534.99	35,383.75	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	156,312.62	39,078.16	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	175,851.54	43,962.88	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	202,673.46	50,668.36	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	248,857.95	62,214.49	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	307,686.31	76,921.58	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	404,587.34	72,825.72	0.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:21 PM	476,253.55	23,812.68	1.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Golden Gate Park

PREVISION DESIGN

SEPTEMBER 20

Fall equinox (Spring equinox on March 22 similar)
Analysis hours: 7:57 AM-6:09 PM (PDT)

Analysis Time	EXISTING SHADOW (PARTIAL AREA ONLY)			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:57 AM	603,609.19	12,072.18	1.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	553,703.83	83,055.58	1.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	397,868.64	99,467.16	0.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	299,327.61	74,831.90	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	233,727.64	58,431.91	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	193,609.38	48,402.34	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	163,348.75	40,837.19	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	142,504.88	35,626.22	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	128,644.25	32,161.06	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	116,300.17	29,075.04	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	106,125.12	26,531.28	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	96,725.98	24,181.50	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	89,160.82	22,290.21	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	81,401.69	20,350.42	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	75,353.09	18,838.27	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	70,503.63	17,625.91	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	65,918.68	16,479.67	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	62,092.02	15,523.00	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	58,988.36	14,747.09	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	56,642.99	14,160.75	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	57,507.07	14,376.77	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	58,565.14	14,641.28	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	61,192.66	15,298.17	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	63,150.08	15,787.52	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	66,341.91	16,585.48	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	69,110.51	17,277.63	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	73,748.36	18,437.09	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	77,451.58	19,362.90	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	82,212.87	20,553.22	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	86,409.86	21,602.46	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	92,282.11	23,070.53	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	99,388.78	24,847.19	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	108,082.54	27,020.63	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	117,270.06	29,317.51	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	128,291.56	32,072.89	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	140,582.74	35,145.68	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	155,272.19	38,818.05	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	172,747.88	43,186.97	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	196,783.57	49,195.89	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	230,747.42	57,686.86	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	282,874.71	70,718.68	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	373,356.82	78,404.93	0.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:09 PM	464,738.28	37,179.06	1.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Golden Gate Park

PREVISION DESIGN

SEPTEMBER 27

Mirror date: March 15
Analysis hours: 8:03 AM-5:58 PM (PDT)

Analysis Time	EXISTING SHADOW (PARTIAL AREA ONLY)			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
8:03 AM	898,156.58	89,815.66	2.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	604,773.06	133,050.07	1.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	485,088.38	121,272.10	1.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	421,763.25	105,440.81	0.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	366,355.96	91,588.99	0.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	351,437.26	87,859.32	0.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	320,947.38	80,236.85	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	323,998.13	80,999.53	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	297,758.15	74,439.54	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	314,017.06	78,504.27	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	283,721.16	70,930.29	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	301,461.37	75,365.34	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	267,673.86	66,918.46	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	285,343.53	71,335.88	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	248,875.59	62,218.90	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	265,910.42	66,477.60	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	228,860.54	57,215.14	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	244,026.13	61,006.53	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	208,933.67	52,233.42	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	317,949.53	79,487.38	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	264,041.17	66,010.29	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	288,782.24	72,195.56	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	179,977.99	44,994.50	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	192,463.14	48,115.79	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	165,217.99	41,304.50	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	173,629.60	43,407.40	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	157,141.44	39,285.36	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	163,577.99	40,894.50	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	148,624.02	37,156.01	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	153,702.73	38,425.68	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	141,781.87	35,445.47	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	147,865.74	36,966.44	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	144,656.28	36,164.07	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	154,231.76	38,557.94	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	160,104.02	40,026.00	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	173,929.39	43,482.35	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	193,856.26	48,464.06	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	225,598.18	56,399.54	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	270,301.38	67,575.35	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	347,980.92	80,035.61	0.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:58 PM	468,053.55	51,485.89	1.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Golden Gate Park

PREVISION DESIGN

OCTOBER 4

Mirror date: March 8

Analysis hours: 8:09 AM-5:47 PM (PDT)

Analysis Time	EXISTING SHADOW (PARTIAL AREA ONLY)			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
8:09 AM	724,845.69	28,993.83	1.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	621,754.99	105,698.35	1.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	426,066.04	106,516.51	1.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	316,186.09	79,046.52	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	243,655.81	60,913.95	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	198,035.61	49,508.90	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	165,958.64	41,489.66	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	144,515.21	36,128.80	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	129,667.04	32,416.76	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	117,622.75	29,405.69	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	107,288.99	26,822.25	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	97,766.41	24,441.60	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	90,430.50	22,607.63	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	84,646.42	21,161.60	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	78,915.24	19,728.81	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	74,559.54	18,639.89	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	70,662.34	17,665.58	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	67,435.24	16,858.81	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	67,047.29	16,761.82	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	68,122.98	17,030.75	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	69,216.32	17,304.08	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	72,319.97	18,079.99	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	75,000.40	18,750.10	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	78,668.36	19,667.09	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	82,089.43	20,522.36	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	86,833.08	21,708.27	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	91,312.22	22,828.06	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	97,096.30	24,274.08	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	102,686.41	25,671.60	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	109,246.41	27,311.60	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	116,917.37	29,229.34	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	127,427.47	31,856.87	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	367,449.30	91,862.32	0.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	152,397.78	38,099.45	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	328,829.96	82,207.49	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	191,951.74	47,987.94	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	314,528.46	78,632.12	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	334,896.19	83,724.05	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	376,213.59	101,577.67	0.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:47 PM	513,850.09	71,939.01	1.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Golden Gate Park

PREVISION DESIGN

OCTOBER 11

Mirror date: March 1
Analysis hours: 8:16 AM-5:37 PM (PDT)

Analysis Time	EXISTING SHADOW (PARTIAL AREA ONLY)			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
8:16 AM	807,833.18	96,939.98	1.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	549,489.21	131,877.41	1.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	388,839.82	97,209.96	0.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	291,374.49	72,843.62	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	227,608.50	56,902.13	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	183,346.16	45,836.54	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	157,123.80	39,280.95	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	138,819.30	34,704.82	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	125,611.13	31,402.78	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	113,848.98	28,462.25	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	104,608.56	26,152.14	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	96,690.71	24,172.68	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	90,448.13	22,612.03	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	84,875.66	21,218.92	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	80,008.57	20,002.14	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	75,793.95	18,948.49	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	73,042.98	18,260.75	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	72,760.83	18,190.21	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	74,383.20	18,595.80	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	75,652.87	18,913.22	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	78,756.53	19,689.13	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	81,595.67	20,398.92	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	85,193.08	21,298.27	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	89,107.92	22,276.98	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	94,556.95	23,639.24	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	99,247.70	24,811.93	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	105,172.86	26,293.21	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	111,485.97	27,871.49	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	119,350.92	29,837.73	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	127,744.89	31,936.22	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	138,854.56	34,713.64	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	151,692.41	37,923.10	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	168,145.30	42,036.33	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	189,659.27	47,414.82	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	218,720.76	54,680.19	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	258,116.01	64,529.00	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	318,531.47	79,632.87	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	420,405.40	79,877.03	0.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:37 PM	493,976.12	29,638.57	1.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Golden Gate Park

PREVISION DESIGN

OCTOBER 18

Mirror date: February 22
Analysis hours: 8:22 AM-5:27 PM (PDT)

Analysis Time	EXISTING SHADOW (PARTIAL AREA ONLY)			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
8:22 AM	892,848.62	53,570.92	2.0%	10,457.20	627.43	0.0%	10,457.20	627.43	0.0%	10,457.20	627.43	0.0%
8:30 AM	730,453.43	131,481.62	1.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	506,443.64	126,610.91	1.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	356,551.24	89,137.81	0.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	276,879.02	69,219.75	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	215,493.67	53,873.42	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	175,886.80	43,971.70	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	150,493.27	37,623.32	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	134,992.63	33,748.16	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	121,149.63	30,287.41	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	112,279.52	28,069.88	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	103,762.11	25,940.53	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	97,113.94	24,278.48	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	91,047.70	22,761.93	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	86,727.28	21,681.82	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	81,772.01	20,443.00	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	79,726.42	19,931.60	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	79,708.78	19,927.20	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	81,613.30	20,403.33	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	82,918.25	20,729.56	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	85,951.36	21,487.84	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	89,090.29	22,272.57	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	93,269.64	23,317.41	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	97,360.82	24,340.20	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	102,827.48	25,706.87	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	107,765.12	26,941.28	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	114,783.61	28,695.90	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	121,555.22	30,388.80	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	130,090.27	32,522.57	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	140,000.80	35,000.20	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	151,762.95	37,940.74	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	167,157.78	41,789.44	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	188,618.84	47,154.71	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	214,982.27	53,745.57	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	256,828.70	64,207.18	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	306,998.57	76,749.64	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	390,215.31	85,847.37	0.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:27 PM	517,659.12	51,765.91	1.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Golden Gate Park

PREVISION DESIGN

OCTOBER 25

Mirror date: February 15
Analysis hours: 7:30 AM-4:18 PM (PST)

Analysis Time	EXISTING SHADOW (PARTIAL AREA ONLY)			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:30 AM	1,136,503.13	147,745.41	2.5%	67,028.36	8,713.69	0.1%	67,028.36	8,713.69	0.1%	67,028.36	8,713.69	0.1%
7:45 AM	818,290.38	204,572.59	1.8%	123.44	30.86	0.0%	123.44	30.86	0.0%	123.44	30.86	0.0%
8:00 AM	600,822.95	150,205.74	1.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	508,048.37	127,012.09	1.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	418,289.27	104,572.32	0.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	387,605.42	96,901.35	0.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	333,097.48	83,274.37	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	333,626.52	83,406.63	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	295,024.81	73,756.20	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	303,171.91	75,792.98	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	269,878.16	67,469.54	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	283,350.84	70,837.71	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	249,457.52	62,364.38	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	262,313.00	65,578.25	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	227,679.04	56,919.76	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	242,403.76	60,600.94	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	210,168.08	52,542.02	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	225,580.55	56,395.14	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	196,466.15	49,116.54	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	209,938.83	52,484.71	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	182,834.76	45,708.69	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	194,032.60	48,508.15	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	175,199.06	43,799.77	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	184,915.62	46,228.90	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	165,905.73	41,476.43	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	174,687.67	43,671.92	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	159,998.21	39,999.55	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	169,221.00	42,305.25	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	163,048.96	40,762.24	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	175,816.27	43,954.07	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	188,513.04	47,128.26	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	214,347.43	53,586.86	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	251,520.75	62,880.19	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	302,678.14	75,669.54	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	380,516.39	95,129.10	0.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	519,422.56	77,913.38	1.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:18 PM	557,318.89	16,719.57	1.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Golden Gate Park

PREVISION DESIGN

NOVEMBER 1

Mirror date: February 8
Analysis hours: 7:36 AM-4:10 PM (PST)

Analysis Time	EXISTING SHADOW (PARTIAL AREA ONLY)			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:36 AM	1,092,910.90	76,503.76	2.4%	158,162.94	11,071.41	0.4%	158,162.94	11,071.41	0.4%	158,162.94	11,071.41	0.4%
7:45 AM	865,162.62	164,380.90	1.9%	69,232.66	13,154.20	0.2%	69,232.66	13,154.20	0.2%	69,232.66	13,154.20	0.2%
8:00 AM	601,404.89	150,351.22	1.3%	581.94	145.48	0.0%	581.94	145.48	0.0%	581.94	145.48	0.0%
8:15 AM	441,531.41	110,382.85	1.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	330,187.81	82,546.95	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	262,877.30	65,719.33	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	209,392.17	52,348.04	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	169,926.38	42,481.59	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	148,130.26	37,032.56	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	133,158.65	33,289.66	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	122,313.50	30,578.37	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	113,725.54	28,431.39	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	106,019.31	26,504.83	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	100,799.53	25,199.88	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	95,315.23	23,828.81	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	94,592.22	23,648.05	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	94,592.22	23,648.05	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	96,955.23	24,238.81	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	98,401.25	24,600.31	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	101,804.69	25,451.17	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	105,014.15	26,253.54	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	110,322.10	27,580.53	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	651,380.78	162,845.19	1.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	121,202.53	30,300.63	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	567,070.71	141,767.68	1.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	135,927.25	33,981.81	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	480,362.36	120,090.59	1.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	466,713.34	116,678.33	1.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	422,927.12	105,731.78	0.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	424,337.87	106,084.47	0.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	409,154.65	102,288.66	0.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	425,872.07	106,468.02	1.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	430,404.11	107,601.03	1.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	479,939.14	119,984.78	1.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	571,620.39	120,040.28	1.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:10 PM	691,904.63	62,271.42	1.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Golden Gate Park

PREVISION DESIGN

NOVEMBER 8

Mirror date: February 1
Analysis hours: 7:43 AM-4:03 PM (PST)

Analysis Time	EXISTING SHADOW (PARTIAL AREA ONLY)			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:43 AM	1,187,783.97	11,877.84	2.7%	232,597.74	2,325.98	0.5%	232,597.74	2,325.98	0.5%	232,597.74	2,325.98	0.5%
7:45 AM	1,150,857.54	149,611.48	2.6%	220,659.25	28,685.70	0.5%	220,659.25	28,685.70	0.5%	220,659.25	28,685.70	0.5%
8:00 AM	778,912.76	194,728.19	1.7%	55,178.04	13,794.51	0.1%	55,178.04	13,794.51	0.1%	55,178.04	13,794.51	0.1%
8:15 AM	564,901.68	141,225.42	1.3%	2,415.91	603.98	0.0%	2,415.91	603.98	0.0%	2,415.91	603.98	0.0%
8:30 AM	423,667.77	105,916.94	0.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	327,683.72	81,920.93	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	262,806.76	65,701.69	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	212,725.07	53,181.27	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	174,934.55	43,733.64	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	151,586.60	37,896.65	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	133,599.51	33,399.88	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	124,941.02	31,235.26	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	115,506.62	28,876.65	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	109,704.90	27,426.23	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	104,026.62	26,006.66	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	103,003.83	25,750.96	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	103,074.37	25,768.59	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	105,155.22	26,288.81	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	106,936.30	26,734.07	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	110,392.64	27,598.16	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	114,060.60	28,515.15	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	119,192.21	29,798.05	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	124,041.67	31,010.42	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	130,883.82	32,720.95	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	138,078.65	34,519.66	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	147,230.90	36,807.73	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	157,582.30	39,395.57	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	173,911.75	43,477.94	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	189,288.95	47,322.24	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	212,390.01	53,097.50	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	243,250.21	60,812.55	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	289,346.54	72,336.63	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	348,986.08	87,246.52	0.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	448,726.25	112,181.56	1.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	627,151.11	94,072.67	1.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:03 PM	676,386.36	20,291.59	1.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Golden Gate Park

PREVISION DESIGN

NOVEMBER 15

Mirror date: January 25
Analysis hours: 7:51 AM-3:57 PM (PST)

Analysis Time	EXISTING SHADOW (PARTIAL AREA ONLY)			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:51 AM	1,310,819.18	104,865.53	2.9%	271,428.69	21,714.30	0.6%	271,428.69	21,714.30	0.6%	271,428.69	21,714.30	0.6%
8:00 AM	1,011,140.18	202,228.04	2.3%	171,917.77	34,383.55	0.4%	171,917.77	34,383.55	0.4%	171,917.77	34,383.55	0.4%
8:15 AM	714,459.03	178,614.76	1.6%	38,672.24	9,668.06	0.1%	38,672.24	9,668.06	0.1%	38,672.24	9,668.06	0.1%
8:30 AM	528,239.76	132,059.94	1.2%	4,673.12	1,168.28	0.0%	4,673.12	1,168.28	0.0%	4,673.12	1,168.28	0.0%
8:45 AM	412,275.94	103,068.99	0.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	318,178.78	79,544.70	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	267,497.52	66,874.38	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	216,304.85	54,076.21	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	180,401.21	45,100.30	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	154,443.37	38,610.84	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	139,066.18	34,766.54	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	127,180.59	31,795.15	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	119,950.49	29,987.62	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	113,073.07	28,268.27	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	111,256.73	27,814.18	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	110,586.62	27,646.66	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	112,579.31	28,144.83	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	114,607.26	28,651.82	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	117,781.46	29,445.36	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	121,872.64	30,468.16	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	127,427.47	31,856.87	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	133,052.85	33,263.21	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	140,018.43	35,004.61	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	149,435.20	37,358.80	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	160,474.34	40,118.58	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	173,753.04	43,438.26	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	190,858.41	47,714.60	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	210,079.91	52,519.98	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	241,134.09	60,283.52	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	280,758.58	70,189.65	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	334,684.58	83,671.15	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	417,389.92	104,347.48	0.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	562,397.59	129,351.45	1.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:57 PM	745,830.63	82,041.37	1.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Golden Gate Park

PREVISION DESIGN

NOVEMBER 22

Mirror date: January 18
Analysis hours: 7:57 AM-3:54 PM (PST)

Analysis Time	EXISTING SHADOW (PARTIAL AREA ONLY)			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:57 AM	1,441,155.04	28,823.10	3.2%	281,374.49	5,627.49	0.6%	281,374.49	5,627.49	0.6%	281,374.49	5,627.49	0.6%
8:00 AM	1,344,324.54	201,648.68	3.0%	271,040.73	40,656.11	0.6%	271,040.73	40,656.11	0.6%	271,040.73	40,656.11	0.6%
8:15 AM	903,182.38	225,795.60	2.0%	109,262.75	27,315.69	0.2%	109,262.75	27,315.69	0.2%	109,262.75	27,315.69	0.2%
8:30 AM	655,630.67	163,907.67	1.5%	24,070.96	6,017.74	0.1%	24,070.96	6,017.74	0.1%	24,070.96	6,017.74	0.1%
8:45 AM	504,133.53	126,033.38	1.1%	9,064.08	2,266.02	0.0%	9,064.08	2,266.02	0.0%	9,064.08	2,266.02	0.0%
9:00 AM	390,232.94	97,558.24	0.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	316,097.92	79,024.48	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	267,215.36	66,803.84	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	220,889.79	55,222.45	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	183,275.62	45,818.90	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	161,479.50	40,369.87	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	143,016.28	35,754.07	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	131,800.80	32,950.20	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	122,789.63	30,697.41	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	120,990.92	30,247.73	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	119,756.51	29,939.13	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	121,872.64	30,468.16	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	123,248.12	30,812.03	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	126,739.73	31,684.93	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	130,778.01	32,694.50	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	136,985.32	34,246.33	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	142,399.08	35,599.77	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	151,621.87	37,905.47	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	160,421.44	40,105.36	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	176,151.32	44,037.83	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	189,288.95	47,322.24	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	209,215.82	52,303.96	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	234,027.42	58,506.86	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	270,389.56	67,597.39	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	315,480.72	78,870.18	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	385,665.63	96,416.41	0.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	493,323.65	123,330.91	1.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	665,523.57	133,104.71	1.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:54 PM	819,119.20	65,529.54	1.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Golden Gate Park

PREVISION DESIGN

NOVEMBER 29

Mirror date: January 11
Analysis hours: 8:04 AM-3:51 PM (PST)

Analysis Time	EXISTING SHADOW (PARTIAL AREA ONLY)			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
8:04 AM	1,564,772.18	140,829.50	3.5%	281,339.22	25,320.53	0.6%	281,339.22	25,320.53	0.6%	281,339.22	25,320.53	0.6%
8:15 AM	1,123,912.17	236,021.56	2.5%	191,756.47	40,268.86	0.4%	191,756.47	40,268.86	0.4%	191,756.47	40,268.86	0.4%
8:30 AM	795,471.46	198,867.87	1.8%	71,190.07	17,797.52	0.2%	71,190.07	17,797.52	0.2%	71,190.07	17,797.52	0.2%
8:45 AM	602,392.41	150,598.10	1.3%	26,451.60	6,612.90	0.1%	26,451.60	6,612.90	0.1%	26,451.60	6,612.90	0.1%
9:00 AM	464,932.26	116,233.07	1.0%	9,452.04	2,363.01	0.0%	9,452.04	2,363.01	0.0%	9,452.04	2,363.01	0.0%
9:15 AM	374,273.81	93,568.45	0.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	306,310.83	76,577.71	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	265,434.29	66,358.57	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	218,368.08	54,592.02	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	188,548.30	47,137.08	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	163,895.41	40,973.85	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	149,082.52	37,270.63	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	135,962.52	33,990.63	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	130,478.22	32,619.56	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	128,062.31	32,015.58	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	129,279.08	32,319.77	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	129,649.41	32,412.35	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	134,463.60	33,615.90	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	137,725.96	34,431.49	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	145,731.98	36,433.00	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	151,463.16	37,865.79	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	162,008.53	40,502.13	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	172,730.25	43,182.56	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	189,059.70	47,264.93	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	202,885.07	50,721.27	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	227,996.46	56,999.11	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	256,176.23	64,044.06	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	297,934.49	74,483.62	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	348,562.85	87,140.71	0.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	436,241.09	109,060.27	1.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	552,927.92	138,231.98	1.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	752,725.68	135,490.62	1.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:51 PM	879,270.14	43,963.51	2.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Golden Gate Park

PREVISION DESIGN

DECEMBER 6

Mirror date: January 4
Analysis hours: 8:10 AM-3:51 PM (PST)

Analysis Time	EXISTING SHADOW (PARTIAL AREA ONLY)			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
8:10 AM	1,659,169.13	66,366.77	3.7%	281,339.22	11,253.57	0.6%	281,339.22	11,253.57	0.6%	281,339.22	11,253.57	0.6%
8:15 AM	1,423,203.22	241,944.55	3.2%	253,900.10	43,163.02	0.6%	253,900.10	43,163.02	0.6%	253,900.10	43,163.02	0.6%
8:30 AM	946,792.25	236,698.06	2.1%	116,263.60	29,065.90	0.3%	116,263.60	29,065.90	0.3%	116,263.60	29,065.90	0.3%
8:45 AM	706,576.45	176,644.11	1.6%	46,396.11	11,599.03	0.1%	46,396.11	11,599.03	0.1%	46,396.11	11,599.03	0.1%
9:00 AM	542,541.26	135,635.31	1.2%	23,965.15	5,991.29	0.1%	23,965.15	5,991.29	0.1%	23,965.15	5,991.29	0.1%
9:15 AM	431,709.05	107,927.26	1.0%	7,670.96	1,917.74	0.0%	7,670.96	1,917.74	0.0%	7,670.96	1,917.74	0.0%
9:30 AM	350,467.37	87,616.84	0.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	297,599.44	74,399.86	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	252,508.27	63,127.07	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	216,304.85	54,076.21	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	185,991.32	46,497.83	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	166,381.86	41,595.47	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	151,480.79	37,870.20	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	143,227.90	35,806.97	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	137,673.06	34,418.26	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	139,207.25	34,801.81	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	138,607.68	34,651.92	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	142,804.67	35,701.17	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	145,731.98	36,433.00	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	152,962.08	38,240.52	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	159,804.23	39,951.06	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	171,178.42	42,794.61	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	183,028.74	45,757.18	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	197,541.85	49,385.46	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	216,357.75	54,089.44	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	242,879.89	60,719.97	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	271,694.50	67,923.63	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	316,397.71	79,099.43	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	373,074.67	93,268.67	0.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	468,847.10	117,211.77	1.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	590,242.31	147,560.58	1.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	807,392.32	137,256.69	1.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:51 PM	926,389.25	46,319.46	2.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Golden Gate Park

PREVISION DESIGN

DECEMBER 13

Mirror date: December 28
Analysis hours: 8:15 AM-3:52 PM (PST)

Analysis Time	EXISTING SHADOW (PARTIAL AREA ONLY)			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
8:15 AM	1,728,789.74	207,454.77	3.9%	277,424.39	33,290.93	0.6%	277,424.39	33,290.93	0.6%	277,424.39	33,290.93	0.6%
8:30 AM	1,106,348.31	276,587.08	2.5%	158,268.74	39,567.19	0.4%	158,268.74	39,567.19	0.4%	158,268.74	39,567.19	0.4%
8:45 AM	802,913.18	200,728.30	1.8%	79,689.86	19,922.46	0.2%	79,689.86	19,922.46	0.2%	79,689.86	19,922.46	0.2%
9:00 AM	611,773.92	152,943.48	1.4%	36,591.38	9,147.85	0.1%	36,591.38	9,147.85	0.1%	36,591.38	9,147.85	0.1%
9:15 AM	482,601.93	120,650.48	1.1%	20,385.37	5,096.34	0.0%	20,385.37	5,096.34	0.0%	20,385.37	5,096.34	0.0%
9:30 AM	389,827.35	97,456.84	0.9%	1,781.07	445.27	0.0%	1,781.07	445.27	0.0%	1,781.07	445.27	0.0%
9:45 AM	328,477.27	82,119.32	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	278,042.89	69,510.72	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	240,622.69	60,155.67	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	202,620.56	50,655.14	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	182,023.58	45,505.89	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	162,220.14	40,555.04	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	154,972.41	38,743.10	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	146,049.40	36,512.35	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	145,026.60	36,256.65	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	143,651.12	35,912.78	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	148,271.33	37,067.83	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	151,674.77	37,918.69	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	158,428.75	39,607.19	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	164,971.11	41,242.78	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	176,133.69	44,033.42	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	186,820.13	46,705.03	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	202,691.09	50,672.77	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	222,335.82	55,583.95	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	250,480.32	62,620.08	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	279,594.71	69,898.68	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	326,237.70	81,559.43	0.7%	264.52	66.13	0.0%	264.52	66.13	0.0%	264.52	66.13	0.0%
3:00 PM	385,595.10	96,398.77	0.9%	17.63	4.41	0.0%	17.63	4.41	0.0%	17.63	4.41	0.0%
3:15 PM	480,256.56	120,064.14	1.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	603,115.42	150,778.86	1.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	819,225.00	147,460.50	1.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:52 PM	957,461.07	57,447.66	2.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Golden Gate Park

PREVISION DESIGN

DECEMBER 20

Winter solstice (December 21 similar)
Analysis hours: 8:19 AM-3:54 PM (PST)

Analysis Time	EXISTING SHADOW (PARTIAL AREA ONLY)			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
8:19 AM	1,753,477.90	140,278.23	3.9%	276,489.76	22,119.18	0.6%	276,489.76	22,119.18	0.6%	276,489.76	22,119.18	0.6%
8:30 AM	1,258,445.01	264,273.45	2.8%	205,158.61	43,083.31	0.5%	205,158.61	43,083.31	0.5%	205,158.61	43,083.31	0.5%
8:45 AM	882,215.08	220,553.77	2.0%	98,382.32	24,595.58	0.2%	98,382.32	24,595.58	0.2%	98,382.32	24,595.58	0.2%
9:00 AM	659,986.37	164,996.59	1.5%	43,856.75	10,964.19	0.1%	43,856.75	10,964.19	0.1%	43,856.75	10,964.19	0.1%
9:15 AM	525,876.75	131,469.19	1.2%	27,492.03	6,873.01	0.1%	27,492.03	6,873.01	0.1%	27,492.03	6,873.01	0.1%
9:30 AM	417,178.31	104,294.58	0.9%	7,071.39	1,767.85	0.0%	7,071.39	1,767.85	0.0%	7,071.39	1,767.85	0.0%
9:45 AM	349,673.82	87,418.46	0.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	293,896.21	73,474.05	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	255,417.95	63,854.49	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	216,287.22	54,071.80	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	190,946.58	47,736.65	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	167,898.42	41,974.61	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	159,610.25	39,902.56	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	150,316.92	37,579.23	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	149,029.61	37,257.40	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	147,442.52	36,860.63	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	149,823.16	37,455.79	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	152,344.88	38,086.22	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	158,940.15	39,735.04	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	165,694.12	41,423.53	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	176,116.05	44,029.01	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	187,790.03	46,947.51	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	202,514.75	50,628.69	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	222,653.23	55,663.31	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	250,497.95	62,624.49	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	276,685.04	69,171.26	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	321,388.24	80,347.06	0.7%	440.86	110.22	0.0%	440.86	110.22	0.0%	440.86	110.22	0.0%
3:00 PM	377,871.23	94,467.81	0.8%	35.27	8.82	0.0%	35.27	8.82	0.0%	35.27	8.82	0.0%
3:15 PM	471,192.47	117,798.12	1.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	584,634.57	146,158.64	1.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	789,387.60	165,771.40	1.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:54 PM	969,646.44	77,571.72	2.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

GOLDEN GATE PARK 1

PREVISION DESIGN

HOSPITAL PROJECT

Shading diagrams on the date of maximum shading

Existing (Current) Shadow
Net New Project Shadow (if present)
2030 Net New Shadow Profiles (if present)
2030-2050 Net New Shadow (if present)

PARK FEATURES

1. Wooded areas with walking paths
2. Golden Gate Park Nursery
3. Structural Maintenance Division
4. San Francisco Lawn Bowling Club
5. Robin Williams Meadow Picnic Area
6. Robin Williams Meadow
7. Carousel
8. Kezar Triangle
9. Little Rec Field Grass Area 1
10. Kezar Pavilion

8:19 AM

DATE OF MAXIMUM SHADOW
DECEMBER 20

GOLDEN GATE PARK 2

HOSPITAL PROJECT

Shading diagrams on the date of maximum shading

PREVISION DESIGN

8:30 AM

DATE OF MAXIMUM SHADOW
DECEMBER 20

- Existing (Current) Shadow
- Net New Project Shadow (if present)
- 2030 Net New Shadow Profiles (if present)
- 2030-2050 Net New Shadow (if present)

PARK FEATURES

1. Wooded areas with walking paths
2. Golden Gate Park Nursery
3. Structural Maintenance Division
4. San Francisco Lawn Bowling Club
5. Robin Williams Meadow Picnic Area
6. Robin Williams Meadow
7. Carousel
8. Kezar Triangle
9. Little Rec Field Grass Area 1
10. Kezar Pavilion

GOLDEN GATE PARK 3

HOSPITAL PROJECT

Shading diagrams on the date of maximum shading

PREVISION DESIGN

8:45 AM

DATE OF MAXIMUM SHADOW
DECEMBER 20

- Existing (Current) Shadow
- Net New Project Shadow (if present)
- 2030 Net New Shadow Profiles (if present)
- 2030-2050 Net New Shadow (if present)

PARK FEATURES

1. Wooded areas with walking paths
2. Golden Gate Park Nursery
3. Structural Maintenance Division
4. San Francisco Lawn Bowling Club
5. Robin Williams Meadow Picnic Area
6. Robin Williams Meadow
7. Carousel
8. Kezar Triangle
9. Little Rec Field Grass Area 1
10. Kezar Pavilion

GOLDEN GATE PARK 4

HOSPITAL PROJECT

Shading diagrams on the date of maximum shading

PREVISION DESIGN

9:00 AM

DATE OF MAXIMUM SHADOW
DECEMBER 20

- Existing (Current) Shadow
- Net New Project Shadow (if present)
- 2030 Net New Shadow Profiles (if present)
- 2030-2050 Net New Shadow (if present)

PARK FEATURES

1. Wooded areas with walking paths
2. Golden Gate Park Nursery
3. Structural Maintenance Division
4. San Francisco Lawn Bowling Club
5. Robin Williams Meadow Picnic Area
6. Robin Williams Meadow
7. Carousel
8. Kezar Triangle
9. Little Rec Field Grass Area 1
10. Kezar Pavilion

GOLDEN GATE PARK 5

HOSPITAL PROJECT

Shading diagrams on the date of maximum shading

PREVISION DESIGN

Existing (Current) Shadow
Net New Project Shadow (if present)
2030 Net New Shadow Profiles (if present)
2030-2050 Net New Shadow (if present)

PARK FEATURES

1. Wooded areas with walking paths
2. Golden Gate Park Nursery
3. Structural Maintenance Division
4. San Francisco Lawn Bowling Club
5. Robin Williams Meadow Picnic Area
6. Robin Williams Meadow
7. Carousel
8. Kezar Triangle
9. Little Rec Field Grass Area 1
10. Kezar Pavilion

9:15 AM

DATE OF MAXIMUM SHADOW
DECEMBER 20

GOLDEN GATE PARK 6

HOSPITAL PROJECT

Shading diagrams on the date of maximum shading

PREVISION DESIGN

Existing (Current) Shadow
Net New Project Shadow (if present)
2030 Net New Shadow Profiles (if present)
2030-2050 Net New Shadow (if present)

PARK FEATURES

1. Wooded areas with walking paths
2. Golden Gate Park Nursery
3. Structural Maintenance Division
4. San Francisco Lawn Bowling Club
5. Robin Williams Meadow Picnic Area
6. Robin Williams Meadow
7. Carousel
8. Kezar Triangle
9. Little Rec Field Grass Area 1
10. Kezar Pavilion

9:30 AM

DATE OF MAXIMUM SHADOW
DECEMBER 20

GOLDEN GATE PARK 7

HOSPITAL PROJECT

Shading diagrams on the date of maximum shading

PREVISION DESIGN

9:45 AM

DATE OF MAXIMUM SHADOW
DECEMBER 20

- Existing (Current) Shadow
- Net New Project Shadow (if present)
- 2030 Net New Shadow Profiles (if present)
- 2030-2050 Net New Shadow (if present)

PARK FEATURES

1. Wooded areas with walking paths
2. Golden Gate Park Nursery
3. Structural Maintenance Division
4. San Francisco Lawn Bowling Club
5. Robin Williams Meadow Picnic Area
6. Robin Williams Meadow
7. Carousel
8. Kezar Triangle
9. Little Rec Field Grass Area 1
10. Kezar Pavilion

GOLDEN GATE PARK 8

HOSPITAL PROJECT

Shading diagrams on the date of maximum shading

PREVISION DESIGN

10:00 AM

DATE OF MAXIMUM SHADOW
DECEMBER 20

- Existing (Current) Shadow
- Net New Project Shadow (if present)
- 2030 Net New Shadow Profiles (if present)
- 2030-2050 Net New Shadow (if present)

PARK FEATURES

1. Wooded areas with walking paths
2. Golden Gate Park Nursery
3. Structural Maintenance Division
4. San Francisco Lawn Bowling Club
5. Robin Williams Meadow Picnic Area
6. Robin Williams Meadow
7. Carousel
8. Kezar Triangle
9. Little Rec Field Grass Area 1
10. Kezar Pavilion

GOLDEN GATE PARK 9

HOSPITAL PROJECT

Shading diagrams on the date of maximum shading

PREVISION DESIGN

11:00 AM

DATE OF MAXIMUM SHADOW
DECEMBER 20

- Existing (Current) Shadow
- Net New Project Shadow (if present)
- 2030 Net New Shadow Profiles (if present)
- 2030-2050 Net New Shadow (if present)

PARK FEATURES

1. Wooded areas with walking paths
2. Golden Gate Park Nursery
3. Structural Maintenance Division
4. San Francisco Lawn Bowling Club
5. Robin Williams Meadow Picnic Area
6. Robin Williams Meadow
7. Carousel
8. Kezar Triangle
9. Little Rec Field Grass Area 1
10. Kezar Pavilion

GOLDEN GATE PARK 10

HOSPITAL PROJECT

Shading diagrams on the date of maximum shading

PREVISION DESIGN

12:00 PM

DATE OF MAXIMUM SHADOW
DECEMBER 20

- Existing (Current) Shadow
- Net New Project Shadow (if present)
- 2030 Net New Shadow Profiles (if present)
- 2030-2050 Net New Shadow (if present)

PARK FEATURES

1. Wooded areas with walking paths
2. Golden Gate Park Nursery
3. Structural Maintenance Division
4. San Francisco Lawn Bowling Club
5. Robin Williams Meadow Picnic Area
6. Robin Williams Meadow
7. Carousel
8. Kezar Triangle
9. Little Rec Field Grass Area 1
10. Kezar Pavilion

GOLDEN GATE PARK 11

PREVISION DESIGN

HOSPITAL PROJECT

Shading diagrams on the date of maximum shading

Existing (Current) Shadow
Net New Project Shadow (if present)
2030 Net New Shadow Profiles (if present)
2030-2050 Net New Shadow (if present)

PARK FEATURES

1. Wooded areas with walking paths
2. Golden Gate Park Nursery
3. Structural Maintenance Division
4. San Francisco Lawn Bowling Club
5. Robin Williams Meadow Picnic Area
6. Robin Williams Meadow
7. Carousel
8. Kezar Triangle
9. Little Rec Field Grass Area 1
10. Kezar Pavilion

1:00 PM

DATE OF MAXIMUM SHADOW
DECEMBER 20

GOLDEN GATE PARK 12

PREVISION DESIGN

HOSPITAL PROJECT

Shading diagrams on the date of maximum shading

Existing (Current) Shadow
Net New Project Shadow (if present)
2030 Net New Shadow Profiles (if present)
2030-2050 Net New Shadow (if present)

PARK FEATURES

1. Wooded areas with walking paths
2. Golden Gate Park Nursery
3. Structural Maintenance Division
4. San Francisco Lawn Bowling Club
5. Robin Williams Meadow Picnic Area
6. Robin Williams Meadow
7. Carousel
8. Kezar Triangle
9. Little Rec Field Grass Area 1
10. Kezar Pavilion

2:00 PM

DATE OF MAXIMUM SHADOW
DECEMBER 20

GOLDEN GATE PARK 13

PREVISION DESIGN

HOSPITAL PROJECT

Shading diagrams on the date of maximum shading

Existing (Current) Shadow
Net New Project Shadow (if present)
2030 Net New Shadow Profiles (if present)
2030-2050 Net New Shadow (if present)

PARK FEATURES

1. Wooded areas with walking paths
2. Golden Gate Park Nursery
3. Structural Maintenance Division
4. San Francisco Lawn Bowling Club
5. Robin Williams Meadow Picnic Area
6. Robin Williams Meadow
7. Carousel
8. Kezar Triangle
9. Little Rec Field Grass Area 1
10. Kezar Pavilion

2:30 PM

DATE OF MAXIMUM SHADOW
DECEMBER 20

GOLDEN GATE PARK 14

PREVISION DESIGN

HOSPITAL PROJECT

Shading diagrams on the date of maximum shading

Existing (Current) Shadow
Net New Project Shadow (if present)
2030 Net New Shadow Profiles (if present)
2030-2050 Net New Shadow (if present)

PARK FEATURES

1. Wooded areas with walking paths
2. Golden Gate Park Nursery
3. Structural Maintenance Division
4. San Francisco Lawn Bowling Club
5. Robin Williams Meadow Picnic Area
6. Robin Williams Meadow
7. Carousel
8. Kezar Triangle
9. Little Rec Field Grass Area 1
10. Kezar Pavilion

2:45 PM

DATE OF MAXIMUM SHADOW
DECEMBER 20

GOLDEN GATE PARK 15

PREVISION DESIGN

HOSPITAL PROJECT

Shading diagrams on the date of maximum shading

Existing (Current) Shadow
Net New Project Shadow (if present)
2030 Net New Shadow Profiles (if present)
2030-2050 Net New Shadow (if present)

PARK FEATURES

1. Wooded areas with walking paths
2. Golden Gate Park Nursery
3. Structural Maintenance Division
4. San Francisco Lawn Bowling Club
5. Robin Williams Meadow Picnic Area
6. Robin Williams Meadow
7. Carousel
8. Kezar Triangle
9. Little Rec Field Grass Area 1
10. Kezar Pavilion

3:00 PM

DATE OF MAXIMUM SHADOW
DECEMBER 20

GOLDEN GATE PARK 16

PREVISION DESIGN

HOSPITAL PROJECT

Shading diagrams on the date of maximum shading

Existing (Current) Shadow
Net New Project Shadow (if present)
2030 Net New Shadow Profiles (if present)
2030-2050 Net New Shadow (if present)

PARK FEATURES

1. Wooded areas with walking paths
2. Golden Gate Park Nursery
3. Structural Maintenance Division
4. San Francisco Lawn Bowling Club
5. Robin Williams Meadow Picnic Area
6. Robin Williams Meadow
7. Carousel
8. Kezar Triangle
9. Little Rec Field Grass Area 1
10. Kezar Pavilion

3:54 PM

DATE OF MAXIMUM SHADOW
DECEMBER 20

THEORETICAL ANNUAL AVAILABLE SUNLIGHT (TAAS) CALCULATION	GOLDEN GATE PARK
Total plan area of Golden Gate Park	1026.83 acres (44,728,912 sf)
Total hours of annual sunlight from 1-hr after sunrise through 1-hr before sunset	3721.4 hrs
Theoretical Annual Available Sunlight (plan area x hours of annual sunlight)	166,454,173,117 sfh

EXISTING SHADOW CONDITIONS SUMMARY	GOLDEN GATE PARK (APPROXIMATED)
Total annual existing shadow load (existing shadow sfh ÷ TAAS sfh)	0.13%
Total annual existing shadow in square-foot-hours (sfh)	217,422,029 sfh
Range in existing shadow area coverage throughout the year	Between 0% - 4%
Time of year / time of day most affected by existing shadow	Fall / Early Morning (before 8:00 AM)

UCSF HOSPITAL PROJECT NET NEW SHADOW SCENARIO SUMMARY	GOLDEN GATE PARK
Annual net new hospital project-only shadow load / total existing + hospital project shadow load	0.005% / 0.136%
Annual net new sfh hospital project shadow / total existing + hospital project sfh	8,646,136 sfh / 226,068,165 sfh
Number of days annually when new shading from hospital project would occur	Up to 140 days a year
Dates when net new shadow from hospital project would be cast annually	October 12 - February 28
Date(s) with most annual sfh net new hospital project shadow (shadow load / net new sfh)	December 20 & December 21
Time of year / time of day most affected by hospital project net new shadow overall	Fall / Early Morning (before 8:00 AM)
Date(s) with largest shadow area from the hospital project (area and time shadow occurs)	Nov 22/Jan 18 (281,374 sf @ 7:57 AM)
Range in hospital project net new shadow percentage coverage (area range)	Between 0% - 1% (0 - 281,374 sf)
Average hospital project net new shadow coverage on affected dates (shadow area)	0.28% (123,263 sf)
Date(s) with the longest duration of net new shadow (duration)	Dec 13/Dec 28 (1 hr 52 min +/- 21 min)
Range in daily hospital project net new shadow duration (margin of error)	Between zero minutes up to 1 hr 52 min (+/- 21 min)
Average daily hospital project net new shadow duration on affected dates	55.7 minutes

NEAR TERM CUMULATIVE (2030) NET NEW SHADOW SCENARIO SUMMARY	GOLDEN GATE PARK
Annual net new 2030 cumulative condition shadow load / total existing + 2030 cumulative shadow load	0.005% / 0.136%
Annual net new sfh 2030 cumulative shadow / total existing + 2030 cumulative sfh	8,646,136 sfh / 226,068,165 sfh
Number of days annually when new shading from 2030 cumulative would occur	Up to 140 days a year
Dates when net new shadow from 2030 cumulative would be cast annually	October 12 - February 28
Date(s) with most annual sfh net new 2030 cumulative shadow (shadow load / net new sfh)	December 20 & December 21
Time of year / time of day most affected by 2030 cumulative net new shadow overall	Fall / Early Morning (before 8:00 AM)
Date(s) with largest shadow area from the 2030 cumulative (area and time shadow occurs)	Nov 22/Jan 18 (281,374 sf @ 7:57 AM)
Range in 2030 cumulative net new shadow percentage coverage (area range)	Between 0% - 1% (0 - 281,374 sf)
Average 2030 cumulative net new shadow coverage on affected dates (shadow area)	0.28% (123,263 sf)
Date(s) with the longest duration of net new shadow (duration)	Dec 13/Dec 28 (1 hr 52 min +/- 21 min)
Range in daily 2030 cumulative net new shadow duration (margin of error)	Between zero minutes up to 1 hr 52 min (+/- 21 min)
Average daily 2030 cumulative net new shadow duration on affected dates	55.7 minutes

LONG TERM CUMULATIVE (2050) NET NEW SHADOW SCENARIO SUMMARY	GOLDEN GATE PARK
Annual net new 2050 cumulative shadow load / total existing + 2050 cumulative shadow load	0.005% / 0.136%
Annual net new sfh 2050 cumulative shadow / total existing + 2050 cumulative sfh	8,646,136 sfh / 226,068,165 sfh
Number of days annually when new shading from 2050 cumulative would occur	Up to 140 days a year
Dates when net new shadow from 2050 cumulative would be cast annually	October 12 - February 28
Date(s) with most annual sfh net new 2050 cumulative shadow (shadow load / net new sfh)	December 20 & December 21
Time of year / time of day most affected by 2050 cumulative net new shadow overall	Fall / Early Morning (before 8:00 AM)
Date(s) with largest shadow area from the 2050 cumulative (area and time shadow occurs)	Nov 22/Jan 18 (281,374 sf @ 7:57 AM)
Range in 2050 cumulative net new shadow percentage coverage (area range)	Between 0% - 1% (0 - 281,374 sf)
Average 2050 cumulative net new shadow coverage on affected dates (shadow area)	0.28% (123,263 sf)
Date(s) with the longest duration of net new shadow (duration)	Dec 13/Dec 28 (1 hr 52 min +/- 21 min)
Range in daily 2050 cumulative net new shadow duration (margin of error)	Between zero minutes up to 1 hr 52 min (+/- 21 min)
Average daily 2050 cumulative net new shadow duration on affected dates	55.7 minutes

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Playground

PREVISION DESIGN

JUNE 21

Summer solstice

Analysis hours: 6:46 AM-7:36 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
6:46 AM	58,239.18	6,406.31	87.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 AM	9,793.88	2,252.59	14.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 AM	7,277.10	1,819.27	11.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 AM	5,862.39	1,465.60	8.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	4,767.86	1,191.96	7.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	4,001.56	1,000.39	6.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	3,434.47	858.62	5.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	3,334.61	833.65	5.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	3,484.85	871.21	5.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	3,609.27	902.32	5.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	3,713.22	928.31	5.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	3,794.80	948.70	5.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	3,867.94	966.98	5.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	3,908.34	977.09	5.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	3,943.51	985.88	6.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	3,960.77	990.19	6.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	3,981.35	995.34	6.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	3,979.56	994.89	6.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	3,961.79	990.45	6.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	3,914.35	978.59	5.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	3,887.63	971.91	5.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	3,828.30	957.07	5.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	3,796.72	949.18	5.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	3,723.96	930.99	5.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	3,683.68	920.92	5.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	3,597.37	899.34	5.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	3,709.77	927.44	5.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	3,777.41	944.35	5.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	3,886.99	971.75	5.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	3,947.09	986.77	6.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	4,044.26	1,011.07	6.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	4,096.18	1,024.04	6.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	4,179.42	1,044.85	6.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	4,229.29	1,057.32	6.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	4,299.49	1,074.87	6.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	4,343.60	1,085.90	6.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	4,401.65	1,100.41	6.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	4,442.82	1,110.71	6.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	4,647.79	1,161.95	7.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	4,880.12	1,220.03	7.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	5,131.51	1,282.88	7.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	5,407.83	1,351.96	8.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	5,714.19	1,428.55	8.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	6,061.22	1,515.31	9.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	6,453.77	1,613.44	9.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	6,910.76	1,727.69	10.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	7,444.98	1,861.25	11.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	8,257.70	2,064.42	12.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	9,178.33	2,294.58	13.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 PM	11,503.06	2,875.77	17.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 PM	17,559.94	5,267.98	26.5%	2,034.86	610.46	3.1%	2,034.86	610.46	3.1%	2,034.86	610.46	3.1%
7:36 PM	37,220.46	6,699.68	56.2%	831.64	149.70	1.3%	831.64	149.70	1.3%	831.64	149.70	1.3%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Playground

PREVISION DESIGN

JUNE 28

Mirror date: June 14
Analysis hours: 6:48 AM-7:36 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
6:48 AM	12,946.28	1,294.63	19.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 AM	10,237.70	2,252.29	15.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 AM	7,542.67	1,885.67	11.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 AM	6,030.53	1,507.63	9.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	4,905.70	1,226.42	7.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	4,089.91	1,022.48	6.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	3,488.43	872.11	5.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	3,337.81	834.45	5.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	3,487.03	871.76	5.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	3,613.36	903.34	5.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	3,719.10	929.78	5.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	3,801.58	950.39	5.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	3,875.74	968.93	5.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	3,917.17	979.29	5.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	3,954.38	988.59	6.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	3,970.87	992.72	6.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	3,992.86	998.22	6.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	3,991.20	997.80	6.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	3,976.50	994.12	6.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	3,930.46	982.62	5.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	3,902.59	975.65	5.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	3,844.28	961.07	5.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	3,812.44	953.11	5.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	3,739.94	934.99	5.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	3,700.69	925.17	5.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	3,615.15	903.79	5.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	3,712.58	928.15	5.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	3,780.86	945.22	5.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	3,891.08	972.77	5.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	3,951.95	987.99	6.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	4,048.74	1,012.19	6.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	4,101.93	1,025.48	6.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	4,185.56	1,046.39	6.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	4,236.19	1,059.05	6.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	4,307.67	1,076.92	6.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	4,353.19	1,088.30	6.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	4,413.41	1,103.35	6.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	4,452.67	1,113.17	6.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	4,629.38	1,157.34	7.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	4,860.69	1,215.17	7.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	5,109.64	1,277.41	7.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	5,386.22	1,346.55	8.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	5,690.28	1,422.57	8.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	6,035.52	1,508.88	9.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	6,424.62	1,606.15	9.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	6,877.39	1,719.35	10.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	7,405.86	1,851.46	11.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	8,189.68	2,047.42	12.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	9,134.60	2,283.65	13.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 PM	11,245.54	2,811.39	17.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 PM	17,094.38	5,128.31	25.8%	1,888.58	566.57	2.9%	1,888.58	566.57	2.9%	1,888.58	566.57	2.9%
7:36 PM	37,126.35	6,682.74	56.0%	1,059.11	190.64	1.6%	1,059.11	190.64	1.6%	1,059.11	190.64	1.6%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Playground

PREVISION DESIGN

JULY 5

Mirror date: June 7
Analysis hours: 6:52 AM-7:36 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
6:52 AM	13,032.85	781.97	19.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 AM	10,995.44	2,089.13	16.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 AM	8,015.14	2,003.78	12.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 AM	6,315.16	1,578.79	9.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	5,120.00	1,280.00	7.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	4,219.44	1,054.86	6.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	3,568.99	892.25	5.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	3,386.27	846.57	5.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	3,524.87	881.22	5.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	3,652.48	913.12	5.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	3,758.87	939.72	5.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	3,839.94	959.98	5.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	3,911.67	977.92	5.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	3,956.42	989.11	6.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	3,993.37	998.34	6.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	4,010.00	1,002.50	6.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	4,030.71	1,007.68	6.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	4,029.05	1,007.26	6.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	4,017.67	1,004.42	6.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	3,970.49	992.62	6.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	3,942.87	985.72	6.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	3,883.03	970.76	5.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	3,851.57	962.89	5.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	3,779.45	944.86	5.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	3,738.92	934.73	5.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	3,654.15	913.54	5.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	3,739.43	934.86	5.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	3,809.89	952.47	5.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	3,922.92	980.73	5.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	3,983.27	995.82	6.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	4,081.86	1,020.46	6.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	4,138.37	1,034.59	6.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	4,221.74	1,055.44	6.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	4,273.53	1,068.38	6.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	4,348.33	1,087.08	6.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	4,394.62	1,098.65	6.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	4,458.29	1,114.57	6.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	4,499.34	1,124.83	6.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	4,624.52	1,156.13	7.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	4,856.60	1,214.15	7.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	5,108.49	1,277.12	7.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	5,384.30	1,346.07	8.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	5,690.03	1,422.51	8.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	6,036.03	1,509.01	9.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	6,428.07	1,607.02	9.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	6,883.14	1,720.79	10.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	7,417.24	1,854.31	11.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	8,219.08	2,054.77	12.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	9,199.94	2,299.99	13.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 PM	11,258.20	2,814.55	17.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 PM	17,221.86	5,166.56	26.0%	3,348.29	1,004.49	5.1%	3,348.29	1,004.49	5.1%	3,348.29	1,004.49	5.1%
7:36 PM	36,843.77	6,631.88	55.6%	2,204.41	396.79	3.3%	2,204.41	396.79	3.3%	2,204.41	396.79	3.3%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Playground

PREVISION DESIGN

JULY 12

Mirror date: May 31
Analysis hours: 6:56 AM-7:33 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
6:56 AM	13,173.12	395.19	19.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 AM	12,142.14	1,821.32	18.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 AM	8,774.15	2,193.54	13.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 AM	6,737.50	1,684.38	10.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	5,422.40	1,355.60	8.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	4,394.75	1,098.69	6.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	3,693.91	923.48	5.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	3,489.33	872.33	5.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	3,604.41	901.10	5.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	3,727.67	931.92	5.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	3,828.68	957.17	5.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	3,910.52	977.63	5.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	3,979.82	994.96	6.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	4,027.90	1,006.97	6.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	4,062.55	1,015.64	6.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	4,077.13	1,019.28	6.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	4,096.69	1,024.17	6.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	4,093.11	1,023.28	6.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	4,083.65	1,020.91	6.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	4,034.80	1,008.70	6.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	4,006.29	1,001.57	6.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	3,945.55	986.39	6.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	3,914.10	978.52	5.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	3,840.57	960.14	5.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	3,800.55	950.14	5.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	3,715.01	928.75	5.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	3,793.52	948.38	5.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	3,866.15	966.54	5.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	3,978.16	994.54	6.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	4,042.35	1,010.59	6.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	4,141.57	1,035.39	6.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	4,199.24	1,049.81	6.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	4,288.23	1,072.06	6.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	4,340.02	1,085.00	6.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	4,418.53	1,104.63	6.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	4,468.14	1,117.04	6.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	4,534.63	1,133.66	6.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	4,580.15	1,145.04	6.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	4,638.20	1,159.55	7.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	4,866.06	1,216.51	7.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	5,121.28	1,280.32	7.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	5,401.94	1,350.49	8.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	5,713.94	1,428.48	8.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	6,063.14	1,515.78	9.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	6,463.23	1,615.81	9.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	6,930.84	1,732.71	10.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	7,477.46	1,869.37	11.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	8,362.81	2,090.70	12.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	9,384.58	2,346.15	14.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 PM	11,578.38	2,894.59	17.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 PM	18,269.21	5,115.38	27.6%	7,366.99	2,062.76	11.1%	7,366.99	2,062.76	11.1%	7,366.99	2,062.76	11.1%
7:33 PM	36,549.30	5,482.39	55.2%	4,786.53	717.98	7.2%	4,786.53	717.98	7.2%	4,786.53	717.98	7.2%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Playground

PREVISION DESIGN

JULY 19

Mirror date: May 24
Analysis hours: 7:01 AM-7:30 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:01 AM	13,358.91	1,736.66	20.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:16 AM	9,557.71	2,293.85	14.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 AM	7,377.22	1,770.53	11.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	5,803.57	1,450.89	8.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	4,613.78	1,153.44	7.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	3,955.14	988.79	6.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	3,669.11	917.28	5.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	3,726.52	931.63	5.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	3,842.11	960.53	5.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	3,941.33	985.33	5.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	4,015.62	1,003.91	6.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	4,083.78	1,020.94	6.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	4,127.76	1,031.94	6.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	4,159.86	1,039.96	6.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	4,171.87	1,042.97	6.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	4,188.63	1,047.16	6.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	4,182.49	1,045.62	6.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	4,174.94	1,043.74	6.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	4,123.80	1,030.95	6.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	4,093.75	1,023.44	6.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	4,033.78	1,008.44	6.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	3,996.70	999.17	6.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	3,923.18	980.79	5.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	3,880.85	970.21	5.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	3,795.31	948.83	5.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	3,873.69	968.42	5.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	3,950.41	987.60	6.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	4,062.29	1,015.57	6.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	4,128.14	1,032.04	6.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	4,230.31	1,057.58	6.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	4,291.56	1,072.89	6.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	4,383.11	1,095.78	6.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	4,440.01	1,110.00	6.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	4,519.16	1,129.79	6.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	4,573.25	1,143.31	6.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	4,645.23	1,161.31	7.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	4,695.87	1,173.97	7.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	4,759.29	1,189.82	7.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	4,894.32	1,223.58	7.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	5,155.04	1,288.76	7.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	5,444.40	1,361.10	8.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	5,765.47	1,441.37	8.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	6,125.79	1,531.45	9.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	6,539.06	1,634.76	9.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	7,025.58	1,756.40	10.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	7,597.66	1,899.41	11.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	8,597.70	2,149.42	13.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	9,741.20	2,435.30	14.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 PM	12,336.75	3,084.19	18.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 PM	20,389.48	5,097.37	30.8%	14,008.60	3,502.15	21.1%	14,008.60	3,502.15	21.1%	14,008.60	3,502.15	21.1%
7:30 PM	36,578.45	4,755.20	55.2%	9,367.84	1,217.82	14.1%	9,367.84	1,217.82	14.1%	9,367.84	1,217.82	14.1%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Playground

PREVISION DESIGN

JULY 26

Mirror date: May 17
Analysis hours: 7:07 AM-7:25 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:07 AM	13,523.47	811.41	20.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 AM	11,281.22	2,143.43	17.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 AM	8,215.50	2,053.88	12.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	6,285.50	1,571.37	9.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	4,915.93	1,228.98	7.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	4,332.35	1,083.09	6.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	3,948.88	987.22	6.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	3,894.15	973.54	5.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	3,993.63	998.41	6.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	4,087.87	1,021.97	6.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	4,157.55	1,039.39	6.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	4,221.10	1,055.28	6.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	4,260.23	1,065.06	6.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	4,290.66	1,072.67	6.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	4,292.58	1,073.15	6.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	4,307.92	1,076.98	6.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	4,299.49	1,074.87	6.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	4,292.84	1,073.21	6.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	4,238.11	1,059.53	6.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	4,204.22	1,051.06	6.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	4,138.37	1,034.59	6.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	4,101.04	1,025.26	6.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	4,025.85	1,006.46	6.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	3,981.61	995.40	6.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	3,896.96	974.24	5.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	3,980.46	995.11	6.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	4,059.35	1,014.84	6.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	4,173.41	1,043.35	6.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	4,243.10	1,060.77	6.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	4,346.67	1,086.67	6.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	4,412.01	1,103.00	6.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	4,507.14	1,126.78	6.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	4,566.85	1,141.71	6.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	4,653.42	1,163.35	7.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	4,711.21	1,177.80	7.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	4,789.47	1,197.37	7.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	4,846.37	1,211.59	7.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	4,919.38	1,229.84	7.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	4,974.11	1,243.53	7.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	5,209.51	1,302.38	7.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	5,508.46	1,377.11	8.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	5,838.86	1,459.72	8.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	6,220.92	1,555.23	9.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	6,656.95	1,664.24	10.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	7,168.79	1,792.20	10.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	7,818.35	1,954.59	11.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	8,904.83	2,226.21	13.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	10,417.87	2,604.47	15.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 PM	13,698.65	3,424.66	20.7%	328.62	82.15	0.5%	328.62	82.15	0.5%	328.62	82.15	0.5%
7:15 PM	24,161.78	5,073.97	36.5%	25,066.56	5,263.98	37.8%	25,066.56	5,263.98	37.8%	25,066.56	5,263.98	37.8%
7:25 PM	36,883.15	3,319.48	55.7%	18,234.05	1,641.06	27.5%	18,234.05	1,641.06	27.5%	18,234.05	1,641.06	27.5%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Playground

PREVISION DESIGN

AUGUST 2

Mirror date: May 10
Analysis hours: 7:12 AM-7:18 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:12 AM	13,811.94	276.24	20.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 AM	13,078.50	1,961.77	19.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 AM	9,386.12	2,346.53	14.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	6,879.18	1,719.79	10.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	5,560.37	1,390.09	8.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	4,805.96	1,201.49	7.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	4,325.31	1,081.33	6.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	4,118.17	1,029.54	6.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	4,190.03	1,047.51	6.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	4,275.70	1,068.93	6.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	4,336.05	1,084.01	6.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	4,391.80	1,097.95	6.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	4,424.79	1,106.20	6.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	4,446.40	1,111.60	6.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	4,446.91	1,111.73	6.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	4,456.25	1,114.06	6.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	4,442.06	1,110.51	6.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	4,433.87	1,108.47	6.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	4,372.62	1,093.16	6.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	4,334.65	1,083.66	6.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	4,266.62	1,066.66	6.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	4,226.22	1,056.55	6.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	4,149.11	1,037.28	6.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	4,102.70	1,025.67	6.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	4,016.13	1,004.03	6.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	4,115.10	1,028.78	6.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	4,196.55	1,049.14	6.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	4,312.02	1,078.00	6.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	4,386.43	1,096.61	6.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	4,492.95	1,123.24	6.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	4,560.97	1,140.24	6.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	4,661.60	1,165.40	7.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	4,725.66	1,181.42	7.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	4,817.60	1,204.40	7.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	4,883.19	1,220.80	7.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	4,970.78	1,242.70	7.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	5,034.84	1,258.71	7.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	5,117.83	1,279.46	7.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	5,184.44	1,296.11	7.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	5,293.26	1,323.31	8.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	5,603.08	1,400.77	8.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	5,956.11	1,489.03	9.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	6,358.64	1,589.66	9.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	6,825.60	1,706.40	10.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	7,376.32	1,844.08	11.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	8,217.81	2,054.45	12.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	9,448.00	2,362.00	14.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	11,575.69	2,893.92	17.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 PM	16,643.14	4,160.79	25.1%	13,386.91	3,346.73	20.2%	13,386.91	3,346.73	20.2%	13,386.91	3,346.73	20.2%
7:15 PM	31,898.43	4,784.76	48.1%	30,224.29	4,533.64	45.6%	30,224.29	4,533.64	45.6%	30,224.29	4,533.64	45.6%
7:18 PM	37,337.46	1,120.12	56.4%	25,729.04	771.87	38.8%	25,729.04	771.87	38.8%	25,729.04	771.87	38.8%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Playground

PREVISION DESIGN

AUGUST 9

Mirror date: May 3
Analysis hours: 7:19 AM-7:10 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:19 AM	14,283.63	1,285.53	21.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 AM	10,908.36	2,290.76	16.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	7,912.33	1,978.08	11.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	6,379.99	1,595.00	9.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	5,382.25	1,345.56	8.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	4,791.64	1,197.91	7.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	4,413.80	1,103.45	6.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	4,431.70	1,107.92	6.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	4,502.02	1,125.51	6.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	4,548.82	1,137.21	6.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	4,592.94	1,148.23	6.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	4,616.85	1,154.21	7.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	4,633.98	1,158.50	7.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	4,626.44	1,156.61	7.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	4,628.87	1,157.22	7.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	4,607.64	1,151.91	7.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	4,595.88	1,148.97	6.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	4,531.31	1,132.83	6.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	4,489.62	1,122.41	6.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	4,418.53	1,104.63	6.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	4,373.14	1,093.28	6.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	4,293.73	1,073.43	6.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	4,241.82	1,060.45	6.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	4,156.02	1,039.00	6.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	4,276.72	1,069.18	6.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	4,361.12	1,090.28	6.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	4,478.88	1,119.72	6.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	4,557.52	1,139.38	6.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	4,667.36	1,166.84	7.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	4,741.13	1,185.28	7.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	4,844.70	1,211.18	7.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	4,916.95	1,229.24	7.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	5,015.79	1,253.95	7.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	5,089.44	1,272.36	7.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	5,187.00	1,296.75	7.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	5,261.68	1,315.42	7.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	5,358.34	1,339.59	8.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	5,438.00	1,359.50	8.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	5,538.89	1,384.72	8.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	5,730.30	1,432.58	8.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	6,109.04	1,527.26	9.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	6,542.64	1,635.66	9.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	7,052.05	1,763.01	10.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	7,668.75	1,917.19	11.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	8,738.22	2,184.55	13.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	10,377.46	2,594.36	15.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	13,593.03	4,621.63	20.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:10 PM	37,776.94	7,933.16	57.0%	28,472.14	5,979.15	43.0%	28,472.14	5,979.15	43.0%	28,472.14	5,979.15	43.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Playground

PREVISION DESIGN

AUGUST 16

Mirror date: April 26
Analysis hours: 7:25 AM-7:02 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:25 AM	14,623.25	584.93	22.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 AM	13,085.53	2,224.54	19.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	9,381.90	2,345.47	14.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	7,384.89	1,846.22	11.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	6,103.80	1,525.95	9.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	5,347.22	1,336.80	8.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	4,823.73	1,205.93	7.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	4,724.64	1,181.16	7.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	4,769.65	1,192.41	7.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	4,801.36	1,200.34	7.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	4,833.58	1,208.40	7.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	4,840.23	1,210.06	7.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	4,853.14	1,213.29	7.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	4,833.96	1,208.49	7.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	4,830.26	1,207.56	7.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	4,801.10	1,200.28	7.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	4,783.97	1,195.99	7.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	4,711.34	1,177.84	7.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	4,664.16	1,166.04	7.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	4,587.95	1,146.99	6.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	4,538.98	1,134.74	6.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	4,456.38	1,114.09	6.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	4,402.80	1,100.70	6.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	4,336.31	1,084.08	6.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	4,465.07	1,116.27	6.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	4,551.64	1,137.91	6.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	4,673.62	1,168.41	7.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	4,753.92	1,188.48	7.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	4,868.87	1,217.22	7.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	4,947.51	1,236.88	7.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	5,060.16	1,265.04	7.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	5,139.56	1,284.89	7.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	5,246.20	1,311.55	7.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	5,330.34	1,332.58	8.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	5,438.51	1,359.63	8.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	5,528.15	1,382.04	8.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	5,640.93	1,410.23	8.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	5,740.53	1,435.13	8.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	5,863.28	1,465.82	8.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	5,978.24	1,494.56	9.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	6,300.20	1,575.05	9.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	6,775.73	1,693.93	10.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	7,338.22	1,834.55	11.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	8,171.39	2,042.85	12.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	9,532.39	2,383.10	14.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	11,891.26	2,972.82	17.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	17,139.13	4,627.57	25.9%	7,061.26	1,906.54	10.7%	7,061.26	1,906.54	10.7%	7,061.26	1,906.54	10.7%
7:02 PM	37,319.69	5,224.76	56.3%	28,929.39	4,050.11	43.7%	28,929.39	4,050.11	43.7%	28,929.39	4,050.11	43.7%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Playground

PREVISION DESIGN

AUGUST 23

Mirror date: April 19
Analysis hours: 7:31 AM-6:52 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:31 AM	15,384.81	1,692.33	23.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	11,336.45	2,607.38	17.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	8,572.12	2,143.03	12.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	6,995.15	1,748.79	10.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	5,993.07	1,498.27	9.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	5,345.56	1,336.39	8.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	5,072.31	1,268.08	7.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	5,079.72	1,269.93	7.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	5,092.38	1,273.10	7.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	5,106.57	1,276.64	7.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	5,102.23	1,275.56	7.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	5,098.39	1,274.60	7.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	5,071.03	1,267.76	7.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	5,056.58	1,264.14	7.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	5,017.20	1,254.30	7.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	4,994.44	1,248.61	7.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	4,912.86	1,228.21	7.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	4,860.43	1,215.11	7.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	4,778.60	1,194.65	7.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	4,724.51	1,181.13	7.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	4,638.46	1,159.61	7.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	4,581.43	1,145.36	6.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	4,551.00	1,137.75	6.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	4,681.29	1,170.32	7.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	4,772.97	1,193.24	7.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	4,894.19	1,223.55	7.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	4,983.57	1,245.89	7.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	5,101.84	1,275.46	7.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	5,188.02	1,297.01	7.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	5,305.02	1,326.26	8.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	5,396.06	1,349.02	8.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	5,514.59	1,378.65	8.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	5,610.49	1,402.62	8.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	5,734.01	1,433.50	8.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	5,839.76	1,459.94	8.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	5,974.27	1,493.57	9.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	6,095.49	1,523.87	9.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	6,249.18	1,562.30	9.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	6,398.91	1,599.73	9.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	6,584.19	1,646.05	9.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	7,079.03	1,769.76	10.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	7,748.54	1,937.13	11.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	8,934.88	2,233.72	13.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	10,866.04	2,716.51	16.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	14,624.40	3,656.10	22.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	24,565.58	4,667.46	37.1%	25,587.49	4,861.62	38.6%	25,587.49	4,861.62	38.6%	25,587.49	4,861.62	38.6%
6:52 PM	37,969.76	2,278.19	57.3%	26,908.09	1,614.49	40.6%	26,908.09	1,614.49	40.6%	26,908.09	1,614.49	40.6%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Playground

PREVISION DESIGN

AUGUST 30

Mirror date: April 12
Analysis hours: 7:37 AM-6:42 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:37 AM	16,191.78	971.51	24.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	13,682.41	2,599.66	20.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	10,081.32	2,520.33	15.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	8,065.77	2,016.44	12.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	6,757.07	1,689.27	10.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	5,957.14	1,489.28	9.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	5,477.13	1,369.28	8.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	5,434.93	1,358.73	8.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	5,417.67	1,354.42	8.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	5,414.99	1,353.75	8.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	5,391.08	1,347.77	8.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	5,379.57	1,344.89	8.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	5,334.43	1,333.61	8.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	5,307.58	1,326.89	8.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	5,259.12	1,314.78	7.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	5,227.41	1,306.85	7.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	5,137.90	1,284.48	7.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	5,077.42	1,269.36	7.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	4,989.70	1,247.43	7.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	4,930.12	1,232.53	7.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	4,840.36	1,210.09	7.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	4,779.75	1,194.94	7.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	4,792.28	1,198.07	7.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	4,925.00	1,231.25	7.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	5,018.35	1,254.59	7.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	5,146.21	1,286.55	7.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	5,239.30	1,309.82	7.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	5,363.46	1,340.86	8.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	5,457.18	1,364.30	8.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	5,585.94	1,396.49	8.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	5,684.66	1,421.16	8.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	5,819.81	1,454.95	8.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	5,927.98	1,482.00	8.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	6,071.19	1,517.80	9.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	6,197.27	1,549.32	9.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	6,358.38	1,589.60	9.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	6,511.69	1,627.92	9.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	6,702.47	1,675.62	10.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	6,896.44	1,724.11	10.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	7,140.28	1,785.07	10.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	7,461.74	1,865.43	11.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	8,441.44	2,110.36	12.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	10,039.25	2,509.81	15.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	12,909.59	3,227.40	19.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	19,753.73	4,543.36	29.8%	379.38	87.26	0.6%	379.38	87.26	0.6%	379.38	87.26	0.6%
6:42 PM	40,258.94	4,428.48	60.8%	13,807.08	1,518.78	20.8%	13,807.08	1,518.78	20.8%	13,807.08	1,518.78	20.8%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Playground

PREVISION DESIGN

SEPTEMBER 6

Mirror date: April 5
Analysis hours: 7:44 AM-6:31 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:44 AM	17,036.84	2,214.79	25.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	11,990.74	2,997.69	18.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	9,348.27	2,337.07	14.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	7,656.73	1,914.18	11.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	6,662.06	1,665.52	10.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	5,964.43	1,491.11	9.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	5,838.35	1,459.59	8.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	5,785.93	1,446.48	8.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	5,758.05	1,439.51	8.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	5,712.27	1,428.07	8.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	5,684.91	1,421.23	8.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	5,624.56	1,406.14	8.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	5,585.69	1,396.42	8.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	5,524.70	1,381.17	8.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	5,483.27	1,370.82	8.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	5,384.43	1,346.11	8.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	5,315.00	1,328.75	8.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	5,220.63	1,305.16	7.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	5,155.93	1,288.98	7.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	5,061.82	1,265.46	7.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	4,995.46	1,248.86	7.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	5,056.20	1,264.05	7.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	5,191.86	1,297.97	7.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	5,291.85	1,322.96	8.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	5,423.04	1,355.76	8.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	5,522.27	1,380.57	8.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	5,655.89	1,413.97	8.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	5,761.12	1,440.28	8.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	5,899.34	1,474.84	8.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	6,012.89	1,503.22	9.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	6,161.08	1,540.27	9.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	6,289.59	1,572.40	9.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	6,457.48	1,614.37	9.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	6,609.13	1,652.28	10.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	6,800.92	1,700.23	10.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	6,991.83	1,747.96	10.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	7,232.47	1,808.12	10.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	7,484.75	1,871.19	11.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	7,807.36	1,951.84	11.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	8,292.35	2,073.09	12.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	9,468.59	2,367.15	14.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	11,942.92	2,985.73	18.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	16,539.44	4,465.65	25.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:31 PM	43,167.89	6,043.50	65.2%	1,240.43	173.66	1.9%	1,240.43	173.66	1.9%	1,240.43	173.66	1.9%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Playground

PREVISION DESIGN

SEPTEMBER 13

Mirror date: March 29
Analysis hours: 7:50 AM-6:21 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:50 AM	18,005.30	1,440.42	27.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	14,499.47	3,044.89	21.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	10,886.88	2,721.72	16.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	8,793.46	2,198.36	13.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	7,489.61	1,872.40	11.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	6,599.28	1,649.82	10.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	6,296.24	1,574.06	9.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	6,192.28	1,548.07	9.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	6,136.92	1,534.23	9.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	6,065.82	1,516.46	9.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	6,019.66	1,504.92	9.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	5,941.92	1,485.48	9.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	5,891.16	1,472.79	8.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	5,815.59	1,453.90	8.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	5,761.12	1,440.28	8.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	5,651.92	1,412.98	8.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	5,574.95	1,393.74	8.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	5,474.19	1,368.55	8.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	5,402.84	1,350.71	8.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	5,303.87	1,325.97	8.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	5,247.10	1,311.77	7.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	5,349.14	1,337.28	8.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	5,486.85	1,371.71	8.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	5,592.46	1,398.12	8.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	5,729.54	1,432.38	8.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	5,836.18	1,459.04	8.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	5,977.72	1,494.43	9.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	6,094.98	1,523.74	9.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	6,247.27	1,561.82	9.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	6,376.28	1,594.07	9.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	6,545.06	1,636.27	9.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	6,696.20	1,674.05	10.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	6,890.81	1,722.70	10.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	7,075.07	1,768.77	10.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	7,309.06	1,827.27	11.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	7,550.09	1,887.52	11.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	7,854.41	1,963.60	11.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	8,184.05	2,046.01	12.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	8,644.49	2,161.12	13.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	9,608.73	2,402.18	14.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	11,366.76	2,841.69	17.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	15,076.91	3,769.23	22.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	31,889.48	5,740.11	48.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:21 PM	46,446.11	2,322.31	70.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Playground

PREVISION DESIGN

SEPTEMBER 20

Fall equinox (Spring equinox on March 22 similar)
Analysis hours: 7:57 AM-6:09 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:57 AM	19,559.63	391.19	29.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	18,084.45	2,712.67	27.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	12,995.51	3,248.88	19.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	10,100.50	2,525.13	15.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	8,401.68	2,100.42	12.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	7,321.85	1,830.46	11.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	6,794.40	1,698.60	10.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	6,639.05	1,659.76	10.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	6,556.70	1,639.18	9.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	6,459.27	1,614.82	9.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	6,393.03	1,598.26	9.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	6,291.38	1,572.84	9.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	6,223.10	1,555.77	9.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	6,128.99	1,532.25	9.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	6,063.14	1,515.78	9.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	5,941.03	1,485.26	9.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	5,854.21	1,463.55	8.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	5,746.29	1,436.57	8.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	5,668.93	1,417.23	8.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	5,565.36	1,391.34	8.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	5,558.20	1,389.55	8.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	5,668.42	1,417.10	8.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	5,808.94	1,452.24	8.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	5,919.93	1,479.98	8.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	6,065.95	1,516.49	9.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	6,181.29	1,545.32	9.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	6,334.60	1,583.65	9.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	6,465.02	1,616.26	9.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	6,635.08	1,658.77	10.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	6,784.17	1,696.04	10.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	6,977.00	1,744.25	10.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	7,151.66	1,787.92	10.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	7,382.97	1,845.74	11.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	7,606.99	1,901.75	11.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	7,893.92	1,973.48	11.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	8,195.69	2,048.92	12.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	8,583.37	2,145.84	13.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	9,018.25	2,254.56	13.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	9,913.05	2,478.26	15.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	11,473.65	2,868.41	17.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	14,627.08	3,656.77	22.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	25,633.64	5,383.07	38.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:09 PM	52,645.18	4,211.61	79.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Playground

PREVISION DESIGN

SEPTEMBER 27

Mirror date: March 15
Analysis hours: 8:03 AM-5:58 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
8:03 AM	22,961.76	2,296.18	34.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	16,914.86	3,721.27	25.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	12,275.88	3,068.97	18.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	9,691.59	2,422.90	14.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	8,205.91	2,051.48	12.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	7,330.03	1,832.51	11.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	7,080.31	1,770.08	10.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	6,961.27	1,740.32	10.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	6,845.17	1,711.29	10.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	6,767.42	1,691.86	10.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	6,657.33	1,664.33	10.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	6,576.78	1,644.19	9.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	6,471.29	1,617.82	9.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	6,391.37	1,597.84	9.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	6,256.86	1,564.21	9.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	6,161.47	1,540.37	9.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	6,042.42	1,510.61	9.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	5,960.33	1,490.08	9.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	5,849.86	1,462.46	8.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	5,901.39	1,475.35	8.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	6,015.83	1,503.96	9.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	6,161.08	1,540.27	9.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	6,274.76	1,568.69	9.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	6,428.58	1,607.14	9.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	6,553.12	1,638.28	9.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	6,721.14	1,680.28	10.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	6,866.52	1,716.63	10.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	7,054.87	1,763.72	10.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	7,228.12	1,807.03	10.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	7,450.48	1,862.62	11.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	7,663.76	1,915.94	11.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	7,936.50	1,984.13	12.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	8,211.28	2,052.82	12.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	8,564.45	2,141.11	12.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	8,944.98	2,236.24	13.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	9,440.20	2,360.05	14.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	10,177.35	2,544.34	15.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	11,640.14	2,910.03	17.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	14,359.59	3,589.90	21.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	20,470.93	4,708.31	30.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:58 PM	57,293.23	6,302.25	86.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Playground

PREVISION DESIGN

OCTOBER 4

Mirror date: March 8
Analysis hours: 8:09 AM-5:47 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
8:09 AM	26,681.51	1,067.26	40.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	23,264.80	3,955.02	35.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	16,050.48	4,012.62	24.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	12,382.52	3,095.63	18.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	9,869.96	2,467.49	14.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	8,430.57	2,107.64	12.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	7,804.93	1,951.23	11.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	7,520.94	1,880.23	11.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	7,309.57	1,827.39	11.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	7,177.49	1,794.37	10.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	7,028.27	1,757.07	10.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	6,931.86	1,732.96	10.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	6,815.88	1,703.97	10.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	6,727.66	1,681.91	10.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	6,588.92	1,647.23	9.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	6,488.68	1,622.17	9.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	6,362.60	1,590.65	9.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	6,275.40	1,568.85	9.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	6,156.35	1,539.09	9.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	6,250.59	1,562.65	9.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	6,360.30	1,590.07	9.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	6,523.71	1,630.93	9.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	6,649.66	1,662.41	10.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	6,816.27	1,704.07	10.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	6,953.72	1,738.43	10.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	7,138.75	1,784.69	10.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	7,301.39	1,825.35	11.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	7,515.31	1,878.83	11.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	7,715.55	1,928.89	11.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	7,975.24	1,993.81	12.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	8,224.97	2,056.24	12.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	8,548.85	2,137.21	12.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	8,888.46	2,222.12	13.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	9,323.72	2,330.93	14.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	9,805.77	2,451.44	14.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	10,520.93	2,630.23	15.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	11,795.24	2,948.81	17.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	14,062.55	3,515.64	21.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	18,073.58	4,879.87	27.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:47 PM	61,751.40	8,645.20	93.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Playground

PREVISION DESIGN

OCTOBER 11

Mirror date: March 1

Analysis hours: 8:16 AM-5:37 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
8:16 AM	30,649.31	3,677.92	46.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	21,529.28	5,167.03	32.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	16,033.35	4,008.34	24.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	12,396.59	3,099.15	18.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	10,318.26	2,579.56	15.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	9,175.78	2,293.94	13.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	8,639.00	2,159.75	13.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	8,159.50	2,039.87	12.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	7,863.75	1,965.94	11.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	7,607.89	1,901.97	11.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	7,451.38	1,862.84	11.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	7,263.80	1,815.95	11.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	7,128.39	1,782.10	10.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	6,938.51	1,734.63	10.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	6,816.91	1,704.23	10.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	6,672.04	1,668.01	10.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	6,578.31	1,644.58	9.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	6,478.96	1,619.74	9.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	6,631.25	1,657.81	10.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	6,758.09	1,689.52	10.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	6,919.84	1,729.96	10.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	7,050.39	1,762.60	10.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	7,228.76	1,807.19	10.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	7,380.03	1,845.01	11.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	7,583.08	1,895.77	11.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	7,766.31	1,941.58	11.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	8,009.64	2,002.41	12.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	8,239.93	2,059.98	12.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	8,540.28	2,135.07	12.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	8,841.66	2,210.42	13.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	9,229.61	2,307.40	13.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	9,640.44	2,410.11	14.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	10,177.99	2,544.50	15.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	10,815.02	2,703.75	16.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	12,020.92	3,005.23	18.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	13,790.71	3,447.68	20.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	17,463.02	4,365.75	26.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	41,424.82	7,870.72	62.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:37 PM	64,353.98	3,861.24	97.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Playground

PREVISION DESIGN

OCTOBER 18

Mirror date: February 22
Analysis hours: 8:22 AM-5:27 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
8:22 AM	34,596.66	2,075.80	52.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	29,133.33	5,244.00	44.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	21,094.79	5,273.70	31.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	15,900.62	3,975.16	24.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	12,782.74	3,195.69	19.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	10,955.80	2,738.95	16.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	10,157.79	2,539.45	15.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	9,482.27	2,370.57	14.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	9,015.05	2,253.76	13.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	8,533.89	2,133.47	12.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	8,239.29	2,059.82	12.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	7,912.72	1,978.18	11.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	7,722.71	1,930.68	11.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	7,494.09	1,873.52	11.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	7,331.95	1,832.99	11.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	7,125.06	1,781.27	10.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	6,996.05	1,749.01	10.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	6,889.02	1,722.26	10.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	7,028.27	1,757.07	10.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	7,129.16	1,782.29	10.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	7,296.79	1,824.20	11.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	7,440.64	1,860.16	11.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	7,635.63	1,908.91	11.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	7,811.32	1,952.83	11.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	8,037.51	2,009.38	12.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	8,252.97	2,063.24	12.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	8,534.53	2,133.63	12.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	8,807.65	2,201.91	13.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	9,169.51	2,292.38	13.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	9,541.35	2,385.34	14.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	10,039.64	2,509.91	15.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	10,573.86	2,643.47	16.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	11,269.84	2,817.46	17.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	12,311.56	3,077.89	18.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	13,698.14	3,424.53	20.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	16,684.57	4,171.14	25.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	25,515.75	5,613.47	38.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:27 PM	66,019.69	6,601.97	99.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Playground

PREVISION DESIGN

OCTOBER 25

Mirror date: February 15
Analysis hours: 7:30 AM-4:18 PM (PST)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:30 AM	38,552.06	5,011.77	58.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	27,670.55	6,917.64	41.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	20,778.32	5,194.58	31.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	16,102.65	4,025.66	24.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	13,259.68	3,314.92	20.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	12,014.27	3,003.57	18.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	11,096.83	2,774.21	16.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	10,433.98	2,608.49	15.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	9,823.42	2,455.85	14.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	9,399.03	2,349.76	14.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	8,911.22	2,227.81	13.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	8,608.95	2,152.24	13.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	8,246.06	2,061.52	12.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	8,013.60	2,003.40	12.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	7,752.12	1,938.03	11.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	7,596.25	1,899.06	11.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	7,488.46	1,872.11	11.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	7,608.01	1,902.00	11.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	7,673.61	1,918.40	11.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	7,824.23	1,956.06	11.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	7,930.49	1,982.62	12.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	8,126.77	2,031.69	12.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	8,298.11	2,074.53	12.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	8,560.87	2,140.22	12.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	8,803.30	2,200.83	13.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	9,148.54	2,287.14	13.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	9,484.96	2,371.24	14.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	9,932.87	2,483.22	15.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	10,390.37	2,597.59	15.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	11,021.26	2,755.32	16.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	11,717.37	2,929.34	17.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	12,826.99	3,206.75	19.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	14,041.46	3,510.36	21.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	16,385.11	4,096.28	24.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	20,981.50	5,245.38	31.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	66,247.80	9,937.17	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:18 PM	66,249.08	1,987.47	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Playground

PREVISION DESIGN

NOVEMBER 1

Mirror date: February 8
Analysis hours: 7:36 AM-4:10 PM (PST)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:36 AM	42,445.57	2,971.19	64.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	35,444.79	6,734.51	53.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	26,491.50	6,622.87	40.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	20,297.29	5,074.32	30.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	16,344.19	4,086.05	24.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	14,249.11	3,562.28	21.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	13,012.26	3,253.07	19.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	12,129.35	3,032.34	18.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	11,301.67	2,825.42	17.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	10,745.97	2,686.49	16.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	10,127.74	2,531.93	15.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	9,745.93	2,436.48	14.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	9,284.97	2,321.24	14.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	8,980.53	2,245.13	13.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	8,620.97	2,155.24	13.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	8,412.93	2,103.23	12.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	8,250.16	2,062.54	12.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	8,343.88	2,085.97	12.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	8,365.11	2,091.28	12.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	8,503.07	2,125.77	12.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	8,582.35	2,145.59	13.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	8,776.84	2,194.21	13.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	8,950.48	2,237.62	13.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	9,232.93	2,308.23	13.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	9,487.51	2,371.88	14.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	9,858.58	2,464.65	14.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	10,232.20	2,558.05	15.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	10,791.87	2,697.97	16.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	11,390.80	2,847.70	17.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	12,244.81	3,061.20	18.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	13,273.37	3,318.34	20.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	14,880.51	3,720.13	22.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	16,560.16	4,140.04	25.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	20,292.82	5,073.20	30.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	52,705.02	11,068.05	79.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:10 PM	66,249.08	5,962.42	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Playground

PREVISION DESIGN

NOVEMBER 8

Mirror date: February 1
Analysis hours: 7:43 AM-4:03 PM (PST)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:43 AM	46,085.15	460.85	69.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	45,018.36	5,852.39	68.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	33,205.22	8,301.31	50.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	25,595.41	6,398.85	38.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	19,966.63	4,991.66	30.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	16,924.19	4,231.05	25.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	15,146.60	3,786.65	22.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	14,005.91	3,501.48	21.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	12,960.73	3,240.18	19.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	12,280.23	3,070.06	18.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	11,486.70	2,871.67	17.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	11,002.47	2,750.62	16.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	10,461.34	2,615.33	15.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	10,112.14	2,528.03	15.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	9,694.66	2,423.66	14.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	9,444.42	2,361.11	14.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	9,242.78	2,310.69	14.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	9,305.56	2,326.39	14.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	9,279.22	2,319.81	14.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	9,398.39	2,349.60	14.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	9,440.46	2,360.11	14.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	9,647.60	2,411.90	14.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	9,801.42	2,450.36	14.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	10,121.60	2,530.40	15.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	10,396.64	2,599.16	15.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	10,881.25	2,720.31	16.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	11,355.76	2,838.94	17.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	12,153.00	3,038.25	18.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	12,967.51	3,241.88	19.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	14,129.17	3,532.29	21.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	15,556.67	3,889.17	23.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	17,166.37	4,291.59	25.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	19,857.94	4,964.49	30.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	24,920.03	6,230.01	37.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	66,249.08	9,937.36	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:03 PM	66,249.08	1,987.47	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Playground

PREVISION DESIGN

NOVEMBER 15

Mirror date: January 25
Analysis hours: 7:51 AM-3:57 PM (PST)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:51 AM	49,304.94	3,944.39	74.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	40,963.22	8,192.64	61.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	31,690.14	7,922.53	47.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	24,209.60	6,052.40	36.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	20,078.26	5,019.56	30.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	17,500.23	4,375.06	26.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	16,030.03	4,007.51	24.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	14,705.59	3,676.40	22.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	13,882.26	3,470.57	21.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	12,975.05	3,243.76	19.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	12,353.88	3,088.47	18.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	11,704.58	2,926.14	17.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	11,296.69	2,824.17	17.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	10,824.35	2,706.09	16.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	10,555.83	2,638.96	15.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	10,332.20	2,583.05	15.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	10,381.30	2,595.32	15.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	10,300.87	2,575.22	15.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	10,408.91	2,602.23	15.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	10,425.15	2,606.29	15.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	10,652.76	2,663.19	16.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	10,817.06	2,704.27	16.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	11,205.90	2,801.48	16.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	11,554.08	2,888.52	17.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	12,150.45	3,037.61	18.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	12,754.87	3,188.72	19.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	13,717.95	3,429.49	20.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	14,714.80	3,678.70	22.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	16,087.31	4,021.83	24.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	17,688.57	4,422.14	26.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	19,663.97	4,915.99	29.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	23,479.74	5,869.94	35.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	48,259.12	11,099.60	72.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:57 PM	66,249.08	7,287.40	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Playground

PREVISION DESIGN

NOVEMBER 22

Mirror date: January 18
Analysis hours: 7:57 AM-3:54 PM (PST)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:57 AM	51,526.22	1,030.52	77.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	49,694.03	7,454.10	75.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	38,209.51	9,552.38	57.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	29,244.32	7,311.08	44.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	23,580.50	5,895.13	35.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	20,022.64	5,005.66	30.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	18,134.57	4,533.64	27.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	16,513.10	4,128.28	24.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	15,511.02	3,877.75	23.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	14,479.78	3,619.94	21.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	13,738.03	3,434.51	20.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	12,981.06	3,245.27	19.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	12,505.40	3,126.35	18.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	11,957.75	2,989.44	18.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	11,657.78	2,914.45	17.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	11,405.88	2,851.47	17.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	11,451.41	2,862.85	17.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	11,346.43	2,836.61	17.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	11,457.54	2,864.39	17.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	11,478.51	2,869.63	17.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	11,740.51	2,935.13	17.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	11,914.41	2,978.60	18.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	12,344.04	3,086.01	18.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	12,729.94	3,182.48	19.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	13,400.98	3,350.24	20.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	14,094.01	3,523.50	21.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	15,194.29	3,798.57	22.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	16,319.77	4,079.94	24.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	17,884.08	4,471.02	27.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	19,557.20	4,889.30	29.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	22,134.72	5,533.68	33.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	28,369.85	7,092.46	42.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	66,249.08	13,249.82	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:54 PM	66,249.08	5,299.93	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Playground

PREVISION DESIGN

NOVEMBER 29

Mirror date: January 11
Analysis hours: 8:04 AM-3:51 PM (PST)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
8:04 AM	53,186.05	4,786.74	80.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	44,932.82	9,435.89	67.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	34,809.68	8,702.42	52.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	27,364.56	6,841.14	41.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	22,724.95	5,681.24	34.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	20,192.44	5,048.11	30.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	18,274.07	4,568.52	27.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	17,047.33	4,261.83	25.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	15,903.95	3,975.99	24.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	15,049.68	3,762.42	22.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	14,197.32	3,549.33	21.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	13,638.04	3,409.51	20.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	13,020.32	3,255.08	19.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	12,682.37	3,170.59	19.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	12,369.23	3,092.31	18.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	12,399.27	3,099.82	18.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	12,281.25	3,070.31	18.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	12,394.54	3,098.64	18.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	12,405.67	3,101.42	18.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	12,689.91	3,172.48	19.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	12,871.87	3,217.97	19.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	13,331.03	3,332.76	20.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	13,739.44	3,434.86	20.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	14,468.91	3,617.23	21.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	15,226.00	3,806.50	23.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	16,431.14	4,107.79	24.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	17,635.25	4,408.81	26.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	19,379.34	4,844.84	29.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	21,112.31	5,278.08	31.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	25,407.32	6,351.83	38.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	50,633.21	12,658.30	76.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	66,249.08	11,924.83	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:51 PM	66,249.08	3,312.45	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Playground

PREVISION DESIGN

DECEMBER 6

Mirror date: January 4
Analysis hours: 8:10 AM-3:51 PM (PST)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
8:10 AM	54,557.79	2,182.31	82.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	50,971.92	8,665.23	76.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	40,114.58	10,028.64	60.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	31,292.09	7,823.02	47.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	25,414.35	6,353.59	38.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	22,113.50	5,528.37	33.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	19,840.94	4,960.23	29.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	18,392.86	4,598.21	27.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	17,125.58	4,281.39	25.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	16,187.68	4,046.92	24.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	15,236.49	3,809.12	23.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	14,609.95	3,652.49	22.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	13,914.87	3,478.72	21.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	13,536.77	3,384.19	20.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	13,150.10	3,287.53	19.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	13,182.84	3,295.71	19.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	13,023.52	3,255.88	19.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	13,122.48	3,280.62	19.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	13,129.39	3,282.35	19.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	13,420.03	3,355.01	20.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	13,609.01	3,402.25	20.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	14,083.65	3,520.91	21.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	14,503.43	3,625.86	21.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	15,264.88	3,816.22	23.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	16,054.58	4,013.64	24.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	17,319.68	4,329.92	26.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	18,582.23	4,645.56	28.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	20,427.46	5,106.86	30.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	22,208.12	5,552.03	33.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	32,357.60	8,089.40	48.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	65,409.64	16,352.41	98.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	66,249.08	11,262.34	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:51 PM	66,249.08	3,312.45	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Playground

PREVISION DESIGN

DECEMBER 13

Mirror date: December 28
Analysis hours: 8:15 AM-3:52 PM (PST)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
8:15 AM	55,525.87	6,663.10	83.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	45,019.51	11,254.88	68.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	35,003.01	8,750.75	52.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	27,926.41	6,981.60	42.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	23,788.03	5,947.01	35.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	21,105.79	5,276.45	31.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	19,448.65	4,862.16	29.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	18,045.96	4,511.49	27.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	17,059.09	4,264.77	25.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	16,010.33	4,002.58	24.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	15,327.15	3,831.79	23.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	14,575.68	3,643.92	22.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	14,148.10	3,537.02	21.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	13,672.43	3,418.11	20.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	13,705.55	3,426.39	20.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	13,532.29	3,383.07	20.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	13,619.11	3,404.78	20.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	13,607.73	3,401.93	20.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	13,881.75	3,470.44	21.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	14,062.81	3,515.70	21.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	14,540.26	3,635.07	21.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	14,954.55	3,738.64	22.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	15,714.58	3,928.65	23.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	16,501.08	4,125.27	24.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	17,784.09	4,446.02	26.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	19,059.68	4,764.92	28.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	20,913.86	5,228.47	31.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	22,729.94	5,682.48	34.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	34,326.86	8,581.71	51.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	66,249.08	16,562.27	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	66,249.08	11,924.83	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:52 PM	66,249.08	3,974.94	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Playground

PREVISION DESIGN

DECEMBER 20

Winter solstice (December 21 similar)
Analysis hours: 8:19 AM-3:54 PM (PST)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
8:19 AM	55,901.79	4,472.14	84.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	48,349.01	10,153.29	73.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	38,040.34	9,510.08	57.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	29,758.09	7,439.52	44.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	25,120.39	6,280.10	37.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	21,949.96	5,487.49	33.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	20,120.20	5,030.05	30.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	18,586.19	4,646.55	28.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	17,569.02	4,392.25	26.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	16,434.21	4,108.55	24.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	15,723.02	3,930.75	23.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	14,923.22	3,730.80	22.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	14,467.12	3,616.78	21.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	13,919.22	3,479.80	21.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	13,930.34	3,482.59	21.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	13,736.75	3,434.19	20.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	13,803.88	3,450.97	20.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	13,771.91	3,442.98	20.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	14,025.34	3,506.34	21.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	14,194.00	3,548.50	21.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	14,654.70	3,663.68	22.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	15,046.35	3,761.59	22.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	15,782.60	3,945.65	23.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	16,529.09	4,132.27	24.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	17,778.85	4,444.71	26.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	19,041.27	4,760.32	28.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	20,823.59	5,205.90	31.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	22,654.50	5,663.62	34.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	28,804.08	7,201.02	43.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	66,249.08	16,562.27	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	66,249.08	13,912.31	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:54 PM	66,249.08	5,299.93	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PREVISION DESIGN

GRATTAN PLAYGROUND 1

HOSPITAL PROJECT

Shading diagrams on the date of maximum shading

7:12 AM

DATE OF MAXIMUM SHADOW
AUGUST 2

PARK FEATURES
1. Tennis court
2. Foursquare courts
3. Play structure areas
4. Blacktop area
5. Basketball court
5. Soccer Field

Existing (Current) Shadow
Net New Project Shadow (if present)
2030 Net New Shadow Profiles (if present)
2030-2050 Net New Shadow (if present)

PREVISION DESIGN

GRATTAN PLAYGROUND 2

HOSPITAL PROJECT

Shading diagrams on the date of maximum shading

8:00 AM

DATE OF MAXIMUM SHADOW
AUGUST 2

PARK FEATURES
1. Tennis court
2. Foursquare courts
3. Play structure areas
4. Blacktop area
5. Basketball court
5. Soccer Field

Existing (Current) Shadow
Net New Project Shadow (if present)
2030 Net New Shadow Profiles (if present)
2030-2050 Net New Shadow (if present)

PREVISION DESIGN

GRATTAN PLAYGROUND 3

HOSPITAL PROJECT

Shading diagrams on the date of maximum shading

9:00 AM

DATE OF MAXIMUM SHADOW
AUGUST 2

PARK FEATURES
1. Tennis court
2. Foursquare courts
3. Play structure areas
4. Blacktop area
5. Basketball court
5. Soccer Field

Existing (Current) Shadow
Net New Project Shadow (if present)
2030 Net New Shadow Profiles (if present)
2030-2050 Net New Shadow (if present)

PREVISION DESIGN

GRATTAN PLAYGROUND 4

HOSPITAL PROJECT

Shading diagrams on the date of maximum shading

10:00 AM

DATE OF MAXIMUM SHADOW
AUGUST 2

PARK FEATURES
1. Tennis court
2. Foursquare courts
3. Play structure areas
4. Blacktop area
5. Basketball court
6. Soccer Field

Existing (Current) Shadow
Net New Project Shadow (if present)
2030 Net New Shadow Profiles (if present)
2030-2050 Net New Shadow (if present)

PREVISION DESIGN

GRATTAN PLAYGROUND 5

HOSPITAL PROJECT

Shading diagrams on the date of maximum shading

11:00 AM

DATE OF MAXIMUM SHADOW
AUGUST 2

PREVISION DESIGN

GRATTAN PLAYGROUND 6

HOSPITAL PROJECT

Shading diagrams on the date of maximum shading

12:00 PM

DATE OF MAXIMUM SHADOW
AUGUST 2

PARK FEATURES

1. Tennis court
2. Foursquare courts
3. Play structure areas
4. Blacktop area
5. Basketball court
5. Soccer Field

Existing (Current) Shadow

Net New Project Shadow (if present)

2030 Net New Shadow Profiles (if present)

2030-2050 Net New Shadow (if present)

PREVISION DESIGN

GRATTAN PLAYGROUND 7

HOSPITAL PROJECT

Shading diagrams on the date of maximum shading

1:00 PM

DATE OF MAXIMUM SHADOW
AUGUST 2

PARK FEATURES

1. Tennis court
2. Foursquare courts
3. Play structure areas
4. Blacktop area
5. Basketball court
5. Soccer Field

Existing (Current) Shadow

Net New Project Shadow (if present)

2030 Net New Shadow Profiles (if present)

2030-2050 Net New Shadow (if present)

PREVISION DESIGN

GRATTAN PLAYGROUND 8

HOSPITAL PROJECT

Shading diagrams on the date of maximum shading

2:00 PM

DATE OF MAXIMUM SHADOW
AUGUST 2

PARK FEATURES
1. Tennis court
2. Foursquare courts
3. Play structure areas
4. Blacktop area
5. Basketball court
5. Soccer Field

Existing (Current) Shadow
Net New Project Shadow (if present)
2030 Net New Shadow Profiles (if present)
2030-2050 Net New Shadow (if present)

PREVISION DESIGN

GRATTAN PLAYGROUND 9

HOSPITAL PROJECT

Shading diagrams on the date of maximum shading

3:00 PM

DATE OF MAXIMUM SHADOW
AUGUST 2

PARK FEATURES
1. Tennis court
2. Foursquare courts
3. Play structure areas
4. Blacktop area
5. Basketball court
5. Soccer Field

Existing (Current) Shadow
Net New Project Shadow (if present)
2030 Net New Shadow Profiles (if present)
2030-2050 Net New Shadow (if present)

PREVISION DESIGN

GRATTAN PLAYGROUND 10

HOSPITAL PROJECT

Shading diagrams on the date of maximum shading

4:00 PM

DATE OF MAXIMUM SHADOW
AUGUST 2

PARK FEATURES
1. Tennis court
2. Foursquare courts
3. Play structure areas
4. Blacktop area
5. Basketball court
5. Soccer Field

Existing (Current) Shadow
Net New Project Shadow (if present)
2030 Net New Shadow Profiles (if present)
2030-2050 Net New Shadow (if present)

PREVISION DESIGN

GRATTAN PLAYGROUND 11

HOSPITAL PROJECT

Shading diagrams on the date of maximum shading

5:00 PM

DATE OF MAXIMUM SHADOW
AUGUST 2

PARK FEATURES
1. Tennis court
2. Foursquare courts
3. Play structure areas
4. Blacktop area
5. Basketball court
5. Soccer Field

Existing (Current) Shadow
Net New Project Shadow (if present)
2030 Net New Shadow Profiles (if present)
2030-2050 Net New Shadow (if present)

PREVISION DESIGN

GRATTAN PLAYGROUND 12

HOSPITAL PROJECT

Shading diagrams on the date of maximum shading

6:00 PM

DATE OF MAXIMUM SHADOW
AUGUST 2

PARK FEATURES
1. Tennis court
2. Foursquare courts
3. Play structure areas
4. Blacktop area
5. Basketball court
5. Soccer Field

Existing (Current) Shadow
Net New Project Shadow (if present)
2030 Net New Shadow Profiles (if present)
2030-2050 Net New Shadow (if present)

PREVISION DESIGN

GRATTAN PLAYGROUND 13

HOSPITAL PROJECT

Shading diagrams on the date of maximum shading

6:45 PM

DATE OF MAXIMUM SHADOW
AUGUST 2

PARK FEATURES
1. Tennis court
2. Foursquare courts
3. Play structure areas
4. Blacktop area
5. Basketball court
6. Soccer Field

Existing (Current) Shadow
Net New Project Shadow (if present)
2030 Net New Shadow Profiles (if present)
2030-2050 Net New Shadow (if present)

PREVISION DESIGN

GRATTAN PLAYGROUND 14

HOSPITAL PROJECT

Shading diagrams on the date of maximum shading

7:00 PM

DATE OF MAXIMUM SHADOW
AUGUST 2

PARK FEATURES
1. Tennis court
2. Foursquare courts
3. Play structure areas
4. Blacktop area
5. Basketball court
5. Soccer Field

Existing (Current) Shadow
Net New Project Shadow (if present)
2030 Net New Shadow Profiles (if present)
2030-2050 Net New Shadow (if present)

PREVISION DESIGN

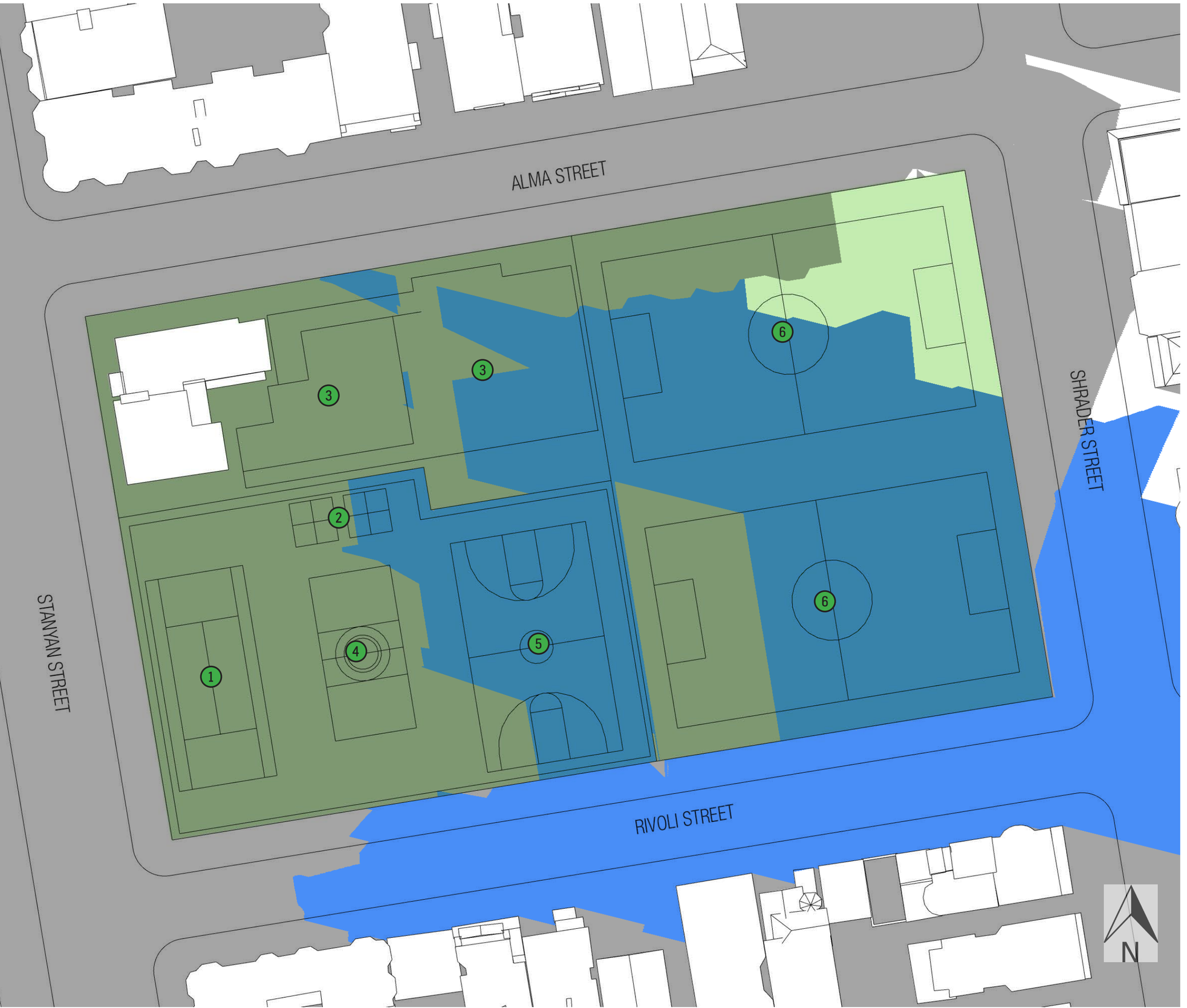
GRATTAN PLAYGROUND 15

HOSPITAL PROJECT

Shading diagrams on the date of maximum shading

7:15 PM

DATE OF MAXIMUM SHADOW
AUGUST 2



PARK FEATURES
1. Tennis court
2. Foursquare courts
3. Play structure areas
4. Blacktop area
5. Basketball court
5. Soccer Field

Existing (Current) Shadow
Net New Project Shadow (if present)
2030 Net New Shadow Profiles (if present)
2030-2050 Net New Shadow (if present)

PREVISION DESIGN

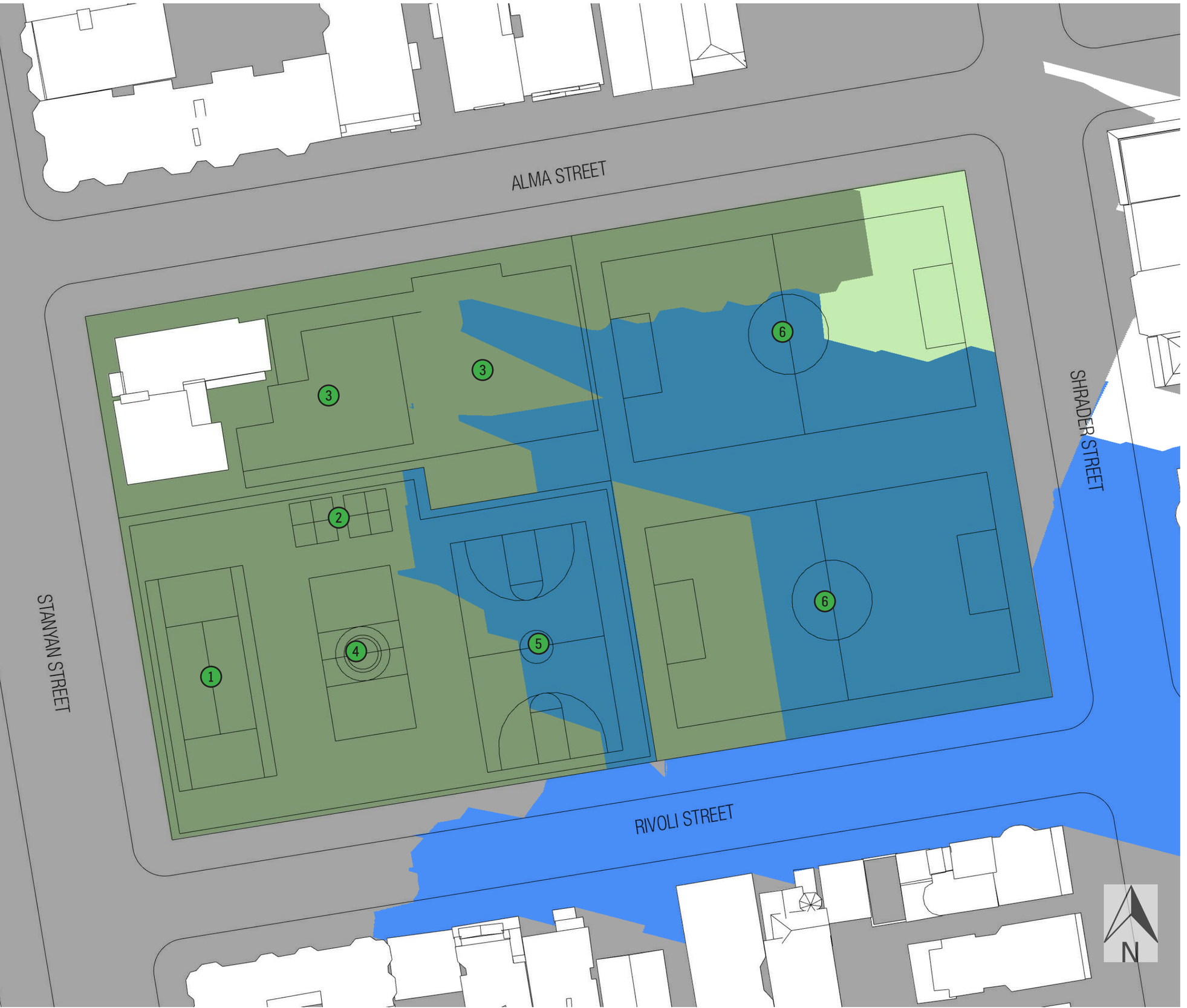
GRATTAN PLAYGROUND 16

HOSPITAL PROJECT

Shading diagrams on the
date of maximum shading

7:18 PM

DATE OF MAXIMUM SHADOW
AUGUST 2



PARK FEATURES
1. Tennis court
2. Foursquare courts
3. Play structure areas
4. Blacktop area
5. Basketball court
5. Soccer Field

Existing (Current) Shadow
Net New Project Shadow (if present)
2030 Net New Shadow Profiles (if present)
2030-2050 Net New Shadow (if present)

THEORETICAL ANNUAL AVAILABLE SUNLIGHT (TAAS) CALCULATION	GRATTAN PLAYGROUND
Total plan area of Grattan Playground	1.52 acres (66,249 sf)
Total hours of annual sunlight from 1-hr after sunrise through 1-hr before sunset	3721.4 hrs
Theoretical Annual Available Sunlight (plan area x hours of annual sunlight)	246,539,029 sfh

EXISTING SHADOW CONDITIONS SUMMARY	GRATTAN PLAYGROUND
Total annual existing shadow load (existing shadow sfh ÷ TAAS sfh)	13.85%
Total annual existing shadow in square-foot-hours (sfh)	34,143,738 sfh
Range in existing shadow area coverage throughout the year	Between 5% - 100%
Time of year / time of day most affected by existing shadow	Fall / Early Morning (before 8:00 AM)

UCSF HOSPITAL PROJECT NET NEW SHADOW SCENARIO SUMMARY	GRATTAN PLAYGROUND
Annual net new hospital project-only shadow load / total existing + hospital project shadow load	0.25% / 14.10%
Annual net new sfh hospital project shadow / total existing + hospital project sfh	624,447 sfh / 34,768,185 sfh
Number of days annually when new shading from hospital project would occur	Up to 167 days a year
Dates when net new shadow from hospital project would be cast annually	March 30 - September 12
Date(s) with most annual sfh net new hospital project shadow (shadow load / net new sfh)	August 2 & May 10
Time of year / time of day most affected by hospital project net new shadow overall	Spring / Late Afternoon (after 4:00 PM)
Date(s) with largest shadow area from the hospital project (area and time shadow occurs)	Aug 2/May 10 (30,224 sf @ 7:15 PM)
Range in hospital project net new shadow percentage coverage (area range)	Between 0% - 46% (0 - 30,224 sf)
Average hospital project net new shadow coverage on affected dates (shadow area)	25.29% (16,752 sf)
Date(s) with the longest duration of net new shadow (duration)	Jul 26/May 17 (32 min +/- 7 min)
Range in daily hospital project net new shadow duration (margin of error)	Between zero minutes up to 32 min (+/- 7 min)
Average daily hospital project net new shadow duration on affected dates	22.4 minutes

NEAR TERM CUMULATIVE (2030) NET NEW SHADOW SCENARIO SUMMARY	GRATTAN PLAYGROUND
Annual net new 2030 cumulative condition shadow load / total existing + 2030 cumulative shadow load	0.25% / 14.10%
Annual net new sfh 2030 cumulative shadow / total existing + 2030 cumulative sfh	624,447 sfh / 34,768,185 sfh
Number of days annually when new shading from 2030 cumulative would occur	Up to 167 days a year
Dates when net new shadow from 2030 cumulative would be cast annually	March 30 - September 12
Date(s) with most annual sfh net new 2030 cumulative shadow (shadow load / net new sfh)	August 2 & May 10
Time of year / time of day most affected by 2030 cumulative net new shadow overall	Spring / Late Afternoon (after 4:00 PM)
Date(s) with largest shadow area from the 2030 cumulative (area and time shadow occurs)	Aug 2/May 10 (30,224 sf @ 7:15 PM)
Range in 2030 cumulative net new shadow percentage coverage (area range)	Between 0% - 46% (0 - 30,224 sf)
Average 2030 cumulative net new shadow coverage on affected dates (shadow area)	25.29% (16,752 sf)
Date(s) with the longest duration of net new shadow (duration)	Jul 26/May 17 (32 min +/- 7 min)
Range in daily 2030 cumulative net new shadow duration (margin of error)	Between zero minutes up to 32 min (+/- 7 min)
Average daily 2030 cumulative net new shadow duration on affected dates	22.4 minutes

LONG TERM CUMULATIVE (2050) NET NEW SHADOW SCENARIO SUMMARY	GRATTAN PLAYGROUND
Annual net new 2050 cumulative shadow load / total existing + 2050 cumulative shadow load	0.25% / 14.10%
Annual net new sfh 2050 cumulative shadow / total existing + 2050 cumulative sfh	624,447 sfh / 34,768,185 sfh
Number of days annually when new shading from 2050 cumulative would occur	Up to 167 days a year
Dates when net new shadow from 2050 cumulative would be cast annually	March 30 - September 12
Date(s) with most annual sfh net new 2050 cumulative shadow (shadow load / net new sfh)	August 2 & May 10
Time of year / time of day most affected by 2050 cumulative net new shadow overall	Spring / Late Afternoon (after 4:00 PM)
Date(s) with largest shadow area from the 2050 cumulative (area and time shadow occurs)	Aug 2/May 10 (30,224 sf @ 7:15 PM)
Range in 2050 cumulative net new shadow percentage coverage (area range)	Between 0% - 46% (0 - 30,224 sf)
Average 2050 cumulative net new shadow coverage on affected dates (shadow area)	25.29% (16,752 sf)
Date(s) with the longest duration of net new shadow (duration)	Jul 26/May 17 (32 min +/- 7 min)
Range in daily 2050 cumulative net new shadow duration (margin of error)	Between zero minutes up to 32 min (+/- 7 min)
Average daily 2050 cumulative net new shadow duration on affected dates	22.4 minutes

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Elementary School

PREVISION DESIGN

JUNE 21

Summer solstice

Analysis hours: 6:46 AM-7:36 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
6:46 AM	18,419.87	2,026.19	60.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 AM	16,065.15	3,694.98	52.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 AM	14,053.63	3,513.41	46.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 AM	12,342.20	3,085.55	40.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	10,784.44	2,696.11	35.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	9,580.16	2,395.04	31.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	8,711.33	2,177.83	28.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	7,970.96	1,992.74	26.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	7,278.26	1,819.56	23.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	6,706.62	1,676.66	22.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	6,213.16	1,553.29	20.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	5,917.13	1,479.28	19.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	5,637.97	1,409.49	18.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	5,369.11	1,342.28	17.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	5,118.50	1,279.63	16.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	4,866.95	1,216.74	16.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	4,631.34	1,157.84	15.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	4,400.52	1,100.13	14.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	4,181.50	1,045.37	13.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	3,967.77	991.94	13.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	3,758.24	939.56	12.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	3,550.96	887.74	11.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	3,345.71	836.43	11.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	3,150.89	787.72	10.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	3,025.11	756.28	10.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	2,965.77	741.44	9.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	3,119.08	779.77	10.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	3,315.42	828.86	10.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	3,560.16	890.04	11.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	3,800.48	950.12	12.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	4,048.48	1,012.12	13.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	4,302.05	1,075.51	14.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	4,562.80	1,140.70	15.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	4,825.08	1,206.27	15.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	5,108.29	1,277.07	16.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	5,388.89	1,347.22	17.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	5,688.76	1,422.19	18.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	5,989.58	1,497.39	19.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	6,332.27	1,583.07	20.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	6,705.32	1,676.33	22.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	7,124.81	1,781.20	23.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	7,690.79	1,922.70	25.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	8,357.34	2,089.33	27.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	9,021.71	2,255.43	29.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	9,682.97	2,420.74	31.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	10,434.64	2,608.66	34.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	11,401.50	2,850.37	37.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	12,710.25	3,177.56	41.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	14,329.01	3,582.25	47.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 PM	16,650.99	4,162.75	54.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 PM	19,059.32	5,717.80	62.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:36 PM	24,543.98	4,417.92	80.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Elementary School

PREVISION DESIGN

JUNE 28

Mirror date: June 14
Analysis hours: 6:48 AM-7:36 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
6:48 AM	18,370.68	1,837.07	60.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 AM	16,363.57	3,599.99	53.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 AM	14,281.78	3,570.44	47.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 AM	12,562.16	3,140.54	41.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	10,978.68	2,744.67	36.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	9,723.40	2,430.85	32.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	8,812.55	2,203.14	29.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	8,068.19	2,017.05	26.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	7,358.46	1,839.61	24.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	6,776.39	1,694.10	22.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	6,263.66	1,565.91	20.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	5,962.91	1,490.73	19.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	5,679.49	1,419.87	18.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	5,408.09	1,352.02	17.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	5,154.80	1,288.70	17.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	4,899.48	1,224.87	16.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	4,662.28	1,165.57	15.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	4,429.79	1,107.45	14.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	4,208.52	1,052.13	13.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	3,992.40	998.10	13.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	3,783.74	945.94	12.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	3,576.46	894.12	11.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	3,368.24	842.06	11.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	3,171.10	792.77	10.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	3,039.09	759.77	10.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	2,970.85	742.71	9.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	3,105.10	776.27	10.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	3,300.93	825.23	10.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	3,541.03	885.26	11.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	3,781.86	945.46	12.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	4,031.38	1,007.84	13.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	4,284.16	1,071.04	14.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	4,545.63	1,136.41	15.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	4,809.93	1,202.48	15.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	5,085.17	1,271.29	16.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	5,370.27	1,342.57	17.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	5,668.76	1,417.19	18.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	5,974.14	1,493.54	19.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	6,312.85	1,578.21	20.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	6,681.84	1,670.46	22.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	7,088.80	1,772.20	23.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	7,639.21	1,909.80	25.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	8,292.78	2,073.20	27.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	8,962.59	2,240.65	29.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	9,613.85	2,403.46	31.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	10,371.10	2,592.78	34.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	11,295.21	2,823.80	37.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	12,590.20	3,147.55	41.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	14,166.51	3,541.63	46.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 PM	16,438.42	4,109.60	54.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 PM	18,885.29	5,665.59	62.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:36 PM	24,490.95	4,408.37	80.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Elementary School

PREVISION DESIGN

JULY 5

Mirror date: June 7
Analysis hours: 6:52 AM-7:36 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
6:52 AM	18,211.43	1,092.69	59.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 AM	16,774.15	3,187.09	55.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 AM	14,610.05	3,652.51	48.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 AM	12,872.90	3,218.22	42.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	11,269.93	2,817.48	37.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	9,948.57	2,487.14	32.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	8,970.49	2,242.62	29.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	8,226.78	2,056.70	27.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	7,493.87	1,873.47	24.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	6,885.14	1,721.28	22.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	6,362.19	1,590.55	20.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	6,044.78	1,511.20	19.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	5,751.94	1,437.98	18.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	5,474.60	1,368.65	18.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	5,207.62	1,301.90	17.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	4,947.95	1,236.99	16.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	4,704.45	1,176.11	15.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	4,469.85	1,117.46	14.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	4,246.12	1,061.53	14.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	4,025.87	1,006.47	13.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	3,814.75	953.69	12.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	3,604.43	901.11	11.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	3,399.83	849.96	11.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	3,196.89	799.22	10.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	3,056.19	764.05	10.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	2,983.38	745.84	9.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	3,100.32	775.08	10.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	3,297.96	824.49	10.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	3,539.15	884.79	11.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	3,776.21	944.05	12.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	4,031.38	1,007.84	13.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	4,282.06	1,070.51	14.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	4,548.60	1,137.15	15.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	4,811.60	1,202.90	15.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	5,090.97	1,272.74	16.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	5,376.28	1,344.07	17.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	5,678.55	1,419.64	18.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	5,988.20	1,497.05	19.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	6,326.11	1,581.53	20.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	6,697.49	1,674.37	22.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	7,109.45	1,777.36	23.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	7,609.94	1,902.48	25.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	8,252.94	2,063.23	27.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	8,918.90	2,229.73	29.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	9,560.67	2,390.17	31.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	10,315.17	2,578.79	33.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	11,234.14	2,808.53	37.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	12,511.08	3,127.77	41.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	14,079.28	3,519.82	46.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 PM	16,364.52	4,091.13	53.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 PM	18,874.64	5,662.39	62.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:36 PM	24,312.57	4,376.26	80.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Elementary School

PREVISION DESIGN

JULY 12

Mirror date: May 31
Analysis hours: 6:56 AM-7:33 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
6:56 AM	17,954.37	538.63	59.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 AM	17,269.71	2,590.46	56.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 AM	15,032.15	3,758.04	49.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 AM	13,280.65	3,320.16	43.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	11,664.64	2,916.16	38.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	10,263.52	2,565.88	33.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	9,193.49	2,298.37	30.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	8,425.37	2,106.34	27.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	7,676.37	1,919.09	25.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	7,016.28	1,754.07	23.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	6,506.51	1,626.63	21.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	6,159.47	1,539.87	20.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	5,851.78	1,462.94	19.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	5,560.38	1,390.09	18.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	5,281.59	1,320.40	17.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	5,010.55	1,252.64	16.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	4,761.75	1,190.44	15.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	4,519.62	1,129.91	14.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	4,291.84	1,072.96	14.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	4,069.20	1,017.30	13.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	3,852.35	963.09	12.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	3,639.64	909.91	12.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	3,429.60	857.40	11.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	3,223.99	806.00	10.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	3,078.94	769.74	10.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	2,998.88	749.72	9.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	3,110.68	777.67	10.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	3,307.02	826.75	10.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	3,546.97	886.74	11.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	3,789.76	947.44	12.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	4,049.06	1,012.26	13.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	4,302.34	1,075.59	14.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	4,571.64	1,142.91	15.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	4,837.03	1,209.26	15.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	5,116.33	1,279.08	16.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	5,406.49	1,351.62	17.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	5,712.09	1,428.02	18.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	6,033.48	1,508.37	19.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	6,376.68	1,594.17	21.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	6,751.25	1,687.81	22.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	7,169.65	1,792.41	23.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	7,605.73	1,901.43	25.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	8,247.07	2,061.77	27.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	8,878.40	2,219.60	29.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	9,527.13	2,381.78	31.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	10,271.85	2,567.96	33.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	11,224.94	2,806.23	36.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	12,478.41	3,119.60	41.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	14,061.82	3,515.45	46.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 PM	16,402.77	4,100.69	54.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 PM	19,070.84	5,339.83	62.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:33 PM	24,024.87	3,603.73	79.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Elementary School

PREVISION DESIGN

JULY 19

Mirror date: May 24
Analysis hours: 7:01 AM-7:30 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:01 AM	17,627.55	2,291.58	58.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:16 AM	15,381.07	3,691.46	50.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 AM	13,757.38	3,301.77	45.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	12,150.71	3,037.68	40.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	10,663.15	2,665.79	35.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	9,499.16	2,374.79	31.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	8,679.96	2,169.99	28.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	7,905.61	1,976.40	26.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	7,186.24	1,796.56	23.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	6,695.83	1,673.96	22.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	6,303.51	1,575.88	20.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	5,978.78	1,494.70	19.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	5,659.85	1,414.96	18.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	5,364.62	1,341.15	17.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	5,084.02	1,271.00	16.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	4,827.54	1,206.88	15.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	4,578.60	1,144.65	15.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	4,343.79	1,085.95	14.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	4,114.84	1,028.71	13.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	3,894.16	973.54	12.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	3,676.52	919.13	12.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	3,460.61	865.15	11.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	3,252.82	813.21	10.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	3,103.21	775.80	10.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	3,020.91	755.23	9.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	3,131.69	782.92	10.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	3,334.26	833.56	11.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	3,576.90	894.22	11.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	3,823.08	955.77	12.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	4,083.47	1,020.87	13.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	4,341.25	1,085.31	14.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	4,614.61	1,153.65	15.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	4,884.12	1,221.03	16.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	5,171.39	1,292.85	17.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	5,465.76	1,366.44	18.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	5,783.24	1,445.81	19.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	6,110.35	1,527.59	20.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	6,471.52	1,617.88	21.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	6,852.03	1,713.01	22.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	7,277.10	1,819.27	23.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	7,709.48	1,927.37	25.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	8,284.96	2,071.24	27.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	8,854.71	2,213.68	29.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	9,523.58	2,380.89	31.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	10,265.33	2,566.33	33.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	11,276.74	2,819.18	37.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	12,505.86	3,126.47	41.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	14,143.97	3,535.99	46.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 PM	16,608.38	4,152.10	54.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 PM	19,465.55	4,866.39	64.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 PM	23,618.42	3,070.40	77.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Elementary School

PREVISION DESIGN

JULY 26

Mirror date: May 17
Analysis hours: 7:07 AM-7:25 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:07 AM	17,388.10	1,043.29	57.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 AM	16,196.72	3,077.38	53.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 AM	14,345.46	3,586.36	47.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	12,756.76	3,189.19	42.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	11,195.01	2,798.75	36.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	9,918.14	2,479.54	32.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	8,995.56	2,248.89	29.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	8,167.88	2,041.97	26.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	7,444.31	1,861.08	24.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	6,918.10	1,729.53	22.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	6,475.79	1,618.95	21.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	6,116.29	1,529.07	20.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	5,772.51	1,443.13	19.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	5,462.43	1,365.61	18.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	5,169.36	1,292.34	17.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	4,899.85	1,224.96	16.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	4,643.73	1,160.93	15.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	4,401.60	1,100.40	14.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	4,164.69	1,041.17	13.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	3,939.08	984.77	13.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	3,715.93	928.98	12.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	3,493.79	873.45	11.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	3,281.44	820.36	10.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	3,129.30	782.32	10.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	3,047.64	761.91	10.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	3,168.06	792.01	10.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	3,376.50	844.12	11.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	3,625.73	906.43	11.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	3,875.25	968.81	12.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	4,138.61	1,034.65	13.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	4,399.57	1,099.89	14.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	4,677.78	1,169.45	15.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	4,957.23	1,239.31	16.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	5,255.07	1,313.77	17.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	5,553.06	1,388.27	18.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	5,877.28	1,469.32	19.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	6,218.52	1,554.63	20.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	6,596.28	1,649.07	21.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	6,998.52	1,749.63	23.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	7,432.43	1,858.11	24.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	7,877.57	1,969.39	25.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	8,335.60	2,083.90	27.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	8,856.31	2,214.08	29.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	9,529.81	2,382.45	31.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	10,305.75	2,576.44	33.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	11,351.65	2,837.91	37.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	12,577.45	3,144.36	41.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	14,350.60	3,587.65	47.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 PM	16,936.51	4,234.13	55.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 PM	20,056.24	4,211.81	66.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:25 PM	23,058.38	2,075.25	75.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Elementary School

PREVISION DESIGN

AUGUST 2

Mirror date: May 10
Analysis hours: 7:12 AM-7:18 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:12 AM	17,254.50	345.09	56.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 AM	16,898.48	2,534.77	55.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 AM	14,988.60	3,747.15	49.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	13,432.87	3,358.22	44.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	11,871.92	2,967.98	39.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	10,431.02	2,607.76	34.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	9,346.51	2,336.63	30.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	8,493.40	2,123.35	27.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	7,747.74	1,936.93	25.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	7,167.48	1,791.87	23.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	6,652.07	1,663.02	21.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	6,261.70	1,565.43	20.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	5,897.13	1,474.28	19.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	5,567.77	1,391.94	18.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	5,262.10	1,315.52	17.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	4,979.76	1,244.94	16.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	4,712.49	1,178.12	15.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	4,461.66	1,115.42	14.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	4,217.00	1,054.25	13.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	3,981.97	995.49	13.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	3,752.59	938.15	12.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	3,527.99	882.00	11.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	3,308.47	827.12	10.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	3,152.41	788.10	10.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	3,078.07	769.52	10.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	3,219.13	804.78	10.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	3,440.25	860.06	11.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	3,693.11	923.28	12.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	3,949.07	987.27	13.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	4,216.78	1,054.20	13.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	4,490.79	1,122.70	14.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	4,772.62	1,193.16	15.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	5,057.72	1,264.43	16.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	5,361.07	1,340.27	17.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	5,670.65	1,417.66	18.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	6,012.83	1,503.21	19.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	6,366.54	1,591.63	20.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	6,765.16	1,691.29	22.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	7,193.27	1,798.32	23.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	7,640.22	1,910.06	25.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	8,109.12	2,027.28	26.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	8,491.37	2,122.84	27.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	8,886.81	2,221.70	29.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	9,512.78	2,378.20	31.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	10,407.40	2,601.85	34.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	11,481.56	2,870.39	37.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	12,847.11	3,211.78	42.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	14,761.91	3,690.48	48.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 PM	17,545.61	4,386.40	57.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 PM	21,242.11	3,186.32	69.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:18 PM	22,402.12	672.06	73.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Elementary School

PREVISION DESIGN

AUGUST 9

Mirror date: May 3
Analysis hours: 7:19 AM-7:10 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:19 AM	17,250.37	1,552.53	56.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 AM	15,789.33	3,315.76	51.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	14,256.27	3,564.07	46.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	12,661.13	3,165.28	41.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	11,024.97	2,756.24	36.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	9,768.39	2,442.10	32.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	8,905.14	2,226.28	29.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	8,095.79	2,023.95	26.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	7,420.48	1,855.12	24.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	6,844.64	1,711.16	22.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	6,421.17	1,605.29	21.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	6,032.76	1,508.19	19.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	5,683.62	1,420.90	18.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	5,361.07	1,340.27	17.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	5,064.53	1,266.13	16.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	4,786.89	1,196.72	15.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	4,523.10	1,130.78	14.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	4,271.70	1,067.92	14.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	4,027.18	1,006.79	13.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	3,789.68	947.42	12.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	3,559.07	889.77	11.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	3,332.37	833.09	11.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	3,181.24	795.31	10.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	3,114.52	778.63	10.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	3,288.54	822.14	10.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	3,518.28	879.57	11.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	3,778.02	944.50	12.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	4,038.48	1,009.62	13.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	4,314.08	1,078.52	14.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	4,593.45	1,148.36	15.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	4,886.01	1,221.50	16.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	5,183.49	1,295.87	17.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	5,497.64	1,374.41	18.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	5,819.46	1,454.87	19.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	6,177.66	1,544.41	20.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	6,555.20	1,638.80	21.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	6,974.40	1,743.60	22.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	7,419.25	1,854.81	24.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	7,890.47	1,972.62	26.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	8,383.56	2,095.89	27.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	8,699.59	2,174.90	28.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	9,056.49	2,264.12	29.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	9,540.10	2,385.02	31.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	10,532.74	2,633.19	34.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	11,694.13	2,923.53	38.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	13,242.33	3,310.58	43.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	15,394.62	5,234.17	50.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:10 PM	21,590.60	4,534.03	71.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Elementary School

PREVISION DESIGN

AUGUST 16

Mirror date: April 26
Analysis hours: 7:25 AM-7:02 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:25 AM	17,534.88	701.40	57.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 AM	16,937.60	2,879.39	55.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	15,217.26	3,804.31	50.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	13,543.29	3,385.82	44.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	11,732.53	2,933.13	38.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	10,386.32	2,596.58	34.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	9,379.62	2,344.90	30.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	8,462.46	2,115.62	27.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	7,695.07	1,923.77	25.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	7,074.45	1,768.61	23.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	6,598.96	1,649.74	21.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	6,183.74	1,545.94	20.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	5,810.62	1,452.66	19.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	5,470.47	1,367.62	18.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	5,158.57	1,289.64	17.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	4,864.13	1,216.03	16.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	4,590.77	1,147.69	15.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	4,327.48	1,081.87	14.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	4,072.89	1,018.22	13.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	3,829.02	957.26	12.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	3,589.36	897.34	11.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	3,357.23	839.31	11.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	3,214.21	803.55	10.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	3,174.58	793.64	10.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	3,375.19	843.80	11.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	3,613.92	903.48	11.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	3,882.35	970.59	12.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	4,151.72	1,037.93	13.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	4,436.74	1,109.19	14.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	4,721.91	1,180.48	15.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	5,023.30	1,255.83	16.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	5,333.32	1,333.33	17.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	5,661.88	1,415.47	18.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	6,005.30	1,501.32	19.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	6,380.81	1,595.20	21.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	6,778.93	1,694.73	22.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	7,231.45	1,807.86	23.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	7,697.24	1,924.31	25.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	8,191.43	2,047.86	26.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	8,601.79	2,150.45	28.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	8,946.22	2,236.55	29.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	9,221.53	2,305.38	30.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	9,686.81	2,421.70	31.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	10,636.49	2,659.12	35.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	12,013.63	3,003.41	39.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	13,806.57	3,451.64	45.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	16,091.74	4,344.77	52.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:02 PM	20,660.70	2,892.50	68.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Elementary School

PREVISION DESIGN

AUGUST 23

Mirror date: April 19
Analysis hours: 7:31 AM-6:52 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:31 AM	18,151.95	1,996.71	59.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	16,254.75	3,738.59	53.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	14,427.26	3,606.81	47.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	12,682.79	3,170.70	41.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	11,063.52	2,765.88	36.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	9,853.52	2,463.38	32.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	8,840.29	2,210.07	29.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	7,984.58	1,996.14	26.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	7,313.03	1,828.26	24.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	6,783.13	1,695.78	22.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	6,338.50	1,584.62	20.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	5,941.69	1,485.42	19.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	5,579.65	1,394.91	18.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	5,250.58	1,312.64	17.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	4,942.95	1,235.74	16.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	4,655.76	1,163.94	15.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	4,378.35	1,094.59	14.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	4,118.75	1,029.69	13.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	3,863.37	965.84	12.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	3,614.21	903.55	11.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	3,378.45	844.61	11.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	3,247.61	811.90	10.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	3,264.05	816.01	10.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	3,483.22	870.80	11.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	3,730.71	932.68	12.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	4,006.46	1,001.61	13.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	4,285.25	1,071.31	14.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	4,581.42	1,145.36	15.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	4,877.89	1,219.47	16.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	5,191.82	1,297.96	17.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	5,514.44	1,378.61	18.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	5,860.83	1,465.21	19.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	6,221.42	1,555.35	20.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	6,622.65	1,655.66	21.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	7,057.64	1,764.41	23.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	7,531.11	1,882.78	24.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	8,015.01	2,003.75	26.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	8,518.32	2,129.58	28.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	8,870.51	2,217.63	29.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	9,196.90	2,299.22	30.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	9,491.34	2,372.83	31.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	10,005.81	2,501.45	32.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	10,835.73	2,708.93	35.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	12,499.71	3,124.93	41.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	14,537.16	3,634.29	47.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	17,576.54	3,339.54	57.8%	2,393.55	454.78	7.9%	2,393.70	454.80	7.9%	2,393.55	454.78	7.9%
6:52 PM	19,638.13	1,178.29	64.6%	5,913.79	354.83	19.5%	5,913.86	354.83	19.5%	5,913.79	354.83	19.5%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Elementary School

PREVISION DESIGN

AUGUST 30

Mirror date: April 12
Analysis hours: 7:37 AM-6:42 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:37 AM	18,499.71	1,109.98	60.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	17,361.22	3,298.63	57.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	15,490.54	3,872.64	51.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	13,674.28	3,418.57	45.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	11,780.34	2,945.09	38.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	10,368.35	2,592.09	34.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	9,259.57	2,314.89	30.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	8,307.56	2,076.89	27.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	7,574.15	1,893.54	24.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	6,986.93	1,746.73	23.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	6,510.35	1,627.59	21.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	6,087.60	1,521.90	20.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	5,701.95	1,425.49	18.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	5,351.87	1,337.97	17.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	5,026.92	1,256.73	16.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	4,726.83	1,181.71	15.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	4,438.33	1,109.58	14.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	4,163.75	1,040.94	13.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	3,896.40	974.10	12.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	3,636.74	909.18	12.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	3,407.00	851.75	11.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	3,289.34	822.33	10.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	3,365.63	841.41	11.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	3,601.46	900.36	11.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	3,863.51	965.88	12.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	4,151.72	1,037.93	13.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	4,436.38	1,109.09	14.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	4,745.60	1,186.40	15.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	5,056.48	1,264.12	16.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	5,386.42	1,346.61	17.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	5,723.46	1,430.87	18.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	6,089.41	1,522.35	20.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	6,472.75	1,618.19	21.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	6,908.98	1,727.24	22.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	7,379.40	1,844.85	24.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	7,865.54	1,966.39	25.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	8,387.55	2,096.89	27.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	8,800.59	2,200.15	29.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	9,166.54	2,291.63	30.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	9,434.53	2,358.63	31.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	9,825.41	2,456.35	32.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	10,358.14	2,589.53	34.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	11,296.15	2,824.04	37.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	13,117.93	3,279.48	43.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	15,738.47	3,619.85	51.8%	35.43	8.15	0.1%	35.21	8.10	0.1%	35.43	8.15	0.1%
6:42 PM	18,893.77	2,078.31	62.2%	11,314.77	1,244.62	37.2%	11,314.84	1,244.63	37.2%	11,314.77	1,244.62	37.2%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Elementary School

PREVISION DESIGN

SEPTEMBER 6

Mirror date: April 5
Analysis hours: 7:44 AM-6:31 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:44 AM	18,860.30	2,451.84	62.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	16,480.58	4,120.15	54.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	14,644.83	3,661.21	48.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	12,576.21	3,144.05	41.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	10,959.98	2,740.00	36.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	9,742.67	2,435.67	32.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	8,689.52	2,172.38	28.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	7,863.88	1,965.97	25.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	7,214.43	1,803.61	23.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	6,700.61	1,675.15	22.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	6,243.81	1,560.95	20.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	5,832.00	1,458.00	19.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	5,465.18	1,366.29	18.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	5,119.37	1,279.84	16.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	4,801.24	1,200.31	15.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	4,498.25	1,124.56	14.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	4,211.49	1,052.87	13.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	3,931.54	982.89	12.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	3,661.01	915.25	12.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	3,440.69	860.17	11.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	3,340.56	835.14	11.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	3,480.17	870.04	11.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	3,739.55	934.89	12.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	4,010.80	1,002.70	13.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	4,313.50	1,078.38	14.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	4,608.52	1,152.13	15.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	4,932.59	1,233.15	16.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	5,255.29	1,313.82	17.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	5,602.54	1,400.64	18.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	5,955.45	1,488.86	19.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	6,348.79	1,587.20	20.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	6,762.19	1,690.55	22.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	7,237.32	1,809.33	23.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	7,721.66	1,930.41	25.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	8,242.72	2,060.68	27.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	8,714.30	2,178.58	28.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	9,138.21	2,284.55	30.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	9,405.19	2,351.30	30.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	9,808.45	2,452.11	32.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	10,252.72	2,563.18	33.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	10,838.48	2,709.62	35.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	11,865.76	2,966.44	39.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	14,019.29	3,785.21	46.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:31 PM	18,457.69	2,584.08	60.7%	11,901.91	1,666.27	39.2%	11,901.91	1,666.27	39.2%	11,901.91	1,666.27	39.2%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Elementary School

PREVISION DESIGN

SEPTEMBER 13

Mirror date: March 29
Analysis hours: 7:50 AM-6:21 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:50 AM	19,063.45	1,525.08	62.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	17,538.43	3,683.07	57.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	15,605.81	3,901.45	51.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	13,523.72	3,380.93	44.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	11,687.53	2,921.88	38.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	10,295.25	2,573.81	33.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	9,122.20	2,280.55	30.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	8,181.57	2,045.39	26.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	7,459.38	1,864.85	24.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	6,903.90	1,725.98	22.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	6,415.30	1,603.82	21.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	5,973.13	1,493.28	19.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	5,580.59	1,395.15	18.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	5,214.79	1,303.70	17.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	4,879.05	1,219.76	16.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	4,560.56	1,140.14	15.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	4,260.32	1,065.08	14.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	3,966.03	991.51	13.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	3,685.43	921.36	12.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	3,474.67	868.67	11.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	3,410.62	852.66	11.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	3,611.38	902.85	11.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	3,892.71	973.18	12.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	4,177.37	1,044.34	13.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	4,490.28	1,122.57	14.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	4,804.14	1,201.03	15.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	5,139.08	1,284.77	16.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	5,477.13	1,369.28	18.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	5,843.81	1,460.95	19.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	6,220.55	1,555.14	20.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	6,643.44	1,660.86	21.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	7,096.62	1,774.16	23.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	7,597.76	1,899.44	25.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	8,103.40	2,025.85	26.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	8,639.03	2,159.76	28.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	9,065.18	2,266.30	29.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	9,401.21	2,350.30	30.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	9,746.94	2,436.74	32.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	10,192.08	2,548.02	33.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	10,741.62	2,685.40	35.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	11,485.25	2,871.31	37.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	12,664.60	3,166.15	41.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	15,931.04	2,867.59	52.4%	1,821.19	327.81	6.0%	1,821.34	327.84	6.0%	1,821.19	327.81	6.0%
6:21 PM	18,262.36	913.12	60.1%	9,155.52	457.78	30.1%	9,155.23	457.76	30.1%	9,155.52	457.78	30.1%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Elementary School

PREVISION DESIGN

SEPTEMBER 20

Fall equinox (Spring equinox on March 22 similar)
Analysis hours: 7:57 AM-6:09 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:57 AM	19,325.43	386.51	63.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	18,737.93	2,810.69	61.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	16,560.71	4,140.18	54.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	14,562.09	3,640.52	47.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	12,536.44	3,134.11	41.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	10,917.89	2,729.47	35.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	9,584.29	2,396.07	31.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	8,541.22	2,135.30	28.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	7,741.00	1,935.25	25.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	7,125.60	1,781.40	23.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	6,598.96	1,649.74	21.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	6,125.71	1,531.43	20.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	5,708.18	1,427.04	18.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	5,321.22	1,330.30	17.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	4,966.07	1,241.52	16.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	4,627.36	1,156.84	15.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	4,310.97	1,077.74	14.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	4,002.83	1,000.71	13.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	3,711.36	927.84	12.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	3,519.22	879.81	11.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	3,541.03	885.26	11.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	3,755.78	938.94	12.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	4,061.74	1,015.43	13.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	4,360.16	1,090.04	14.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	4,685.83	1,171.46	15.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	5,011.85	1,252.96	16.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	5,362.52	1,340.63	17.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	5,720.42	1,430.11	18.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	6,106.66	1,526.66	20.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	6,512.45	1,628.11	21.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	6,968.96	1,742.24	22.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	7,470.11	1,867.53	24.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	7,987.55	1,996.89	26.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	8,529.34	2,132.33	28.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	8,996.93	2,249.23	29.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	9,389.18	2,347.30	30.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	9,694.70	2,423.68	31.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	10,091.52	2,522.88	33.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	10,599.61	2,649.90	34.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	11,284.56	2,821.14	37.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	12,266.41	3,066.60	40.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	14,438.41	3,032.07	47.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:09 PM	17,778.54	1,422.28	58.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Elementary School

PREVISION DESIGN

SEPTEMBER 27

Mirror date: March 15
Analysis hours: 8:03 AM-5:58 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
8:03 AM	20,047.76	2,004.78	66.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	17,884.46	3,934.58	58.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	15,781.72	3,945.43	51.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	13,579.08	3,394.77	44.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	11,637.25	2,909.31	38.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	10,128.39	2,532.10	33.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	8,965.85	2,241.46	29.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	8,064.35	2,016.09	26.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	7,369.62	1,842.40	24.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	6,801.60	1,700.40	22.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	6,289.81	1,572.45	20.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	5,844.10	1,461.02	19.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	5,433.01	1,358.25	17.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	5,056.77	1,264.19	16.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	4,695.90	1,173.97	15.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	4,362.55	1,090.64	14.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	4,041.74	1,010.43	13.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	3,741.87	935.47	12.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	3,577.62	894.41	11.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	3,692.38	923.10	12.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	3,940.16	985.04	13.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	4,250.61	1,062.65	14.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	4,557.44	1,139.36	15.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	4,898.76	1,224.69	16.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	5,242.46	1,310.62	17.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	5,609.07	1,402.27	18.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	5,985.74	1,496.43	19.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	6,402.11	1,600.53	21.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	6,840.44	1,710.11	22.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	7,338.61	1,834.65	24.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	7,858.88	1,964.72	25.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	8,407.55	2,101.89	27.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	8,910.79	2,227.70	29.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	9,383.75	2,345.94	30.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	9,670.80	2,417.70	31.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	10,033.34	2,508.33	33.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	10,467.03	2,616.76	34.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	11,053.23	2,763.31	36.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	11,871.99	2,968.00	39.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	13,427.73	3,088.38	44.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:58 PM	17,520.03	1,927.20	57.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Elementary School

PREVISION DESIGN

OCTOBER 4

Mirror date: March 8

Analysis hours: 8:09 AM-5:47 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
8:09 AM	21,479.90	859.20	70.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	20,174.63	3,429.69	66.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	17,442.00	4,360.50	57.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	14,952.89	3,738.22	49.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	12,646.42	3,161.60	41.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	10,829.21	2,707.30	35.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	9,486.63	2,371.66	31.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	8,447.97	2,111.99	27.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	7,646.31	1,911.58	25.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	7,027.65	1,756.91	23.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	6,472.39	1,618.10	21.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	5,999.57	1,499.89	19.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	5,556.10	1,389.03	18.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	5,156.97	1,289.24	17.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	4,773.93	1,193.48	15.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	4,423.26	1,105.82	14.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	4,086.66	1,021.66	13.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	3,790.55	947.64	12.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	3,650.65	912.66	12.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	3,824.10	956.02	12.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	4,071.15	1,017.79	13.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	4,418.77	1,104.69	14.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	4,766.68	1,191.67	15.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	5,123.65	1,280.91	16.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	5,484.31	1,371.08	18.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	5,871.26	1,467.82	19.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	6,271.05	1,567.76	20.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	6,715.60	1,678.90	22.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	7,188.49	1,797.12	23.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	7,732.81	1,933.20	25.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	8,265.76	2,066.44	27.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	8,811.39	2,202.85	29.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	9,296.08	2,324.02	30.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	9,712.24	2,428.06	32.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	10,047.83	2,511.96	33.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	10,464.13	2,616.03	34.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	10,947.38	2,736.84	36.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	11,662.03	2,915.51	38.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	12,671.63	3,421.34	41.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:47 PM	16,494.42	2,309.22	54.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Elementary School

PREVISION DESIGN

OCTOBER 11

Mirror date: March 1

Analysis hours: 8:16 AM-5:37 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
8:16 AM	22,311.78	2,677.41	73.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	19,696.23	4,727.10	64.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	16,893.62	4,223.41	55.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	14,092.61	3,523.15	46.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	11,954.08	2,988.52	39.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	10,232.87	2,558.22	33.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	8,924.77	2,231.19	29.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	7,965.45	1,991.36	26.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	7,283.69	1,820.92	24.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	6,682.28	1,670.57	22.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	6,172.44	1,543.11	20.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	5,700.93	1,425.23	18.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	5,271.08	1,317.77	17.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	4,864.27	1,216.07	16.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	4,492.09	1,123.02	14.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	4,140.13	1,035.03	13.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	3,845.11	961.28	12.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	3,744.84	936.21	12.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	3,993.27	998.32	13.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	4,287.56	1,071.89	14.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	4,636.56	1,159.14	15.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	4,981.50	1,245.37	16.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	5,358.24	1,339.56	17.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	5,733.03	1,433.26	18.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	6,141.87	1,535.47	20.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	6,567.52	1,641.88	21.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	7,045.98	1,761.49	23.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	7,567.99	1,892.00	24.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	8,124.34	2,031.08	26.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	8,690.10	2,172.53	28.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	9,198.71	2,299.68	30.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	9,691.08	2,422.77	31.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	10,097.60	2,524.40	33.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	10,516.37	2,629.09	34.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	11,019.68	2,754.92	36.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	11,755.64	2,938.91	38.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	12,717.13	3,179.28	41.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	14,745.03	2,801.55	48.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:37 PM	17,368.46	1,042.11	57.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Elementary School

PREVISION DESIGN

OCTOBER 18

Mirror date: February 22
Analysis hours: 8:22 AM-5:27 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
8:22 AM	22,879.06	1,372.74	75.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	21,600.45	3,888.08	71.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	18,976.36	4,744.09	62.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	15,879.02	3,969.76	52.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	13,361.51	3,340.38	44.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	11,225.01	2,806.25	36.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	9,709.27	2,427.32	31.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	8,478.04	2,119.51	27.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	7,622.98	1,905.74	25.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	6,916.73	1,729.18	22.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	6,364.58	1,591.15	20.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	5,857.64	1,464.41	19.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	5,403.02	1,350.75	17.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	4,967.66	1,241.91	16.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	4,575.85	1,143.96	15.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	4,202.65	1,050.66	13.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	3,911.84	977.96	12.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	3,886.26	971.57	12.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	4,152.37	1,038.09	13.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	4,470.43	1,117.61	14.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	4,834.49	1,208.62	15.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	5,196.39	1,299.10	17.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	5,587.19	1,396.80	18.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	5,985.23	1,496.31	19.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	6,421.96	1,605.49	21.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	6,876.23	1,719.06	22.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	7,395.55	1,848.89	24.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	7,942.27	1,985.57	26.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	8,515.57	2,128.89	28.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	9,046.27	2,261.57	29.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	9,600.01	2,400.00	31.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	10,085.00	2,521.25	33.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	10,594.76	2,648.69	34.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	11,126.48	2,781.62	36.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	11,890.98	2,972.74	39.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	12,903.98	3,226.00	42.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	14,385.81	3,164.88	47.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:27 PM	18,498.33	1,849.83	60.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Elementary School

PREVISION DESIGN

OCTOBER 25

Mirror date: February 15
Analysis hours: 7:30 AM-4:18 PM (PST)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:30 AM	23,413.68	3,043.78	77.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	20,731.84	5,182.96	68.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	17,678.84	4,419.71	58.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	15,028.67	3,757.17	49.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	12,602.73	3,150.68	41.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	10,790.45	2,697.61	35.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	9,257.90	2,314.47	30.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	8,172.95	2,043.24	26.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	7,348.32	1,837.08	24.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	6,681.41	1,670.35	22.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	6,075.43	1,518.86	20.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	5,549.95	1,387.49	18.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	5,081.55	1,270.39	16.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	4,665.39	1,166.35	15.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	4,272.71	1,068.18	14.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	3,989.29	997.32	13.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	4,033.26	1,008.32	13.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	4,307.34	1,076.84	14.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	4,645.83	1,161.46	15.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	5,025.69	1,256.42	16.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	5,400.12	1,350.03	17.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	5,809.97	1,452.49	19.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	6,225.11	1,556.28	20.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	6,685.25	1,671.31	22.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	7,170.16	1,792.54	23.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	7,727.60	1,931.90	25.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	8,292.35	2,073.09	27.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	8,882.46	2,220.62	29.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	9,414.90	2,353.73	31.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	10,004.36	2,501.09	32.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	10,561.36	2,640.34	34.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	11,255.66	2,813.91	37.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	12,061.81	3,015.45	39.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	13,162.34	3,290.58	43.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	14,474.86	3,618.71	47.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	17,418.38	2,612.76	57.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:18 PM	19,554.88	586.65	64.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Elementary School

PREVISION DESIGN

NOVEMBER 1

Mirror date: February 8
Analysis hours: 7:36 AM-4:10 PM (PST)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:36 AM	23,829.55	1,668.07	78.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	22,311.70	4,239.22	73.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	19,456.64	4,864.16	64.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	16,550.93	4,137.73	54.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	14,131.95	3,532.99	46.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	12,171.07	3,042.77	40.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	10,429.57	2,607.39	34.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	9,129.81	2,282.45	30.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	7,992.98	1,998.25	26.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	7,166.03	1,791.51	23.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	6,460.51	1,615.13	21.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	5,869.38	1,467.35	19.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	5,302.67	1,325.67	17.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	4,828.55	1,207.14	15.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	4,374.43	1,093.61	14.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	4,079.99	1,020.00	13.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	4,174.61	1,043.65	13.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	4,455.22	1,113.80	14.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	4,809.93	1,202.48	15.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	5,205.23	1,301.31	17.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	5,595.59	1,398.90	18.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	6,020.30	1,505.07	19.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	6,452.68	1,613.17	21.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	6,941.29	1,735.32	22.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	7,455.69	1,863.92	24.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	8,042.68	2,010.67	26.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	8,618.09	2,154.52	28.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	9,225.37	2,306.34	30.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	9,823.88	2,455.97	32.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	10,554.84	2,638.71	34.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	11,335.42	2,833.86	37.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	12,199.76	3,049.94	40.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	13,121.98	3,280.50	43.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	14,037.54	3,509.39	46.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	15,912.64	3,341.65	52.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:10 PM	30,359.60	2,732.36	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Elementary School

PREVISION DESIGN

NOVEMBER 8

Mirror date: February 1
Analysis hours: 7:43 AM-4:03 PM (PST)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:43 AM	24,119.49	241.19	79.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	23,898.16	3,106.76	78.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	21,274.14	5,318.53	70.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	18,404.65	4,601.16	60.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	15,777.88	3,944.47	51.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	13,630.44	3,407.61	44.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	11,838.74	2,959.68	38.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	10,373.86	2,593.46	34.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	8,995.48	2,248.87	29.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	7,956.54	1,989.14	26.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	7,037.00	1,759.25	23.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	6,312.34	1,578.09	20.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	5,636.60	1,409.15	18.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	5,100.17	1,275.04	16.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	4,609.25	1,152.31	15.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	4,302.34	1,075.59	14.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	4,385.66	1,096.42	14.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	4,660.40	1,165.10	15.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	5,006.20	1,251.55	16.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	5,407.29	1,351.82	17.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	5,796.42	1,449.11	19.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	6,241.05	1,560.26	20.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	6,684.09	1,671.02	22.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	7,203.92	1,800.98	23.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	7,737.81	1,934.45	25.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	8,352.85	2,088.21	27.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	8,951.87	2,237.97	29.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	9,567.41	2,391.85	31.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	10,271.05	2,567.76	33.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	11,184.51	2,796.13	36.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	12,107.24	3,026.81	39.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	13,071.41	3,267.85	43.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	13,873.66	3,468.42	45.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	15,213.49	3,803.37	50.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	30,359.60	4,553.94	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:03 PM	30,359.60	910.79	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Elementary School

PREVISION DESIGN

NOVEMBER 15

Mirror date: January 25
Analysis hours: 7:51 AM-3:57 PM (PST)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:51 AM	24,502.76	1,960.22	80.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	23,011.21	4,602.24	75.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	20,263.67	5,065.92	66.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	17,597.92	4,399.48	57.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	15,250.95	3,812.74	50.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	13,243.70	3,310.93	43.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	11,684.20	2,921.05	38.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	10,186.86	2,546.72	33.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	8,940.57	2,235.14	29.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	7,838.88	1,959.72	25.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	6,986.86	1,746.72	23.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	6,147.08	1,536.77	20.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	5,484.09	1,371.02	18.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	4,907.81	1,226.95	16.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	4,553.46	1,138.36	15.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	4,628.66	1,157.17	15.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	4,912.23	1,228.06	16.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	5,256.30	1,314.08	17.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	5,670.36	1,417.59	18.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	6,063.55	1,515.89	19.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	6,525.93	1,631.48	21.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	6,989.03	1,747.26	23.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	7,547.56	1,886.89	24.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	8,108.83	2,027.21	26.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	8,777.84	2,194.46	28.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	9,426.35	2,356.59	31.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	10,035.15	2,508.79	33.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	10,789.51	2,697.38	35.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	11,746.73	2,936.68	38.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	12,765.53	3,191.38	42.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	13,790.85	3,447.71	45.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	14,606.86	3,651.72	48.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	16,376.69	3,766.64	53.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:57 PM	30,359.60	3,339.56	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Elementary School

PREVISION DESIGN

NOVEMBER 22

Mirror date: January 18
Analysis hours: 7:57 AM-3:54 PM (PST)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:57 AM	25,194.52	503.89	82.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	24,804.66	3,720.70	81.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	22,082.54	5,520.64	72.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	19,369.84	4,842.46	63.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	17,042.00	4,260.50	56.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	14,826.39	3,706.60	48.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	13,059.68	3,264.92	43.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	11,352.88	2,838.22	37.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	9,995.52	2,498.88	32.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	8,740.89	2,185.22	28.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	7,754.48	1,938.62	25.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	6,788.20	1,697.05	22.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	6,015.22	1,503.81	19.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	5,335.13	1,333.78	17.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	4,894.41	1,223.60	16.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	4,909.34	1,227.33	16.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	5,198.63	1,299.66	17.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	5,528.21	1,382.05	18.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	5,956.39	1,489.10	19.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	6,352.84	1,588.21	20.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	6,849.93	1,712.48	22.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	7,328.83	1,832.21	24.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	7,937.34	1,984.34	26.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	8,506.88	2,126.72	28.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	9,229.28	2,307.32	30.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	9,895.61	2,473.90	32.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	10,489.49	2,622.37	34.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	11,220.44	2,805.11	36.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	12,171.87	3,042.97	40.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	13,339.77	3,334.94	43.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	14,514.20	3,628.55	47.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	15,628.71	3,907.18	51.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	18,767.42	3,753.48	61.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:54 PM	30,359.60	2,428.77	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Elementary School

PREVISION DESIGN

NOVEMBER 29

Mirror date: January 11
Analysis hours: 8:04 AM-3:51 PM (PST)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
8:04 AM	25,855.48	2,326.99	85.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	23,783.97	4,994.63	78.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	20,978.90	5,244.73	69.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	18,654.61	4,663.65	61.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	16,320.61	4,080.15	53.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	14,498.19	3,624.55	47.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	12,647.36	3,161.84	41.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	11,032.87	2,758.22	36.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	9,596.17	2,399.04	31.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	8,509.63	2,127.41	28.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	7,466.70	1,866.68	24.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	6,592.00	1,648.00	21.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	5,813.81	1,453.45	19.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	5,297.96	1,324.49	17.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	5,236.38	1,309.09	17.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	5,498.51	1,374.63	18.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	5,766.14	1,441.53	19.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	6,237.94	1,559.48	20.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	6,658.59	1,664.65	21.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	7,177.33	1,794.33	23.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	7,681.23	1,920.31	25.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	8,322.71	2,080.68	27.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	8,899.49	2,224.87	29.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	9,626.53	2,406.63	31.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	10,272.86	2,568.22	33.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	10,851.45	2,712.86	35.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	11,523.36	2,880.84	37.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	12,589.40	3,147.35	41.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	13,939.16	3,484.79	45.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	15,229.87	3,807.47	50.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	16,693.08	4,173.27	54.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	30,359.60	5,464.73	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:51 PM	30,359.60	1,517.98	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Elementary School

PREVISION DESIGN

DECEMBER 6

Mirror date: January 4
Analysis hours: 8:10 AM-3:51 PM (PST)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
8:10 AM	26,483.41	1,059.34	87.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	25,343.62	4,308.42	83.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	22,430.88	5,607.72	73.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	19,975.46	4,993.86	65.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	17,606.39	4,401.60	57.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	15,767.59	3,941.90	51.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	13,895.25	3,473.81	45.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	12,182.44	3,045.61	40.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	10,455.29	2,613.82	34.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	9,202.76	2,300.69	30.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	8,072.10	2,018.02	26.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	7,141.54	1,785.39	23.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	6,279.89	1,569.97	20.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	5,668.55	1,417.14	18.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	5,498.72	1,374.68	18.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	5,788.16	1,447.04	19.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	6,074.13	1,518.53	20.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	6,509.48	1,627.37	21.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	6,900.57	1,725.14	22.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	7,431.27	1,857.82	24.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	7,938.36	1,984.59	26.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	8,579.83	2,144.96	28.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	9,154.37	2,288.59	30.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	9,886.26	2,471.57	32.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	10,527.24	2,631.81	34.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	11,096.92	2,774.23	36.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	11,771.58	2,942.89	38.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	12,986.07	3,246.52	42.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	14,326.04	3,581.51	47.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	15,880.33	3,970.08	52.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	21,192.41	5,298.10	69.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	30,359.60	5,161.13	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:51 PM	30,359.60	1,517.98	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Elementary School

PREVISION DESIGN

DECEMBER 13

Mirror date: December 28

Analysis hours: 8:15 AM-3:52 PM (PST)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
8:15 AM	26,809.30	3,217.12	88.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	23,679.50	5,919.88	77.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	21,031.50	5,257.87	69.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	18,647.44	4,661.86	61.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	16,699.96	4,174.99	54.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	14,883.84	3,720.96	49.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	13,167.19	3,291.80	43.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	11,290.21	2,822.55	37.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	9,846.34	2,461.59	32.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	8,581.43	2,145.36	28.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	7,600.59	1,900.15	25.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	6,675.90	1,668.98	22.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	5,981.10	1,495.27	19.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	5,670.58	1,417.64	18.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	5,934.37	1,483.59	19.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	6,176.50	1,544.12	20.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	6,618.23	1,654.56	21.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	7,012.07	1,753.02	23.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	7,539.95	1,884.99	24.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	8,046.16	2,011.54	26.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	8,686.12	2,171.53	28.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	9,258.26	2,314.57	30.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	9,988.35	2,497.09	32.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	10,642.94	2,660.73	35.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	11,229.28	2,807.32	36.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	11,953.07	2,988.27	39.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	13,134.23	3,283.56	43.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	14,472.97	3,618.24	47.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	16,158.83	4,039.71	53.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	25,596.26	6,399.06	84.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	30,359.60	5,464.73	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:52 PM	30,359.60	1,821.58	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Elementary School

PREVISION DESIGN

DECEMBER 20

Winter solstice (December 21 similar)
Analysis hours: 8:19 AM-3:54 PM (PST)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
8:19 AM	26,920.15	2,153.61	88.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	24,597.38	5,165.45	80.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	21,815.05	5,453.76	71.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	19,391.72	4,847.93	63.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	17,312.10	4,328.02	57.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	15,498.01	3,874.50	51.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	13,814.69	3,453.67	45.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	11,889.09	2,972.27	39.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	10,341.40	2,585.35	34.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	8,969.76	2,242.44	29.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	7,931.98	1,982.99	26.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	6,950.49	1,737.62	22.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	6,210.04	1,552.51	20.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	5,760.05	1,440.01	18.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	5,965.88	1,491.47	19.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	6,176.14	1,544.03	20.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	6,605.55	1,651.39	21.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	6,995.12	1,748.78	23.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	7,508.14	1,877.04	24.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	8,005.88	2,001.47	26.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	8,643.74	2,160.93	28.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	9,214.94	2,303.73	30.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	9,923.29	2,480.82	32.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	10,596.50	2,649.12	34.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	11,207.62	2,801.91	36.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	11,910.75	2,977.69	39.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	13,016.57	3,254.14	42.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	14,331.33	3,582.83	47.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	16,044.94	4,011.23	52.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	20,822.99	5,205.75	68.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	30,359.60	6,375.52	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:54 PM	30,359.60	2,428.77	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PREVISION DESIGN

GRATTAN ELEMENTARY 1

HOSPITAL PROJECT

Shading diagrams on the
date of maximum shading

7:44 AM

DATE OF MAXIMUM SHADOW
SEPTEMBER 6

GRATTAN STREET

SHRADER STREET

ALMA STREET

N

PLAYGROUND FEATURES
1. Outdoor planter boxes and picnic tables
2. Blacktop area
3. Basketball court
4. Foursquare court
5. Play structure

Existing (Current) Shadow
Net New Project Shadow (if present)
2030 Net New Shadow Profiles (if present)
2030-2050 Net New Shadow (if present)

PREVISION DESIGN

GRATTAN ELEMENTARY 2

HOSPITAL PROJECT

Shading diagrams on the date of maximum shading

8:00 AM

DATE OF MAXIMUM SHADOW
SEPTEMBER 6

PLAYGROUND FEATURES
1. Outdoor planter boxes and picnic tables
2. Blacktop area
3. Basketball court
4. Foursquare court
5. Play structure

Existing (Current) Shadow
Net New Project Shadow (if present)
2030 Net New Shadow Profiles (if present)
2030-2050 Net New Shadow (if present)

PREVISION DESIGN

GRATTAN ELEMENTARY 3

HOSPITAL PROJECT

Shading diagrams on the date of maximum shading

9:00 AM

DATE OF MAXIMUM SHADOW
SEPTEMBER 6

PLAYGROUND FEATURES

1. Outdoor planter boxes and picnic tables
2. Blacktop area
3. Basketball court
4. Foursquare court
5. Play structure

Existing (Current) Shadow
Net New Project Shadow (if present)
2030 Net New Shadow Profiles (if present)
2030-2050 Net New Shadow (if present)

PREVISION DESIGN

GRATTAN ELEMENTARY 4

HOSPITAL PROJECT

Shading diagrams on the date of maximum shading

10:00 AM

DATE OF MAXIMUM SHADOW
SEPTEMBER 6

PLAYGROUND FEATURES

1. Outdoor planter boxes and picnic tables
2. Blacktop area
3. Basketball court
4. Foursquare court
5. Play structure

Existing (Current) Shadow
Net New Project Shadow (if present)
2030 Net New Shadow Profiles (if present)
2030-2050 Net New Shadow (if present)

PREVISION DESIGN

GRATTAN ELEMENTARY 5

HOSPITAL PROJECT

Shading diagrams on the date of maximum shading

11:00 AM

DATE OF MAXIMUM SHADOW
SEPTEMBER 6

GRATTAN STREET

SHRADER STREET

ALMA STREET

N

PLAYGROUND FEATURES

1. Outdoor planter boxes and picnic tables
2. Blacktop area
3. Basketball court
4. Foursquare court
5. Play structure

Existing (Current) Shadow

Net New Project Shadow (if present)

2030 Net New Shadow Profiles (if present)

2030-2050 Net New Shadow (if present)

PREVISION DESIGN

GRATTAN ELEMENTARY 6

HOSPITAL PROJECT

Shading diagrams on the date of maximum shading

12:00 PM

DATE OF MAXIMUM SHADOW
SEPTEMBER 6

GRATTAN STREET

SHRADER STREET

ALMA STREET

N

PLAYGROUND FEATURES

1. Outdoor planter boxes and picnic tables
2. Blacktop area
3. Basketball court
4. Foursquare court
5. Play structure

Existing (Current) Shadow

Net New Project Shadow (if present)

2030 Net New Shadow Profiles (if present)

2030-2050 Net New Shadow (if present)

PREVISION DESIGN

GRATTAN ELEMENTARY 7

HOSPITAL PROJECT

Shading diagrams on the date of maximum shading

1:00 PM

DATE OF MAXIMUM SHADOW
SEPTEMBER 6

GRATTAN STREET

SHRADER STREET

ALMA STREET

N

PLAYGROUND FEATURES

1. Outdoor planter boxes and picnic tables
2. Blacktop area
3. Basketball court
4. Foursquare court
5. Play structure

Existing (Current) Shadow

Net New Project Shadow (if present)

2030 Net New Shadow Profiles (if present)

2030-2050 Net New Shadow (if present)

PREVISION DESIGN

GRATTAN ELEMENTARY 8

HOSPITAL PROJECT

Shading diagrams on the date of maximum shading

2:00 PM

DATE OF MAXIMUM SHADOW
SEPTEMBER 6

GRATTAN STREET

SHRADER STREET

ALMA STREET

N

PLAYGROUND FEATURES

1. Outdoor planter boxes and picnic tables
2. Blacktop area
3. Basketball court
4. Foursquare court
5. Play structure

Existing (Current) Shadow

Net New Project Shadow (if present)

2030 Net New Shadow Profiles (if present)

2030-2050 Net New Shadow (if present)

PREVISION DESIGN

GRATTAN ELEMENTARY 9

HOSPITAL PROJECT

Shading diagrams on the date of maximum shading

3:00 PM

DATE OF MAXIMUM SHADOW
SEPTEMBER 6

PLAYGROUND FEATURES

1. Outdoor planter boxes and picnic tables
2. Blacktop area
3. Basketball court
4. Foursquare court
5. Play structure

Existing (Current) Shadow

Net New Project Shadow (if present)

2030 Net New Shadow Profiles (if present)

2030-2050 Net New Shadow (if present)

N

PREVISION DESIGN

GRATTAN ELEMENTARY 10

HOSPITAL PROJECT

Shading diagrams on the date of maximum shading

4:00 PM

DATE OF MAXIMUM SHADOW
SEPTEMBER 6

GRATTAN STREET

SHRADER STREET

ALMA STREET

N

PLAYGROUND FEATURES

1. Outdoor planter boxes and picnic tables
2. Blacktop area
3. Basketball court
4. Foursquare court
5. Play structure

Existing (Current) Shadow

Net New Project Shadow (if present)

2030 Net New Shadow Profiles (if present)

2030-2050 Net New Shadow (if present)

PREVISION DESIGN

GRATTAN ELEMENTARY 11

HOSPITAL PROJECT

Shading diagrams on the date of maximum shading

5:00 PM

DATE OF MAXIMUM SHADOW
SEPTEMBER 6

PLAYGROUND FEATURES

1. Outdoor planter boxes and picnic tables
2. Blacktop area
3. Basketball court
4. Foursquare court
5. Play structure

Existing (Current) Shadow

Net New Project Shadow (if present)

2030 Net New Shadow Profiles (if present)

2030-2050 Net New Shadow (if present)

N

PREVISION DESIGN

GRATTAN ELEMENTARY 12

HOSPITAL PROJECT

Shading diagrams on the date of maximum shading

6:00 PM

DATE OF MAXIMUM SHADOW
SEPTEMBER 6

GRATTAN STREET

SHRADER STREET

ALMA STREET

N

PLAYGROUND FEATURES

1. Outdoor planter boxes and picnic tables
2. Blacktop area
3. Basketball court
4. Foursquare court
5. Play structure

Existing (Current) Shadow

Net New Project Shadow (if present)

2030 Net New Shadow Profiles (if present)

2030-2050 Net New Shadow (if present)

PREVISION DESIGN

GRATTAN ELEMENTARY 13

HOSPITAL PROJECT

Shading diagrams on the date of maximum shading

6:15 PM

DATE OF MAXIMUM SHADOW
SEPTEMBER 6

GRATTAN STREET

SHRADER STREET

ALMA STREET

N

PLAYGROUND FEATURES
1. Outdoor planter boxes and picnic tables
2. Blacktop area
3. Basketball court
4. Foursquare court
5. Play structure

Existing (Current) Shadow
Net New Project Shadow (if present)
2030 Net New Shadow Profiles (if present)
2030-2050 Net New Shadow (if present)

PREVISION DESIGN

GRATTAN ELEMENTARY 14

HOSPITAL PROJECT

Shading diagrams on the
date of maximum shading

6:31 PM

DATE OF MAXIMUM SHADOW
SEPTEMBER 6

PLAYGROUND FEATURES
1. Outdoor planter boxes and picnic tables
2. Blacktop area
3. Basketball court
4. Foursquare court
5. Play structure

Existing (Current) Shadow
Net New Project Shadow (if present)
2030 Net New Shadow Profiles (if present)
2030-2050 Net New Shadow (if present)

GRATTAN STREET
SHRADER STREET
ALMA STREET
N

THEORETICAL ANNUAL AVAILABLE SUNLIGHT (TAAS) CALCULATION	GRATTAN ELEMENTARY SCHOOL
Total plan area of Grattan Elementary School	0.70 acres (30,398 sf)
Total hours of annual sunlight from 1-hr after sunrise through 1-hr before sunset	3721.4 hrs
Theoretical Annual Available Sunlight (plan area x hours of annual sunlight)	113,121,457 sfh

EXISTING SHADOW CONDITIONS SUMMARY	GRATTAN ELEMENTARY SCHOOL
Total annual existing shadow load (existing shadow sfh ÷ TAAS sfh)	28.01%
Total annual existing shadow in square-foot-hours (sfh)	31,685,678 sfh
Range in existing shadow area coverage throughout the year	Between 10% - 100%
Time of year / time of day most affected by existing shadow	Fall / Early Morning (before 8:00 AM)

UCSF HOSPITAL PROJECT NET NEW SHADOW SCENARIO SUMMARY	GRATTAN ELEMENTARY SCHOOL
Annual net new hospital project-only shadow load / total existing + hospital project shadow load	0.05% / 28.06%
Annual net new sfh hospital project shadow / total existing + hospital project sfh	60,949 sfh / 31,746,627 sfh
Number of days annually when new shading from hospital project would occur	Up to 68 days a year
Dates when net new shadow from hospital project would be cast annually	3/23 - 4/25 & 8/17 - 9/19
Date(s) with most annual sfh net new hospital project shadow (shadow load / net new sfh)	September 6 & April 5
Time of year / time of day most affected by hospital project net new shadow overall	Spring / Late Afternoon (after 4:00 PM)
Date(s) with largest shadow area from the hospital project (area and time shadow occurs)	Sep 6/Apr 5 (11,902 sf @ 6:31 PM)
Range in hospital project net new shadow percentage coverage (area range)	Between 0% - 39% (0 - 11,902 sf)
Average hospital project net new shadow coverage on affected dates (shadow area)	36.44% (11,077 sf)
Date(s) with the longest duration of net new shadow (duration)	Aug 30/Apr 12 (20 min +/- 7 min)
Range in daily hospital project net new shadow duration (margin of error)	Between zero minutes up to 20 min (+/- 7 min)
Average daily hospital project net new shadow duration on affected dates	13.8 minutes

NEAR TERM CUMULATIVE (2030) NET NEW SHADOW SCENARIO SUMMARY	GRATTAN ELEMENTARY SCHOOL
Annual net new 2030 cumulative condition shadow load / total existing + 2030 cumulative shadow load	0.05% / 28.06%
Annual net new sfh 2030 cumulative shadow / total existing + 2030 cumulative sfh	60,949 sfh / 31,746,627 sfh
Number of days annually when new shading from 2030 cumulative would occur	Up to 68 days a year
Dates when net new shadow from 2030 cumulative would be cast annually	3/23 - 4/25 & 8/17 - 9/19
Date(s) with most annual sfh net new 2030 cumulative shadow (shadow load / net new sfh)	September 6 & April 5
Time of year / time of day most affected by 2030 cumulative net new shadow overall	Spring / Late Afternoon (after 4:00 PM)
Date(s) with largest shadow area from the 2030 cumulative (area and time shadow occurs)	Sep 6/Apr 5 (11,902 sf @ 6:31 PM)
Range in 2030 cumulative net new shadow percentage coverage (area range)	Between 0% - 39% (0 - 11,902 sf)
Average 2030 cumulative net new shadow coverage on affected dates (shadow area)	36.44% (11,077 sf)
Date(s) with the longest duration of net new shadow (duration)	Aug 30/Apr 12 (20 min +/- 7 min)
Range in daily 2030 cumulative net new shadow duration (margin of error)	Between zero minutes up to 20 min (+/- 7 min)
Average daily 2030 cumulative net new shadow duration on affected dates	13.8 minutes

LONG TERM CUMULATIVE (2050) NET NEW SHADOW SCENARIO SUMMARY	GRATTAN ELEMENTARY SCHOOL
Annual net new 2050 cumulative shadow load / total existing + 2050 cumulative shadow load	0.05% / 28.06%
Annual net new sfh 2050 cumulative shadow / total existing + 2050 cumulative sfh	60,949 sfh / 31,746,627 sfh
Number of days annually when new shading from 2050 cumulative would occur	Up to 68 days a year
Dates when net new shadow from 2050 cumulative would be cast annually	3/23 - 4/25 & 8/17 - 9/19
Date(s) with most annual sfh net new 2050 cumulative shadow (shadow load / net new sfh)	September 6 & April 5
Time of year / time of day most affected by 2050 cumulative net new shadow overall	Spring / Late Afternoon (after 4:00 PM)
Date(s) with largest shadow area from the 2050 cumulative (area and time shadow occurs)	Sep 6/Apr 5 (11,902 sf @ 6:31 PM)
Range in 2050 cumulative net new shadow percentage coverage (area range)	Between 0% - 39% (0 - 11,902 sf)
Average 2050 cumulative net new shadow coverage on affected dates (shadow area)	36.44% (11,077 sf)
Date(s) with the longest duration of net new shadow (duration)	Aug 30/Apr 12 (20 min +/- 7 min)
Range in daily 2050 cumulative net new shadow duration (margin of error)	Between zero minutes up to 20 min (+/- 7 min)
Average daily 2050 cumulative net new shadow duration on affected dates	13.8 minutes

PROJECT: UCSF Hospital Project
OPEN SPACE: Independence High School

PREVISION DESIGN

JUNE 21

Summer solstice

Analysis hours: 6:46 AM-7:36 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
6:46 AM	14,142.40	1,555.66	70.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 AM	10,068.66	2,315.79	49.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 AM	6,792.20	1,698.05	33.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 AM	4,382.27	1,095.57	21.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	2,554.36	638.59	12.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	1,210.88	302.72	6.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	593.00	148.25	2.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	297.53	74.38	1.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	132.18	33.04	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	18.84	4.71	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	55.41	13.85	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	125.99	31.50	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	186.91	46.73	0.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	232.73	58.18	1.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	274.38	68.59	1.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	303.22	75.80	1.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	332.27	83.07	1.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	348.61	87.15	1.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	368.74	92.19	1.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	375.38	93.85	1.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	389.50	97.37	1.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	387.50	96.88	1.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	397.65	99.41	2.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	387.74	96.94	1.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	393.50	98.38	1.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	377.42	94.36	1.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	384.80	96.20	1.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	572.42	143.10	2.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	785.55	196.39	3.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	1,016.59	254.15	5.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	1,414.26	353.57	7.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	1,811.65	452.91	9.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	2,228.34	557.08	11.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	2,635.16	658.79	13.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	3,066.70	766.68	15.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	3,499.37	874.84	17.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	3,962.12	990.53	19.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	4,434.81	1,108.70	21.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	4,943.06	1,235.77	24.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	5,471.62	1,367.91	27.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	6,191.00	1,547.75	30.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	7,092.42	1,773.11	35.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	8,109.74	2,027.44	40.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	9,234.54	2,308.64	45.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	10,269.89	2,567.47	50.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	11,414.80	2,853.70	56.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	12,688.14	3,172.03	62.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	14,135.83	3,533.96	69.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	15,727.89	3,931.97	77.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 PM	16,265.46	4,066.37	80.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 PM	15,990.21	4,797.06	79.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:36 PM	15,594.25	2,806.97	77.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Independence High School

PREVISION DESIGN

JUNE 28

Mirror date: June 14
Analysis hours: 6:48 AM-7:36 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
6:48 AM	13,842.40	1,384.24	68.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 AM	10,585.81	2,328.88	52.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 AM	7,180.05	1,795.01	35.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 AM	4,653.35	1,163.34	23.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	2,768.87	692.22	13.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	1,314.89	328.72	6.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	635.55	158.89	3.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	308.86	77.22	1.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	137.87	34.47	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	21.26	5.31	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	54.67	13.67	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	126.41	31.60	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	188.17	47.04	0.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	234.63	58.66	1.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	276.84	69.21	1.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	306.13	76.53	1.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	335.47	83.87	1.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	352.14	88.04	1.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	372.52	93.13	1.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	379.46	94.87	1.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	393.95	98.49	1.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	391.87	97.97	1.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	402.14	100.53	2.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	392.56	98.14	1.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	398.37	99.59	2.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	382.57	95.64	1.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	388.19	97.05	1.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	557.12	139.28	2.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	770.47	192.62	3.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	985.57	246.39	4.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	1,383.24	345.81	6.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	1,780.01	445.00	8.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	2,196.51	549.13	10.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	2,607.44	651.86	12.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	3,038.81	759.70	15.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	3,471.46	867.87	17.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	3,934.26	983.56	19.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	4,406.68	1,101.67	21.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	4,914.82	1,228.70	24.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	5,442.38	1,360.59	26.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	6,118.57	1,529.64	30.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	7,011.43	1,752.86	34.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	8,019.83	2,004.96	39.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	9,170.27	2,292.57	45.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	10,203.72	2,550.93	50.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	11,343.54	2,835.88	56.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	12,614.79	3,153.70	62.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	14,052.78	3,513.20	69.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	15,679.04	3,919.76	77.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 PM	16,310.33	4,077.58	80.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 PM	16,033.99	4,810.20	79.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:36 PM	15,624.82	2,812.47	77.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Independence High School

PREVISION DESIGN

JULY 5

Mirror date: June 7
Analysis hours: 6:52 AM-7:36 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
6:52 AM	13,798.17	827.89	68.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 AM	11,400.15	2,166.03	56.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 AM	7,768.35	1,942.09	38.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 AM	5,049.10	1,262.27	25.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	3,075.93	768.98	15.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	1,495.54	373.88	7.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	679.99	170.00	3.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	300.66	75.16	1.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	123.28	30.82	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	16.66	4.16	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	68.78	17.20	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	141.95	35.49	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	203.82	50.96	1.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	250.47	62.62	1.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	292.69	73.17	1.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	321.81	80.45	1.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	351.22	87.80	1.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	367.51	91.88	1.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	388.17	97.04	1.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	394.81	98.70	2.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	408.75	102.19	2.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	407.00	101.75	2.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	416.72	104.18	2.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	407.19	101.80	2.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	412.88	103.22	2.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	397.30	99.32	2.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	401.78	100.45	2.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	555.75	138.94	2.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	770.56	192.64	3.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	976.51	244.13	4.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	1,375.56	343.89	6.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	1,772.90	443.22	8.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	2,189.94	547.49	10.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	2,614.06	653.51	12.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	3,048.65	762.16	15.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	3,485.34	871.33	17.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	3,951.88	987.97	19.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	4,427.95	1,106.99	21.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	4,941.12	1,235.28	24.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	5,473.97	1,368.49	27.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	6,083.71	1,520.93	30.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	6,972.73	1,743.18	34.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	7,981.68	1,995.42	39.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	9,145.44	2,286.36	45.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	10,238.54	2,559.63	50.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	11,396.61	2,849.15	56.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	12,685.81	3,171.45	62.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	14,156.49	3,539.12	70.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	15,790.67	3,947.67	78.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 PM	16,389.90	4,097.47	81.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 PM	16,114.82	4,834.44	79.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:36 PM	15,719.68	2,829.54	77.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Independence High School

PREVISION DESIGN

JULY 12

Mirror date: May 31
Analysis hours: 6:56 AM-7:33 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
6:56 AM	13,712.88	411.39	67.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 AM	12,558.29	1,883.74	62.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 AM	8,589.02	2,147.25	42.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 AM	5,596.75	1,399.19	27.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	3,484.88	871.22	17.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	1,790.64	447.66	8.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	753.04	188.26	3.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	274.02	68.51	1.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	88.35	22.09	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	22.54	5.63	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	101.99	25.50	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	173.80	43.45	0.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	235.27	58.82	1.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	281.00	70.25	1.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	322.50	80.62	1.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	350.82	87.70	1.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	379.61	94.90	1.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	395.26	98.81	2.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	415.11	103.78	2.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	421.18	105.30	2.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	434.70	108.67	2.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	432.35	108.09	2.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	441.72	110.43	2.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	432.02	108.00	2.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	436.86	109.21	2.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	421.44	105.36	2.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	424.67	106.17	2.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	568.62	142.16	2.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	786.07	196.52	3.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	993.28	248.32	4.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	1,391.12	347.78	6.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	1,790.40	447.60	8.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	2,209.91	552.48	10.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	2,642.35	660.59	13.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	3,097.34	774.34	15.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	3,540.95	885.24	17.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	4,015.86	1,003.97	19.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	4,500.78	1,125.20	22.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	5,023.51	1,255.88	24.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	5,567.67	1,391.92	27.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	6,160.22	1,540.05	30.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	6,979.56	1,744.89	34.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	7,996.36	1,999.09	39.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	9,173.85	2,293.46	45.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	10,376.90	2,594.22	51.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	11,570.76	2,892.69	57.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	12,905.24	3,226.31	63.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	14,456.50	3,614.12	71.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	16,062.95	4,015.74	79.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 PM	16,501.41	4,125.35	81.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 PM	16,225.21	4,543.06	80.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:33 PM	15,874.64	2,381.20	78.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Independence High School

PREVISION DESIGN

JULY 19

Mirror date: May 24
Analysis hours: 7:01 AM-7:30 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:01 AM	13,657.51	1,775.48	67.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:16 AM	9,344.02	2,242.56	46.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 AM	6,323.26	1,517.58	31.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	3,984.51	996.13	19.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	2,173.89	543.47	10.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	860.05	215.01	4.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	245.37	61.34	1.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	35.16	8.79	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	61.27	15.32	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	153.47	38.37	0.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	223.51	55.88	1.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	283.44	70.86	1.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	327.05	81.76	1.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	367.30	91.82	1.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	393.62	98.41	1.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	421.30	105.32	2.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	435.03	108.76	2.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	454.26	113.57	2.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	459.03	114.76	2.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	471.79	117.95	2.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	468.35	117.09	2.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	476.77	119.19	2.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	466.48	116.62	2.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	470.53	117.63	2.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	455.00	113.75	2.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	457.37	114.34	2.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	599.26	149.82	3.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	819.75	204.94	4.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	1,030.71	257.68	5.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	1,435.89	358.97	7.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	1,838.05	459.51	9.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	2,261.73	565.43	11.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	2,698.91	674.73	13.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	3,163.75	790.94	15.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	3,645.18	911.30	18.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	4,133.14	1,033.28	20.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	4,631.20	1,157.80	22.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	5,170.85	1,292.71	25.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	5,732.43	1,433.11	28.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	6,346.46	1,586.61	31.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	7,041.69	1,760.42	34.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	8,077.99	2,019.50	40.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	9,286.27	2,321.57	45.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	10,638.34	2,659.59	52.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	11,895.08	2,973.77	58.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	13,309.14	3,327.29	65.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	14,997.60	3,749.40	74.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	16,539.81	4,134.95	81.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 PM	16,638.80	4,159.70	82.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 PM	16,364.07	4,091.02	81.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 PM	16,082.23	2,090.69	79.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Independence High School

PREVISION DESIGN

JULY 26

Mirror date: May 17
Analysis hours: 7:07 AM-7:25 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:07 AM	13,610.50	816.63	67.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 AM	11,131.47	2,114.98	55.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 AM	7,273.94	1,818.49	36.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	4,608.86	1,152.21	22.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	2,644.63	661.16	13.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	1,037.32	259.33	5.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	240.96	60.24	1.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	38.45	9.61	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	135.78	33.95	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	224.88	56.22	1.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	291.41	72.85	1.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	348.54	87.13	1.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	389.02	97.26	1.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	426.47	106.62	2.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	450.35	112.59	2.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	475.87	118.97	2.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	487.89	121.97	2.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	504.99	126.25	2.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	508.27	127.07	2.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	519.41	129.85	2.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	514.74	128.69	2.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	521.85	130.46	2.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	510.80	127.70	2.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	513.36	128.34	2.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	497.33	124.33	2.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	499.06	124.77	2.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	645.82	161.45	3.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	870.79	217.70	4.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	1,095.36	273.84	5.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	1,505.64	376.41	7.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	1,913.18	478.29	9.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	2,342.01	585.50	11.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	2,786.35	696.59	13.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	3,258.63	814.66	16.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	3,754.51	938.63	18.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	4,290.45	1,072.61	21.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	4,819.22	1,204.80	23.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	5,381.03	1,345.26	26.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	5,967.36	1,491.84	29.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	6,611.58	1,652.89	32.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	7,300.91	1,825.23	36.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	8,221.52	2,055.38	40.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	9,474.00	2,368.50	46.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	10,941.86	2,735.46	54.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	12,376.65	3,094.16	61.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	13,911.81	3,477.95	68.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	15,799.11	3,949.78	78.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	17,036.94	4,259.24	84.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 PM	16,799.95	4,199.99	83.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 PM	16,528.45	3,470.97	81.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:25 PM	16,340.12	1,470.61	80.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Independence High School

PREVISION DESIGN

AUGUST 2

Mirror date: May 10
Analysis hours: 7:12 AM-7:18 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:12 AM	13,589.18	271.78	67.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 AM	12,781.20	1,917.18	63.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 AM	8,463.87	2,115.97	41.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	5,368.20	1,342.05	26.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	3,165.22	791.30	15.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	1,374.52	343.63	6.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	330.16	82.54	1.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	150.63	37.66	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	236.20	59.05	1.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	319.06	79.76	1.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	379.80	94.95	1.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	432.11	108.03	2.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	467.85	116.96	2.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	501.98	125.50	2.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	521.83	130.46	2.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	544.43	136.11	2.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	553.35	138.34	2.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	568.36	142.09	2.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	569.07	142.27	2.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	578.39	144.60	2.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	571.99	143.00	2.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	577.26	144.31	2.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	564.90	141.22	2.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	566.06	141.52	2.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	549.56	137.39	2.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	550.41	137.60	2.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	711.77	177.94	3.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	942.98	235.74	4.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	1,192.97	298.24	5.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	1,608.47	402.12	8.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	2,022.51	505.63	10.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	2,458.84	614.71	12.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	2,911.95	727.99	14.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	3,395.00	848.75	16.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	3,903.04	975.76	19.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	4,453.66	1,113.41	22.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	5,045.47	1,261.37	25.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	5,668.68	1,417.17	28.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	6,288.78	1,572.19	31.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	6,973.91	1,743.48	34.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	7,710.39	1,927.60	38.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	8,536.01	2,134.00	42.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	9,766.54	2,441.64	48.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	11,324.90	2,831.22	56.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	13,067.74	3,266.93	64.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	14,805.31	3,701.33	73.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	16,730.01	4,182.50	82.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	17,240.97	4,310.24	85.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 PM	16,976.56	4,244.14	84.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 PM	16,703.87	2,505.58	82.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:18 PM	16,637.92	499.14	82.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Independence High School

PREVISION DESIGN

AUGUST 9

Mirror date: May 3
Analysis hours: 7:19 AM-7:10 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:19 AM	13,531.91	1,217.87	67.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 AM	10,002.63	2,100.55	49.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	6,378.02	1,594.51	31.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	3,778.84	944.71	18.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	1,832.19	458.05	9.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	723.56	180.89	3.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	358.95	89.74	1.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	366.63	91.66	1.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	436.83	109.21	2.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	489.55	122.39	2.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	535.04	133.76	2.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	564.07	141.02	2.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	593.17	148.29	2.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	608.16	152.04	3.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	626.54	156.63	3.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	631.83	157.96	3.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	643.42	160.86	3.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	641.00	160.25	3.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	647.95	161.99	3.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	639.39	159.85	3.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	642.52	160.63	3.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	628.67	157.17	3.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	627.77	156.94	3.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	609.98	152.50	3.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	611.38	152.85	3.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	796.98	199.25	3.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	1,034.33	258.58	5.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	1,318.76	329.69	6.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	1,739.91	434.98	8.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	2,161.89	540.47	10.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	2,608.65	652.16	12.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	3,072.44	768.11	15.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	3,568.06	892.01	17.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	4,091.97	1,022.99	20.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	4,660.89	1,165.22	23.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	5,273.36	1,318.34	26.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	5,955.10	1,488.77	29.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	6,698.81	1,674.70	33.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	7,438.22	1,859.56	36.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	8,236.65	2,059.16	40.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	9,139.77	2,284.94	45.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	10,178.89	2,544.72	50.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	11,839.82	2,959.95	58.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	13,914.64	3,478.66	68.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	16,085.15	4,021.29	79.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	17,667.43	4,416.86	87.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	17,430.53	5,926.38	86.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:10 PM	16,968.31	3,563.34	84.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Independence High School

PREVISION DESIGN

AUGUST 16

Mirror date: April 26
Analysis hours: 7:25 AM-7:02 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:25 AM	13,631.54	545.26	67.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 AM	12,027.72	2,044.71	59.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	7,665.92	1,916.48	37.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	4,566.52	1,141.63	22.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	2,720.94	680.24	13.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	1,365.01	341.25	6.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	696.38	174.10	3.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	533.90	133.48	2.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	579.98	145.00	2.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	621.06	155.26	3.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	657.61	164.40	3.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	678.33	169.58	3.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	700.89	175.22	3.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	709.45	177.36	3.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	722.99	180.75	3.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	723.35	180.84	3.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	730.94	182.73	3.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	724.70	181.17	3.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	728.87	182.22	3.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	717.23	179.31	3.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	717.49	179.37	3.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	701.95	175.49	3.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	698.78	174.69	3.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	679.57	169.89	3.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	684.52	171.13	3.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	898.77	224.69	4.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	1,144.76	286.19	5.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	1,471.14	367.78	7.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	1,897.15	474.29	9.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	2,328.94	582.24	11.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	2,786.50	696.62	13.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	3,263.83	815.96	16.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	3,775.43	943.86	18.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	4,317.13	1,079.28	21.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	4,908.63	1,227.16	24.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	5,549.31	1,387.33	27.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	6,262.86	1,565.71	31.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	7,055.68	1,763.92	34.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	7,963.20	1,990.80	39.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	8,892.30	2,223.07	44.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	9,897.22	2,474.30	49.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	11,024.86	2,756.22	54.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	12,506.26	3,126.57	61.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	14,852.30	3,713.07	73.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	17,485.51	4,371.38	86.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	17,980.01	4,495.00	89.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	17,634.59	4,761.34	87.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:02 PM	17,324.83	2,425.48	85.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Independence High School

PREVISION DESIGN

AUGUST 23

Mirror date: April 19
Analysis hours: 7:31 AM-6:52 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:31 AM	13,849.37	1,523.43	68.5%	1,317.76	144.95	6.5%	1,317.61	144.94	6.5%	1,317.76	144.95	6.5%
7:45 AM	9,283.61	2,135.23	45.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	5,931.07	1,482.77	29.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	3,861.49	965.37	19.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	2,235.48	558.87	11.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	1,200.94	300.23	5.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	769.19	192.30	3.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	753.01	188.25	3.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	777.11	194.28	3.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	801.70	200.43	4.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	811.78	202.95	4.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	825.63	206.41	4.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	826.01	206.50	4.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	832.80	208.20	4.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	827.22	206.81	4.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	830.09	207.52	4.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	819.23	204.81	4.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	819.13	204.78	4.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	804.60	201.15	4.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	801.92	200.48	4.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	783.99	196.00	3.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	778.22	194.56	3.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	757.21	189.30	3.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	793.97	198.49	3.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	1,023.97	255.99	5.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	1,279.75	319.94	6.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	1,658.23	414.56	8.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	2,088.98	522.25	10.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	2,532.36	633.09	12.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	3,003.85	750.96	14.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	3,496.98	874.24	17.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	4,027.60	1,006.90	19.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	4,592.30	1,148.08	22.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	5,211.05	1,302.76	25.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	5,885.04	1,471.26	29.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	6,640.27	1,660.07	32.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	7,484.68	1,871.17	37.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	8,458.08	2,114.52	41.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	9,585.85	2,396.46	47.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	10,865.37	2,716.34	53.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	12,162.97	3,040.74	60.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	13,745.59	3,436.40	68.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	16,250.07	4,062.52	80.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	18,259.43	4,564.86	90.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	18,605.45	4,651.36	92.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	18,096.86	3,438.40	89.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:52 PM	17,716.48	1,062.99	87.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Independence High School

PREVISION DESIGN

AUGUST 30

Mirror date: April 12
Analysis hours: 7:37 AM-6:42 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:37 AM	14,167.71	850.06	70.1%	6,001.05	360.06	29.7%	6,001.05	360.06	29.7%	6,001.05	360.06	29.7%
7:45 AM	11,638.52	2,211.32	57.6%	564.16	107.19	2.8%	563.82	107.13	2.8%	564.16	107.19	2.8%
8:00 AM	7,728.25	1,932.06	38.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	5,164.83	1,291.21	25.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	3,318.54	829.64	16.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	1,884.88	471.22	9.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	1,144.78	286.19	5.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	965.13	241.28	4.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	958.23	239.56	4.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	967.17	241.79	4.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	963.19	240.80	4.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	965.84	241.46	4.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	956.24	239.06	4.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	955.93	238.98	4.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	942.65	235.66	4.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	939.68	234.92	4.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	923.98	231.00	4.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	919.69	229.92	4.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	901.24	225.31	4.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	894.98	223.74	4.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	874.11	218.53	4.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	866.64	216.66	4.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	843.47	210.87	4.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	923.03	230.76	4.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	1,167.69	291.92	5.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	1,434.38	358.59	7.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	1,864.77	466.19	9.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	2,305.20	576.30	11.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	2,761.45	690.36	13.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	3,249.43	812.36	16.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	3,760.54	940.13	18.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	4,313.19	1,078.30	21.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	4,903.62	1,225.91	24.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	5,554.82	1,388.70	27.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	6,267.70	1,566.92	31.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	7,071.05	1,767.76	35.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	7,977.12	1,994.28	39.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	9,030.30	2,257.58	44.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	10,261.97	2,565.49	50.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	11,755.53	2,938.88	58.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	13,626.87	3,406.72	67.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	15,703.37	3,925.84	77.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	17,576.01	4,394.00	87.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	17,852.68	4,463.17	88.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	19,134.65	4,400.97	94.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:42 PM	19,391.37	2,133.05	95.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Independence High School

PREVISION DESIGN

SEPTEMBER 6

Mirror date: April 5
Analysis hours: 7:44 AM-6:31 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:44 AM	16,292.50	2,118.02	80.6%	3,876.26	503.91	19.2%	3,876.26	503.91	19.2%	3,876.26	503.91	19.2%
8:00 AM	9,841.18	2,460.29	48.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	6,709.88	1,677.47	33.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	4,592.68	1,148.17	22.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	2,794.89	698.72	13.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	1,659.99	415.00	8.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	1,218.70	304.68	6.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	1,162.09	290.52	5.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	1,150.97	287.74	5.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	1,130.24	282.56	5.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	1,120.33	280.08	5.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	1,099.58	274.89	5.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	1,090.40	272.60	5.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	1,069.22	267.31	5.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	1,060.02	265.00	5.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	1,038.53	259.63	5.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	1,029.33	257.33	5.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	1,006.87	251.72	5.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	997.24	249.31	4.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	973.91	243.48	4.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	962.95	240.74	4.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	938.57	234.64	4.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	1,070.90	267.73	5.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	1,329.10	332.28	6.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	1,651.26	412.81	8.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	2,091.00	522.75	10.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	2,545.33	636.33	12.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	3,015.81	753.95	14.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	3,521.36	880.34	17.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	4,053.40	1,013.35	20.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	4,630.79	1,157.70	22.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	5,251.09	1,312.77	26.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	5,939.59	1,484.90	29.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	6,697.41	1,674.35	33.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	7,557.73	1,889.43	37.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	8,535.82	2,133.96	42.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	9,683.46	2,420.87	47.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	11,079.34	2,769.84	54.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	12,812.29	3,203.07	63.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	15,056.77	3,764.19	74.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	17,973.68	4,493.42	88.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	18,268.63	4,567.16	90.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	17,565.69	4,742.74	86.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:31 PM	18,652.45	2,611.34	92.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Independence High School

PREVISION DESIGN

SEPTEMBER 13

Mirror date: March 29
Analysis hours: 7:50 AM-6:21 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:50 AM	19,644.49	1,571.56	97.2%	0.00	0.00	0.0%	7.80	0.62	0.0%	7.80	0.62	0.0%
8:00 AM	12,272.61	2,577.25	60.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	8,526.57	2,131.64	42.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	5,967.24	1,491.81	29.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	3,930.77	982.69	19.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	2,354.75	588.69	11.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	1,559.22	389.80	7.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	1,406.77	351.69	7.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	1,366.07	341.52	6.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	1,320.75	330.19	6.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	1,293.62	323.41	6.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	1,256.67	314.17	6.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	1,235.87	308.97	6.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	1,206.30	301.57	6.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	1,190.27	297.57	5.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	1,162.78	290.69	5.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	1,148.43	287.11	5.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	1,121.82	280.46	5.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	1,108.52	277.13	5.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	1,082.10	270.52	5.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	1,068.46	267.12	5.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	1,045.10	261.28	5.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	1,238.79	309.70	6.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	1,511.76	377.94	7.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	1,897.76	474.44	9.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	2,338.76	584.69	11.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	2,808.34	702.08	13.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	3,294.63	823.66	16.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	3,820.63	955.16	18.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	4,374.42	1,093.61	21.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	4,980.89	1,245.22	24.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	5,635.07	1,408.77	27.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	6,364.74	1,591.19	31.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	7,173.34	1,793.33	35.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	8,099.71	2,024.93	40.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	9,161.33	2,290.33	45.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	10,448.61	2,612.15	51.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	12,056.11	3,014.03	59.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	14,092.77	3,523.19	69.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	16,940.51	4,235.13	83.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	18,637.35	4,659.34	92.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	18,960.88	4,740.22	93.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	18,496.12	3,329.30	91.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:21 PM	18,154.25	907.71	89.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Independence High School

PREVISION DESIGN

SEPTEMBER 20

Fall equinox (Spring equinox on March 22 similar)
Analysis hours: 7:57 AM-6:09 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:57 AM	16,631.14	332.62	82.3%	0.00	0.00	0.0%	1,123.47	22.47	5.6%	1,123.36	22.47	5.6%
8:00 AM	15,398.47	2,309.77	76.2%	0.00	0.00	0.0%	860.72	129.11	4.3%	860.72	129.11	4.3%
8:15 AM	10,632.46	2,658.11	52.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	7,518.93	1,879.73	37.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	5,274.49	1,318.62	26.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	3,254.65	813.66	16.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	2,097.62	524.40	10.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	1,725.01	431.25	8.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	1,633.07	408.27	8.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	1,549.75	387.44	7.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	1,492.93	373.23	7.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	1,431.51	357.88	7.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	1,393.87	348.47	6.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	1,353.46	338.36	6.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	1,330.26	332.57	6.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	1,295.85	323.96	6.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	1,276.26	319.07	6.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	1,244.98	311.24	6.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	1,228.00	307.00	6.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	1,198.12	299.53	5.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	1,182.23	295.56	5.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	1,168.09	292.02	5.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	1,426.79	356.70	7.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	1,714.75	428.69	8.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	2,158.16	539.54	10.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	2,603.48	650.87	12.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	3,088.42	772.11	15.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	3,592.82	898.20	17.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	4,140.30	1,035.07	20.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	4,719.44	1,179.86	23.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	5,357.48	1,339.37	26.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	6,047.37	1,511.84	29.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	6,826.04	1,706.51	33.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	7,689.73	1,922.43	38.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	8,690.57	2,172.64	43.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	9,847.63	2,461.91	48.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	11,312.87	2,828.22	56.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	13,171.90	3,292.97	65.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	15,631.89	3,907.97	77.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	18,126.88	4,531.72	89.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	18,887.41	4,721.85	93.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	19,634.72	4,123.29	97.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:09 PM	19,842.43	1,587.39	98.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Independence High School

PREVISION DESIGN

SEPTEMBER 27

Mirror date: March 15
Analysis hours: 8:03 AM-5:58 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
8:03 AM	20,168.76	2,016.88	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	13,250.23	2,915.05	65.6%	0.00	0.00	0.0%	2,718.90	598.16	13.5%	2,718.90	598.16	13.5%
8:30 AM	9,245.60	2,311.40	45.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	6,687.75	1,671.94	33.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	4,430.20	1,107.55	21.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	2,796.27	699.07	13.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	2,101.15	525.29	10.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	1,934.10	483.52	9.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	1,804.06	451.02	8.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	1,712.23	428.06	8.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	1,623.58	405.90	8.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	1,567.14	391.78	7.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	1,511.71	377.93	7.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	1,480.48	370.12	7.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	1,438.79	359.70	7.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	1,413.70	353.42	7.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	1,377.41	344.35	6.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	1,356.56	339.14	6.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	1,323.27	330.82	6.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	1,308.30	327.08	6.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	1,349.73	337.43	6.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	1,644.81	411.20	8.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	1,956.55	489.14	9.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	2,423.43	605.86	12.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	2,883.73	720.93	14.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	3,384.54	846.14	16.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	3,908.17	977.04	19.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	4,477.68	1,119.42	22.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	5,081.92	1,270.48	25.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	5,753.58	1,438.40	28.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	6,482.97	1,620.74	32.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	7,310.99	1,827.75	36.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	8,237.83	2,059.46	40.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	9,317.46	2,329.36	46.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	10,589.98	2,647.50	52.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	12,251.08	3,062.77	60.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	14,417.37	3,604.34	71.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	17,415.78	4,353.95	86.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	18,221.30	4,555.32	90.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	19,283.44	4,435.19	95.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:58 PM	20,168.76	2,218.56	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Independence High School

PREVISION DESIGN

OCTOBER 4

Mirror date: March 8

Analysis hours: 8:09 AM-5:47 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
8:09 AM	20,117.11	804.68	99.5%	0.00	0.00	0.0%	51.65	2.07	0.3%	51.65	2.07	0.3%
8:15 AM	18,318.89	3,114.21	90.6%	0.00	0.00	0.0%	1,849.87	314.48	9.2%	1,849.87	314.48	9.2%
8:30 AM	11,231.53	2,807.88	55.6%	0.00	0.00	0.0%	2,695.44	673.86	13.3%	2,695.54	673.88	13.3%
8:45 AM	8,212.50	2,053.13	40.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	5,845.95	1,461.49	28.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	3,716.09	929.02	18.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	2,573.91	643.48	12.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	2,279.45	569.86	11.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	2,092.11	523.03	10.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	1,958.19	489.55	9.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	1,835.29	458.82	9.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	1,756.51	439.13	8.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	1,682.92	420.73	8.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	1,641.72	410.43	8.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	1,592.28	398.07	7.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	1,561.18	390.30	7.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	1,519.18	379.80	7.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	1,494.12	373.53	7.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	1,457.50	364.37	7.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	1,445.45	361.36	7.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	1,507.80	376.95	7.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	1,850.40	462.60	9.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	2,235.55	558.89	11.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	2,700.64	675.16	13.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	3,174.77	793.69	15.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	3,694.65	923.66	18.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	4,236.56	1,059.14	21.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	4,832.36	1,208.09	23.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	5,466.64	1,366.66	27.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	6,176.29	1,544.07	30.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	6,951.40	1,737.85	34.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	7,837.91	1,959.48	38.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	8,833.48	2,208.37	43.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	10,024.83	2,506.21	49.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	11,463.02	2,865.75	56.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	13,397.75	3,349.44	66.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	16,332.60	4,083.15	80.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	17,587.56	4,396.89	87.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	18,580.07	5,016.62	91.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:47 PM	19,974.67	2,796.45	98.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Independence High School

PREVISION DESIGN

OCTOBER 11

Mirror date: March 1
Analysis hours: 8:16 AM-5:37 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
8:16 AM	19,826.18	2,379.14	98.1%	0.00	0.00	0.0%	342.58	41.11	1.7%	342.58	41.11	1.7%
8:30 AM	13,493.99	3,238.56	66.8%	0.00	0.00	0.0%	5,477.42	1,314.58	27.1%	5,695.47	1,366.91	28.2%
8:45 AM	10,020.16	2,505.04	49.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	7,363.07	1,840.77	36.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	4,952.57	1,238.14	24.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	3,251.00	812.75	16.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	2,677.69	669.42	13.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	2,419.47	604.87	12.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	2,234.65	558.66	11.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	2,069.37	517.34	10.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	1,963.81	490.95	9.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	1,869.85	467.46	9.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	1,815.47	453.87	9.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	1,755.89	438.97	8.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	1,718.26	429.56	8.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	1,670.16	417.54	8.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	1,641.01	410.25	8.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	1,600.20	400.05	7.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	1,595.29	398.82	7.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	1,750.25	437.56	8.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	2,104.38	526.09	10.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	2,516.20	629.05	12.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	2,987.58	746.90	14.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	3,476.99	869.25	17.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	4,017.36	1,004.34	19.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	4,582.11	1,145.53	22.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	5,209.94	1,302.48	25.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	5,877.52	1,469.38	29.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	6,629.03	1,657.26	32.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	7,449.58	1,862.40	36.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	8,391.39	2,097.85	41.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	9,478.18	2,369.54	46.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	10,840.21	2,710.05	53.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	12,514.99	3,128.75	61.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	14,895.81	3,723.95	73.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	16,936.24	4,234.06	83.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	18,075.47	4,518.87	89.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	19,480.57	3,701.31	96.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:37 PM	19,991.34	1,199.48	98.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Independence High School

PREVISION DESIGN

OCTOBER 18

Mirror date: February 22
Analysis hours: 8:22 AM-5:27 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
8:22 AM	20,168.76	1,210.13	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	17,249.39	3,104.89	85.3%	0.00	0.00	0.0%	1,131.16	203.61	5.6%	2,919.37	525.49	14.4%
8:45 AM	12,053.83	3,013.46	59.6%	0.00	0.00	0.0%	955.59	238.90	4.7%	955.78	238.94	4.7%
9:00 AM	9,016.83	2,254.21	44.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	6,568.87	1,642.22	32.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	4,254.49	1,063.62	21.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	3,194.55	798.64	15.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	2,791.52	697.88	13.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	2,545.09	636.27	12.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	2,328.92	582.23	11.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	2,190.13	547.53	10.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	2,073.62	518.40	10.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	2,004.01	501.00	9.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	1,929.64	482.41	9.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	1,884.27	471.07	9.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	1,829.93	457.48	9.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	1,796.31	449.08	8.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	1,751.36	437.84	8.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	1,754.19	438.55	8.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	1,977.64	494.41	9.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	2,349.53	587.38	11.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	2,790.55	697.64	13.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	3,279.12	819.78	16.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	3,786.31	946.58	18.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	4,351.51	1,087.88	21.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	4,940.62	1,235.15	24.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	5,594.52	1,398.63	27.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	6,290.13	1,572.53	31.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	7,076.36	1,769.09	35.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	7,937.63	1,984.41	39.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	8,933.49	2,233.37	44.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	10,153.40	2,538.35	50.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	11,700.58	2,925.15	57.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	13,656.87	3,414.22	67.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	16,146.24	4,036.56	79.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	17,270.00	4,317.50	85.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	18,677.28	4,109.00	92.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:27 PM	20,058.34	2,005.83	99.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Independence High School

PREVISION DESIGN

OCTOBER 25

Mirror date: February 15
Analysis hours: 7:30 AM-4:18 PM (PST)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:30 AM	20,168.76	2,621.94	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	14,343.37	3,585.84	71.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	2,828.80	707.20	14.0%
8:00 AM	10,886.29	2,721.57	53.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	8,274.88	2,068.72	40.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	5,678.61	1,419.65	28.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	3,955.05	988.76	19.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	3,307.87	826.97	16.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	2,952.34	738.09	14.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	2,643.77	660.94	13.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	2,443.51	610.88	12.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	2,291.95	572.99	11.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	2,207.42	551.86	10.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	2,119.41	529.85	10.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	2,064.25	516.06	10.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	2,001.38	500.34	9.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	1,962.63	490.66	9.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	1,911.64	477.91	9.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	1,925.46	481.37	9.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	2,209.63	552.41	10.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	2,606.37	651.59	12.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	3,061.10	765.28	15.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	3,566.92	891.73	17.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	4,092.39	1,023.10	20.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	4,676.97	1,169.24	23.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	5,282.94	1,320.73	26.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	5,958.53	1,489.63	29.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	6,678.41	1,669.60	33.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	7,495.00	1,873.75	37.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	8,390.66	2,097.66	41.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	9,431.24	2,357.81	46.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	10,774.31	2,693.58	53.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	12,494.74	3,123.68	61.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	15,071.24	3,767.81	74.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	16,581.12	4,145.28	82.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	18,079.62	4,519.90	89.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	19,944.76	2,991.71	98.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:18 PM	20,117.03	603.51	99.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Independence High School

PREVISION DESIGN

NOVEMBER 1

Mirror date: February 8
Analysis hours: 7:36 AM-4:10 PM (PST)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:36 AM	20,168.76	1,411.81	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	20,168.76	3,832.06	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	12,992.27	3,248.07	64.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	10,083.81	2,520.95	49.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	7,365.89	1,841.47	36.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	5,005.93	1,251.48	24.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	3,908.33	977.08	19.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	3,436.41	859.10	17.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	3,030.77	757.69	15.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	2,764.20	691.05	13.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	2,551.85	637.96	12.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	2,425.54	606.38	12.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	2,317.20	579.30	11.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	2,252.72	563.18	11.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	2,181.12	545.28	10.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	2,137.10	534.28	10.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	2,085.90	521.48	10.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	2,106.82	526.70	10.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	2,442.50	610.62	12.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	2,865.42	716.36	14.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	3,323.14	830.79	16.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	3,844.77	961.19	19.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	4,382.18	1,095.54	21.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	4,977.97	1,244.49	24.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	5,596.75	1,399.19	27.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	6,289.51	1,572.38	31.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	7,028.46	1,757.11	34.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	7,868.34	1,967.08	38.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	8,789.37	2,197.34	43.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	9,897.81	2,474.45	49.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	11,398.72	2,849.68	56.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	13,482.79	3,370.70	66.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	15,675.62	3,918.90	77.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	17,180.99	4,295.25	85.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	19,180.82	4,027.97	94.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:10 PM	20,165.87	1,814.93	99.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Independence High School

PREVISION DESIGN

NOVEMBER 8

Mirror date: February 1
Analysis hours: 7:43 AM-4:03 PM (PST)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:43 AM	20,168.76	201.69	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	20,168.76	2,621.94	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	20,168.76	5,042.19	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	11,993.40	2,998.35	59.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	9,181.11	2,295.28	45.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	6,610.89	1,652.72	32.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	4,670.16	1,167.54	23.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	3,991.24	997.81	19.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	3,484.43	871.11	17.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	3,127.60	781.90	15.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	2,845.55	711.39	14.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	2,668.96	667.24	13.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	2,528.23	632.06	12.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	2,445.08	611.27	12.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	2,364.33	591.08	11.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	2,314.38	578.60	11.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	2,260.40	565.10	11.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	2,285.78	571.44	11.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	2,659.16	664.79	13.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	3,101.14	775.28	15.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	3,561.96	890.49	17.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	4,094.36	1,023.59	20.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	4,636.94	1,159.23	22.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	5,240.32	1,310.08	25.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	5,866.66	1,466.66	29.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	6,571.28	1,642.82	32.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	7,322.30	1,830.57	36.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	8,175.36	2,043.84	40.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	9,143.43	2,285.86	45.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	10,374.15	2,593.54	51.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	11,986.00	2,996.50	59.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	14,424.48	3,606.12	71.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	15,931.56	3,982.89	78.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	17,812.93	4,453.23	88.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	20,149.88	3,022.48	99.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:03 PM	20,168.76	605.06	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Independence High School

PREVISION DESIGN

NOVEMBER 15

Mirror date: January 25
Analysis hours: 7:51 AM-3:57 PM (PST)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:51 AM	20,168.76	1,613.50	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	20,168.76	4,033.75	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	18,452.03	4,613.01	91.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	10,956.14	2,739.03	54.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	8,358.43	2,089.61	41.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	5,765.63	1,441.41	28.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	4,637.10	1,159.28	22.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	3,998.79	999.70	19.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	3,541.68	885.42	17.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	3,177.41	794.35	15.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	2,948.67	737.17	14.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	2,758.72	689.68	13.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	2,645.34	661.33	13.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	2,546.89	636.72	12.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	2,488.46	622.11	12.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	2,429.38	607.35	12.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	2,455.66	613.91	12.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	2,849.37	712.34	14.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	3,306.71	826.68	16.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	3,770.14	942.54	18.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	4,306.38	1,076.60	21.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	4,849.86	1,212.46	24.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	5,457.77	1,364.44	27.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	6,088.45	1,522.11	30.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	6,799.31	1,699.83	33.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	7,552.61	1,888.15	37.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	8,406.83	2,101.71	41.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	9,432.19	2,358.05	46.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	10,746.79	2,686.70	53.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	12,422.26	3,105.56	61.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	14,550.51	3,637.63	72.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	16,161.80	4,040.45	80.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	18,533.94	4,262.81	91.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:57 PM	20,132.02	2,214.52	99.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Independence High School

PREVISION DESIGN

NOVEMBER 22

Mirror date: January 18
Analysis hours: 7:57 AM-3:54 PM (PST)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:57 AM	20,168.76	403.38	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	20,168.76	3,025.31	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	20,168.76	5,042.19	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	12,722.62	3,180.66	62.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	10,030.00	2,507.50	49.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	7,237.06	1,809.27	35.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	5,333.19	1,333.30	26.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	4,546.86	1,136.72	22.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	4,007.02	1,001.75	19.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	3,548.92	887.23	17.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	3,245.99	811.50	16.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	2,996.74	749.18	14.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	2,855.60	713.90	14.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	2,742.98	685.74	13.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	2,674.70	668.67	13.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	2,599.54	649.89	12.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	2,621.17	655.29	13.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	3,005.82	751.46	14.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	3,480.69	870.17	17.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	3,943.17	985.79	19.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	4,480.51	1,120.13	22.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	5,022.11	1,255.53	24.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	5,630.02	1,407.51	27.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	6,253.61	1,563.40	30.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	6,958.99	1,739.75	34.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	7,705.24	1,926.31	38.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	8,548.01	2,137.00	42.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	9,595.83	2,398.96	47.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	10,952.46	2,738.11	54.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	12,743.09	3,185.77	63.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	14,547.90	3,636.98	72.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	16,380.55	4,095.14	81.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	19,183.31	3,836.66	94.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:54 PM	20,103.80	1,608.30	99.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Independence High School

PREVISION DESIGN

NOVEMBER 29

Mirror date: January 11
Analysis hours: 8:04 AM-3:51 PM (PST)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
8:04 AM	20,168.76	1,815.19	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	20,168.76	4,235.44	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	20,168.76	5,042.19	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	11,651.18	2,912.80	57.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	8,842.95	2,210.74	43.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	6,346.96	1,586.74	31.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	5,085.03	1,271.26	25.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	4,456.20	1,114.05	22.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	3,918.32	979.58	19.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	3,559.76	889.94	17.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	3,245.19	811.30	16.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	3,053.56	763.39	15.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	2,921.49	730.37	14.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	2,843.25	710.81	14.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	2,755.21	688.80	13.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	2,772.19	693.05	13.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	3,043.89	760.97	15.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	3,584.80	896.20	17.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	4,071.43	1,017.86	20.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	4,604.28	1,151.07	22.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	5,137.46	1,284.37	25.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	5,738.45	1,434.61	28.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	6,352.69	1,588.17	31.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	7,046.55	1,761.64	34.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	7,779.69	1,944.92	38.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	8,603.08	2,150.77	42.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	9,633.09	2,408.27	47.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	11,026.64	2,756.66	54.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	12,783.34	3,195.83	63.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	14,483.61	3,620.90	71.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	16,488.32	4,122.08	81.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	19,485.43	3,507.38	96.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:51 PM	20,086.80	1,004.34	99.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Independence High School

PREVISION DESIGN

DECEMBER 6

Mirror date: January 4
Analysis hours: 8:10 AM-3:51 PM (PST)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
8:10 AM	20,168.76	806.75	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	20,168.76	3,428.69	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	20,168.76	5,042.19	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	15,070.17	3,767.54	74.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	10,208.73	2,552.18	50.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	7,553.67	1,888.42	37.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	5,660.45	1,415.11	28.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	4,865.58	1,216.40	24.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	4,258.05	1,064.51	21.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	3,841.83	960.46	19.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	3,474.99	868.75	17.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	3,232.71	808.18	16.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	3,071.25	767.81	15.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	2,983.20	745.80	14.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	2,887.26	721.82	14.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	2,895.14	723.78	14.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	3,185.99	796.50	15.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	3,696.29	924.07	18.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	4,137.17	1,034.29	20.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	4,663.45	1,165.86	23.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	5,187.62	1,296.91	25.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	5,779.50	1,444.88	28.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	6,381.77	1,595.44	31.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	7,061.73	1,765.43	34.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	7,778.78	1,944.70	38.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	8,582.90	2,145.72	42.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	9,577.03	2,394.26	47.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	10,916.53	2,729.13	54.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	12,641.61	3,160.40	62.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	14,328.48	3,582.12	70.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	16,475.28	4,118.82	81.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	19,487.26	3,312.83	96.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:51 PM	20,089.93	1,004.50	99.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Independence High School

PREVISION DESIGN

DECEMBER 13

Mirror date: December 28

Analysis hours: 8:15 AM-3:52 PM (PST)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
8:15 AM	20,168.76	2,420.25	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	20,168.76	5,042.19	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	20,168.76	5,042.19	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	11,416.91	2,854.23	56.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	8,752.47	2,188.12	43.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	6,223.32	1,555.83	30.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	5,258.30	1,314.57	26.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	4,547.65	1,136.91	22.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	4,075.46	1,018.87	20.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	3,667.19	916.80	18.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	3,380.82	845.20	16.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	3,185.99	796.50	15.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	3,085.13	771.28	15.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	2,981.51	745.38	14.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	2,971.77	742.94	14.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	3,138.18	784.55	15.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	3,695.20	923.80	18.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	4,134.70	1,033.68	20.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	4,653.66	1,163.41	23.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	5,167.77	1,291.94	25.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	5,750.40	1,437.60	28.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	6,340.91	1,585.23	31.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	7,005.26	1,751.32	34.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	7,706.26	1,926.57	38.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	8,497.19	2,124.30	42.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	9,422.47	2,355.62	46.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	10,695.90	2,673.98	52.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	12,352.11	3,088.03	61.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	14,070.24	3,517.56	69.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	16,232.42	4,058.11	80.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	19,271.25	3,468.83	95.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:52 PM	20,106.69	1,206.40	99.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Independence High School

PREVISION DESIGN

DECEMBER 20

Winter solstice (December 21 similar)
Analysis hours: 8:19 AM-3:54 PM (PST)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
8:19 AM	20,168.76	1,613.50	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	20,168.76	4,235.44	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	20,168.76	5,042.19	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	12,276.10	3,069.02	60.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	9,612.17	2,403.04	47.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	6,823.36	1,705.84	33.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	5,552.02	1,388.00	27.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	4,748.00	1,187.00	23.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	4,236.54	1,059.13	21.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	3,796.35	949.09	18.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	3,486.00	871.50	17.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	3,254.58	813.64	16.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	3,141.22	785.30	15.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	3,030.79	757.70	15.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	3,001.22	750.31	14.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	3,062.03	765.51	15.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	3,631.57	907.89	18.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	4,065.17	1,016.29	20.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	4,576.13	1,144.03	22.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	5,082.75	1,270.69	25.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	5,657.15	1,414.29	28.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	6,237.60	1,559.40	30.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	6,888.39	1,722.10	34.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	7,574.42	1,893.61	37.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	8,350.84	2,087.71	41.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	9,212.23	2,303.06	45.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	10,410.05	2,602.51	51.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	11,969.28	2,992.32	59.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	13,730.01	3,432.50	67.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	15,757.77	3,939.44	78.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	18,774.97	3,942.74	92.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:54 PM	20,115.18	1,609.21	99.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PREVISION DESIGN

INDEPENDENCE HS 1

HOSPITAL PROJECT

Shading diagrams on the date of maximum shading

7:44 AM

DATE OF MAXIMUM SHADOW
SEPTEMBER 6

7TH STREET

6TH STREET

N

Independence High School Features
1. Landscape area with walking path
2. Basketball court
3. Blacktop area
4. Four square court

Existing (Current) Shadow
Net New Project Shadow (if present)
2030 Net New Shadow Profiles (if present)
2030-2050 Net New Shadow (if present)

PREVISION DESIGN

INDEPENDENCE HS 2

HOSPITAL PROJECT

Shading diagrams on the date of maximum shading

8:00 AM

DATE OF MAXIMUM SHADOW
SEPTEMBER 6

7TH STREET

6TH STREET

1
2
3
4

N

Independence High School Features
1. Landscape area with walking path
2. Basketball court
3. Blacktop area
4. Four square court

Existing (Current) Shadow
Net New Project Shadow (if present)
2030 Net New Shadow Profiles (if present)
2030-2050 Net New Shadow (if present)

PREVISION DESIGN

INDEPENDENCE HS 3

HOSPITAL PROJECT

Shading diagrams on the date of maximum shading

9:00 AM

DATE OF MAXIMUM SHADOW
SEPTEMBER 6

7TH STREET

6TH STREET

1
2
3
4

N

Independence High School Features
1. Landscape area with walking path
2. Basketball court
3. Blacktop area
4. Four square court

Existing (Current) Shadow
Net New Project Shadow (if present)
2030 Net New Shadow Profiles (if present)
2030-2050 Net New Shadow (if present)

PREVISION DESIGN

INDEPENDENCE HS 4

HOSPITAL PROJECT

Shading diagrams on the date of maximum shading

10:00 AM

DATE OF MAXIMUM SHADOW
SEPTEMBER 6

7TH STREET

6TH STREET

1
2
3
3
4

N

Independence High School Features
1. Landscape area with walking path
2. Basketball court
3. Blacktop area
4. Four square court

Existing (Current) Shadow
Net New Project Shadow (if present)
2030 Net New Shadow Profiles (if present)
2030-2050 Net New Shadow (if present)

PREVISION DESIGN

INDEPENDENCE HS 5

HOSPITAL PROJECT

Shading diagrams on the date of maximum shading

11:00 AM

DATE OF MAXIMUM SHADOW
SEPTEMBER 6

7TH STREET

6TH STREET

1
2
3
3
4

N

Independence High School Features
1 Landscape area with walking path
2 Basketball court
3 Blacktop area
4 Four square court

Existing (Current) Shadow
Net New Project Shadow (if present)
2030 Net New Shadow Profiles (if present)
2030-2050 Net New Shadow (if present)

PREVISION DESIGN

INDEPENDENCE HS 6

HOSPITAL PROJECT

Shading diagrams on the date of maximum shading

12:00 PM

DATE OF MAXIMUM SHADOW
SEPTEMBER 6

7TH STREET

6TH STREET

Independence High School Features
1. Landscape area with walking path
2. Basketball court
3. Blacktop area
4. Four square court

Existing (Current) Shadow
Net New Project Shadow (if present)
2030 Net New Shadow Profiles (if present)
2030-2050 Net New Shadow (if present)

N

PREVISION DESIGN

INDEPENDENCE HS 7

HOSPITAL PROJECT

Shading diagrams on the date of maximum shading

1:00 PM

DATE OF MAXIMUM SHADOW
SEPTEMBER 6

7TH STREET

6TH STREET

1
2
3
3
4

N

Independence High School Features
1. Landscape area with walking path
2. Basketball court
3. Blacktop area
4. Four square court

Existing (Current) Shadow
Net New Project Shadow (if present)
2030 Net New Shadow Profiles (if present)
2030-2050 Net New Shadow (if present)

PREVISION DESIGN

INDEPENDENCE HS 8

HOSPITAL PROJECT

Shading diagrams on the date of maximum shading

2:00 PM

DATE OF MAXIMUM SHADOW
SEPTEMBER 6

Independence High School Features
1. Landscape area with walking path
2. Basketball court
3. Blacktop area
4. Four square court

Existing (Current) Shadow
Net New Project Shadow (if present)
2030 Net New Shadow Profiles (if present)
2030-2050 Net New Shadow (if present)

PREVISION DESIGN

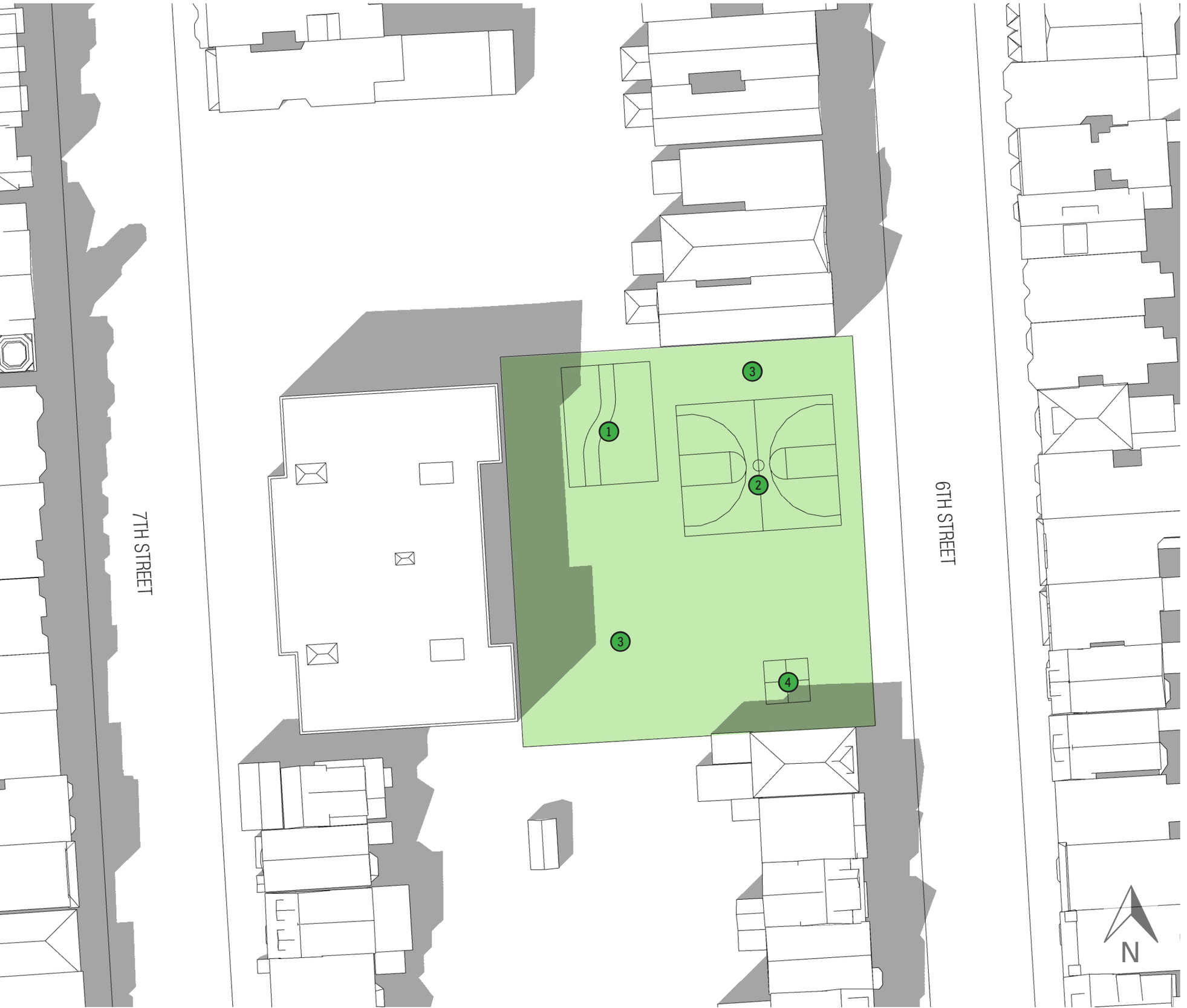
INDEPENDENCE HS 9

HOSPITAL PROJECT

Shading diagrams on the date of maximum shading

3:00 PM

DATE OF MAXIMUM SHADOW
SEPTEMBER 6



Independence High School Features
1. Landscape area with walking path
2. Basketball court
3. Blacktop area
4. Four square court

Existing (Current) Shadow
Net New Project Shadow (if present)
2030 Net New Shadow Profiles (if present)
2030-2050 Net New Shadow (if present)

PREVISION DESIGN

INDEPENDENCE HS 10

HOSPITAL PROJECT

Shading diagrams on the date of maximum shading

4:00 PM

DATE OF MAXIMUM SHADOW
SEPTEMBER 6

7TH STREET

6TH STREET

N

Independence High School Features
1. Landscape area with walking path
2. Basketball court
3. Blacktop area
4. Four square court

Existing (Current) Shadow
Net New Project Shadow (if present)
2030 Net New Shadow Profiles (if present)
2030-2050 Net New Shadow (if present)

PREVISION DESIGN

INDEPENDENCE HS 11

HOSPITAL PROJECT

Shading diagrams on the date of maximum shading

5:00 PM

DATE OF MAXIMUM SHADOW
SEPTEMBER 6

Independence High School Features

1. Landscape area with walking path
2. Basketball court
3. Blacktop area
4. Four square court

Existing (Current) Shadow

Net New Project Shadow (if present)

2030 Net New Shadow Profiles (if present)

2030-2050 Net New Shadow (if present)

PREVISION DESIGN

INDEPENDENCE HS 12

HOSPITAL PROJECT

Shading diagrams on the date of maximum shading

6:00 PM

DATE OF MAXIMUM SHADOW
SEPTEMBER 6

7TH STREET

6TH STREET

1
2
3
3
4

N

Independence High School Features
1. Landscape area with walking path
2. Basketball court
3. Blacktop area
4. Four square court

Existing (Current) Shadow
Net New Project Shadow (if present)
2030 Net New Shadow Profiles (if present)
2030-2050 Net New Shadow (if present)

PREVISION DESIGN

INDEPENDENCE HS 13

HOSPITAL PROJECT

Shading diagrams on the
date of maximum shading

7TH STREET

6TH STREET

1
2
3
3
4

N

6:31 PM

DATE OF MAXIMUM SHADOW
SEPTEMBER 6

Independence High School Features
1. Landscape area with walking path
2. Basketball court
3. Blacktop area
4. Four square court

Existing (Current) Shadow
Net New Project Shadow (if present)
2030 Net New Shadow Profiles (if present)
2030-2050 Net New Shadow (if present)

THEORETICAL ANNUAL AVAILABLE SUNLIGHT (TAAS) CALCULATION	INDEPENDENCE HIGH SCHOOL
Total plan area of Independence High School	0.46 acres (20,211 sf)
Total hours of annual sunlight from 1-hr after sunrise through 1-hr before sunset	3721.4 hrs
Theoretical Annual Available Sunlight (plan area x hours of annual sunlight)	75,213,781 sfh

EXISTING SHADOW CONDITIONS SUMMARY	INDEPENDENCE HIGH SCHOOL
Total annual existing shadow load (existing shadow sfh ÷ TAAS sfh)	27.51%
Total annual existing shadow in square-foot-hours (sfh)	20,691,122 sfh
Range in existing shadow area coverage throughout the year	Between 0% - 100%
Time of year / time of day most affected by existing shadow	Fall / Early Morning (before 8:00 AM)

UCSF HOSPITAL PROJECT NET NEW SHADOW SCENARIO SUMMARY	INDEPENDENCE HIGH SCHOOL
Annual net new hospital project-only shadow load / total existing + hospital project shadow load	0.02% / 27.53%
Annual net new sfh hospital project shadow / total existing + hospital project sfh	15,069 sfh / 20,706,191 sfh
Number of days annually when new shading from hospital project would occur	Up to 54 days a year
Dates when net new shadow from hospital project would be cast annually	3/30 - 4/25 & 8/17 - 9/12
Date(s) with most annual sfh net new hospital project shadow (shadow load / net new sfh)	September 6 & April 5
Time of year / time of day most affected by hospital project net new shadow overall	Summer / Early Morning (before 8:00 AM)
Date(s) with largest shadow area from the hospital project (area and time shadow occurs)	Aug 30/Apr 12 (6,001 sf @ 7:37 AM)
Range in hospital project net new shadow percentage coverage (area range)	Between 0% - 30% (0 - 6,001 sf)
Average hospital project net new shadow coverage on affected dates (shadow area)	29.68% (6,000 sf)
Date(s) with the longest duration of net new shadow (duration)	Aug 30/Apr 12 (15 min +/- 7 min)
Range in daily hospital project net new shadow duration (margin of error)	Between zero minutes up to 15 min (+/- 7 min)
Average daily hospital project net new shadow duration on affected dates	10.2 minutes

NEAR TERM CUMULATIVE (2030) NET NEW SHADOW SCENARIO SUMMARY	INDEPENDENCE HIGH SCHOOL
Annual net new 2030 cumulative condition shadow load / total existing + 2030 cumulative shadow load	0.08% / 27.59%
Annual net new sfh 2030 cumulative shadow / total existing + 2030 cumulative sfh	62,849 sfh / 20,753,971 sfh
Number of days annually when new shading from 2030 cumulative would occur	Up to 138 days a year
Dates when net new shadow from 2030 cumulative would be cast annually	2/16 - 4/25 & 8/17 - 10/24
Date(s) with most annual sfh net new 2030 cumulative shadow (shadow load / net new sfh)	October 11 & March 1
Time of year / time of day most affected by 2030 cumulative net new shadow overall	Winter / Early Morning (before 8:00 AM)
Date(s) with largest shadow area from the 2030 cumulative (area and time shadow occurs)	Aug 30/Apr 12 (6,001 sf @ 7:37 AM)
Range in 2030 cumulative net new shadow percentage coverage (area range)	Between 0% - 30% (0 - 6,001 sf)
Average 2030 cumulative net new shadow coverage on affected dates (shadow area)	16.22% (3,278 sf)
Date(s) with the longest duration of net new shadow (duration)	Oct 4/Mar 8 (28 min +/- 7 min)
Range in daily 2030 cumulative net new shadow duration (margin of error)	Between zero minutes up to 28 min (+/- 7 min)
Average daily 2030 cumulative net new shadow duration on affected dates	15.2 minutes

LONG TERM CUMULATIVE (2050) NET NEW SHADOW SCENARIO SUMMARY	INDEPENDENCE HIGH SCHOOL
Annual net new 2050 cumulative shadow load / total existing + 2050 cumulative shadow load	0.10% / 27.61%
Annual net new sfh 2050 cumulative shadow / total existing + 2050 cumulative sfh	77,452 sfh / 20,768,574 sfh
Number of days annually when new shading from 2050 cumulative would occur	Up to 152 days a year
Dates when net new shadow from 2050 cumulative would be cast annually	2/9 - 4/25 & 8/17 - 10/31
Date(s) with most annual sfh net new 2050 cumulative shadow (shadow load / net new sfh)	October 11 & March 1
Time of year / time of day most affected by 2050 cumulative net new shadow overall	Winter / Early Morning (before 8:00 AM)
Date(s) with largest shadow area from the 2050 cumulative (area and time shadow occurs)	Aug 30/Apr 12 (6,001 sf @ 7:37 AM)
Range in 2050 cumulative net new shadow percentage coverage (area range)	Between 0% - 30% (0 - 6,001 sf)
Average 2050 cumulative net new shadow coverage on affected dates (shadow area)	17.00% (3,436 sf)
Date(s) with the longest duration of net new shadow (duration)	Oct 4/Mar 8 (28 min +/- 7 min)
Range in daily 2050 cumulative net new shadow duration (margin of error)	Between zero minutes up to 28 min (+/- 7 min)
Average daily 2050 cumulative net new shadow duration on affected dates	15.2 minutes

THEORETICAL ANNUAL AVAILABLE SUNLIGHT (TAAS) CALCULATION	GOLDEN GATE PARK
Total plan area of Golden Gate Park	1026.83 acres (44,728,912 sf)
Total hours of annual sunlight from 1-hr after sunrise through 1-hr before sunset	3721.4 hrs
Theoretical Annual Available Sunlight (plan area x hours of annual sunlight)	166,454,173,117 sfh

EXISTING SHADOW CONDITIONS SUMMARY	GOLDEN GATE PARK (APPROXIMATED)
Total annual existing shadow load (existing shadow sfh ÷ TAAS sfh)	0.13%
Total annual existing shadow in square-foot-hours (sfh)	217,422,029 sfh
Range in existing shadow area coverage throughout the year	Between 0% - 4%
Time of year / time of day most affected by existing shadow	Fall / Early Morning (before 8:00 AM)

UCSF HOSPITAL PROJECT NET NEW SHADOW SCENARIO SUMMARY	GOLDEN GATE PARK
Annual net new hospital project-only shadow load / total existing + hospital project shadow load	0.005% / 0.136%
Annual net new sfh hospital project shadow / total existing + hospital project sfh	8,646,136 sfh / 226,068,165 sfh
Number of days annually when new shading from hospital project would occur	Up to 140 days a year
Dates when net new shadow from hospital project would be cast annually	October 12 - February 28
Date(s) with most annual sfh net new hospital project shadow (shadow load / net new sfh)	December 20 & December 21
Time of year / time of day most affected by hospital project net new shadow overall	Fall / Early Morning (before 8:00 AM)
Date(s) with largest shadow area from the hospital project (area and time shadow occurs)	Nov 22/Jan 18 (281,374 sf @ 7:57 AM)
Range in hospital project net new shadow percentage coverage (area range)	Between 0% - 1% (0 - 281,374 sf)
Average hospital project net new shadow coverage on affected dates (shadow area)	0.28% (123,263 sf)
Date(s) with the longest duration of net new shadow (duration)	Dec 13/Dec 28 (1 hr 52 min +/- 21 min)
Range in daily hospital project net new shadow duration (margin of error)	Between zero minutes up to 1 hr 52 min (+/- 21 min)
Average daily hospital project net new shadow duration on affected dates	55.7 minutes

NEAR TERM CUMULATIVE (2030) NET NEW SHADOW SCENARIO SUMMARY	GOLDEN GATE PARK
Annual net new 2030 cumulative condition shadow load / total existing + 2030 cumulative shadow load	0.005% / 0.136%
Annual net new sfh 2030 cumulative shadow / total existing + 2030 cumulative sfh	8,646,136 sfh / 226,068,165 sfh
Number of days annually when new shading from 2030 cumulative would occur	Up to 140 days a year
Dates when net new shadow from 2030 cumulative would be cast annually	October 12 - February 28
Date(s) with most annual sfh net new 2030 cumulative shadow (shadow load / net new sfh)	December 20 & December 21
Time of year / time of day most affected by 2030 cumulative net new shadow overall	Fall / Early Morning (before 8:00 AM)
Date(s) with largest shadow area from the 2030 cumulative (area and time shadow occurs)	Nov 22/Jan 18 (281,374 sf @ 7:57 AM)
Range in 2030 cumulative net new shadow percentage coverage (area range)	Between 0% - 1% (0 - 281,374 sf)
Average 2030 cumulative net new shadow coverage on affected dates (shadow area)	0.28% (123,263 sf)
Date(s) with the longest duration of net new shadow (duration)	Dec 13/Dec 28 (1 hr 52 min +/- 21 min)
Range in daily 2030 cumulative net new shadow duration (margin of error)	Between zero minutes up to 1 hr 52 min (+/- 21 min)
Average daily 2030 cumulative net new shadow duration on affected dates	55.7 minutes

LONG TERM CUMULATIVE (2050) NET NEW SHADOW SCENARIO SUMMARY	GOLDEN GATE PARK
Annual net new 2050 cumulative shadow load / total existing + 2050 cumulative shadow load	0.005% / 0.136%
Annual net new sfh 2050 cumulative shadow / total existing + 2050 cumulative sfh	8,646,136 sfh / 226,068,165 sfh
Number of days annually when new shading from 2050 cumulative would occur	Up to 140 days a year
Dates when net new shadow from 2050 cumulative would be cast annually	October 12 - February 28
Date(s) with most annual sfh net new 2050 cumulative shadow (shadow load / net new sfh)	December 20 & December 21
Time of year / time of day most affected by 2050 cumulative net new shadow overall	Fall / Early Morning (before 8:00 AM)
Date(s) with largest shadow area from the 2050 cumulative (area and time shadow occurs)	Nov 22/Jan 18 (281,374 sf @ 7:57 AM)
Range in 2050 cumulative net new shadow percentage coverage (area range)	Between 0% - 1% (0 - 281,374 sf)
Average 2050 cumulative net new shadow coverage on affected dates (shadow area)	0.28% (123,263 sf)
Date(s) with the longest duration of net new shadow (duration)	Dec 13/Dec 28 (1 hr 52 min +/- 21 min)
Range in daily 2050 cumulative net new shadow duration (margin of error)	Between zero minutes up to 1 hr 52 min (+/- 21 min)
Average daily 2050 cumulative net new shadow duration on affected dates	55.7 minutes

THEORETICAL ANNUAL AVAILABLE SUNLIGHT (TAAS)	GOLDEN GATE PARK
Area of Golden Gate Park	1026.83 acres (44,728,912 sf)
Hours of annual available sunlight	3721.4 hrs
TAAS for Golden Gate Park	166,454,173,117 sfh

EXISTING (CURRENT) LEVELS OF SHADOW (ROUGH APPROXIMATE)	GOLDEN GATE PARK
Existing annual total shading on park (sfh)	217,422,029 sfh
Existing shading as percentage of TAAS	0.131%

NEW SHADOW CAST BY THE PROPOSED CPHP PROJECT	GOLDEN GATE PARK
Additional annual shading on Golden Gate Park from Project	8,091,947 sfh
Additional annual shading from Project as percentage of TAAS	0.005%
Combined total annual shading existing + Project (sfh)	225,513,976 sfh
Combined total annual shading from existing + Project as percentage of TAAS	0.136%
Number of days when new shading from Project would occur	128-140 days annually
Dates when new shadow from Project would be cast on Golden Gate Park	Between Oct 12 - Feb 28
Annual range in duration of new Project shadow (duration variance +/- 6 min.)	Zero to approx. 94 min
Range in area of new Project shadow (sf)	Zero to 252,115 sf
Average daily duration of new Project shadow (when present)	Approx. 50 min.
MAXIMUM NEW SHADING BY THE PROPOSED PROJECT	GOLDEN GATE PARK
Dates of maximum new shading from proposed Project (max sfh)	Dec 20 & Dec 21
Total new shading on date(s) of maximum shading (sfh)	102,927.50 sfh
Percentage new shadow on date(s) of maximum shading	0.030%
Date and duration of longest duration of new shading (duration variance +/- 6 min.)	Approx. 94 min on Dec 20 & Dec 21
Date and time of largest area of new Project shadow	252,115 sf on Dec 6/Jan 4 at 8:10 AM
Percentage of Golden Gate Park covered by largest new shadow	0.564%

PROJECT: UCSF Hospital Project
OPEN SPACE: Golden Gate Park

PREVISION DESIGN

JUNE 21

Summer solstice

Analysis hours: 6:46 AM-7:36 PM (PDT)

Analysis Time	EXISTING SHADOW (PARTIAL AREA ONLY)			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
6:46 AM	633,376.06	69,671.37	1.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 AM	462,181.30	106,301.70	1.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 AM	349,162.42	87,290.61	0.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 AM	273,405.04	68,351.26	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	222,318.18	55,579.55	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	184,439.49	46,109.87	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	156,788.75	39,197.19	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	137,338.01	34,334.50	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	121,537.58	30,384.40	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	109,669.63	27,417.41	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	100,376.30	25,094.08	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	92,687.70	23,171.93	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	85,704.48	21,426.12	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	78,509.65	19,627.41	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	71,843.84	17,960.96	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	66,095.03	16,523.76	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	60,839.98	15,209.99	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	55,355.68	13,838.92	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	50,276.97	12,569.24	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	45,991.81	11,497.95	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	41,741.92	10,435.48	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	37,421.49	9,355.37	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	33,330.31	8,332.58	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	29,697.63	7,424.41	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	27,616.77	6,904.19	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	25,888.59	6,472.15	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	27,634.40	6,908.60	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	29,098.06	7,274.51	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	31,655.04	7,913.76	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	33,876.98	8,469.24	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	36,963.00	9,240.75	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	40,472.24	10,118.06	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	45,074.82	11,268.71	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	49,659.77	12,414.94	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	54,544.50	13,636.12	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	59,535.03	14,883.76	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	65,125.14	16,281.28	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	71,685.13	17,921.28	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	79,056.31	19,764.08	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	86,674.37	21,668.59	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	95,191.79	23,797.95	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	105,296.30	26,324.08	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	115,876.94	28,969.24	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	128,820.59	32,205.15	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	143,139.72	35,784.93	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	159,433.91	39,858.48	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	179,096.27	44,774.07	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	207,346.58	51,836.64	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	245,084.19	61,271.05	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 PM	300,967.61	75,241.90	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 PM	405,045.84	121,513.75	0.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:36 PM	669,350.23	120,483.04	1.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Golden Gate Park

PREVISION DESIGN

JUNE 28

Mirror date: June 14
Analysis hours: 6:48 AM-7:36 PM (PDT)

Analysis Time	EXISTING SHADOW (PARTIAL AREA ONLY)			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
6:48 AM	629,708.10	62,970.81	1.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 AM	483,148.60	106,292.69	1.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 AM	360,183.92	90,045.98	0.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 AM	281,305.25	70,326.31	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	228,490.22	57,122.56	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	188,618.84	47,154.71	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	159,645.52	39,911.38	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	139,365.96	34,841.49	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	123,371.56	30,842.89	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	111,115.65	27,778.91	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	101,381.46	25,345.37	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	93,393.08	23,348.27	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	86,603.84	21,650.96	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	79,373.73	19,843.43	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	72,831.37	18,207.84	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	67,012.02	16,753.00	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	61,510.08	15,377.52	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	55,990.52	13,997.63	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	50,770.73	12,692.68	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	46,855.90	11,713.97	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	42,270.95	10,567.74	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	38,003.43	9,500.86	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	33,771.17	8,442.79	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	30,297.19	7,574.30	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	27,987.09	6,996.77	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	26,047.30	6,511.83	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	27,440.42	6,860.11	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	28,956.98	7,239.25	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	31,655.04	7,913.76	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	33,824.08	8,456.02	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	36,892.46	9,223.12	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	40,101.92	10,025.48	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	44,898.48	11,224.62	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	49,483.42	12,370.86	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	54,279.98	13,569.99	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	58,970.73	14,742.68	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	64,384.49	16,096.12	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	71,138.47	17,784.62	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	78,456.74	19,614.19	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	85,969.00	21,492.25	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	94,380.61	23,595.15	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	104,185.33	26,046.33	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	114,818.88	28,704.72	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	127,762.53	31,940.63	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	141,975.85	35,493.96	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	158,128.96	39,532.24	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	177,914.76	44,478.69	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	205,071.74	51,267.93	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	240,252.37	60,063.09	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 PM	294,813.20	73,703.30	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 PM	396,704.77	119,011.43	0.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:36 PM	664,588.94	119,626.01	1.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Golden Gate Park

PREVISION DESIGN

JULY 5

Mirror date: June 7
Analysis hours: 6:52 AM-7:36 PM (PDT)

Analysis Time	EXISTING SHADOW (PARTIAL AREA ONLY)			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
6:52 AM	622,160.58	37,329.63	1.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 AM	517,712.02	98,365.28	1.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 AM	377,430.37	94,357.59	0.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 AM	294,337.07	73,584.27	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	237,325.06	59,331.26	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	195,143.57	48,785.89	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	163,771.97	40,942.99	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	142,822.30	35,705.58	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	125,822.74	31,455.69	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	113,125.97	28,281.49	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	103,427.05	25,856.76	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	95,050.71	23,762.68	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	87,820.61	21,955.15	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	80,467.06	20,116.77	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	74,118.68	18,529.67	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	67,946.64	16,986.66	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	62,338.90	15,584.73	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	56,678.26	14,169.56	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	51,793.53	12,948.38	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	47,526.00	11,881.50	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	43,082.14	10,770.53	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	38,567.73	9,641.93	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	34,370.74	8,592.69	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	31,020.21	7,755.05	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	28,586.66	7,146.66	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	26,541.07	6,635.27	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	27,916.55	6,979.14	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	29,538.92	7,384.73	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	31,954.83	7,988.71	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	33,947.52	8,486.88	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	37,174.61	9,293.65	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	40,207.73	10,051.93	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	45,021.92	11,255.48	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	49,395.25	12,348.81	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	54,068.37	13,517.09	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	58,794.39	14,698.60	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	64,402.13	16,100.53	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	70,926.85	17,731.71	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	78,015.88	19,503.97	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	86,233.51	21,558.38	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	94,362.97	23,590.74	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	103,621.03	25,905.26	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	114,466.19	28,616.55	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	127,374.57	31,843.64	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	141,922.95	35,480.74	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	158,058.43	39,514.61	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	177,438.63	44,359.66	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	204,683.78	51,170.95	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	241,310.43	60,327.61	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 PM	295,254.06	73,813.52	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 PM	397,498.32	119,249.49	0.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:36 PM	655,419.06	117,975.43	1.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Golden Gate Park

PREVISION DESIGN

JULY 12

Mirror date: May 31
Analysis hours: 6:56 AM-7:33 PM (PDT)

Analysis Time	EXISTING SHADOW (PARTIAL AREA ONLY)			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
6:56 AM	610,892.20	18,326.77	1.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 AM	561,903.83	84,285.57	1.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 AM	402,506.49	100,626.62	0.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 AM	311,001.58	77,750.40	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	247,694.08	61,923.52	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	202,973.24	50,743.31	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	170,384.87	42,596.22	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	147,160.37	36,790.09	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	129,173.28	32,293.32	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	116,000.38	29,000.10	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	105,807.70	26,451.92	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	97,096.30	24,274.08	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	89,337.17	22,334.29	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	82,107.06	20,526.77	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	75,582.34	18,895.58	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	69,198.68	17,299.67	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	63,291.16	15,822.79	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	57,806.86	14,451.71	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	53,239.55	13,309.89	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	48,495.90	12,123.97	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	44,052.03	11,013.01	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	39,572.89	9,893.22	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	35,234.83	8,808.71	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	31,972.46	7,993.12	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	29,538.92	7,384.73	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	27,369.88	6,842.47	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	28,639.56	7,159.89	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	30,173.75	7,543.44	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	32,695.47	8,173.87	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	34,758.70	8,689.67	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	37,791.82	9,447.95	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	40,701.49	10,175.37	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	45,339.34	11,334.83	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	49,730.30	12,432.58	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	54,632.67	13,658.17	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	59,305.78	14,826.45	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	64,966.43	16,241.61	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	71,138.47	17,784.62	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	78,156.96	19,539.24	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	86,127.71	21,531.93	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	95,174.15	23,793.54	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	104,396.95	26,099.24	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	115,012.85	28,753.21	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	127,709.62	31,927.41	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	142,240.37	35,560.09	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	158,834.34	39,708.58	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	178,620.14	44,655.03	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	207,134.96	51,783.74	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	244,608.06	61,152.02	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 PM	301,320.30	75,330.07	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 PM	409,048.85	114,533.68	0.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:33 PM	640,288.74	96,043.31	1.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Golden Gate Park

PREVISION DESIGN

JULY 19

Mirror date: May 24
Analysis hours: 7:01 AM-7:30 PM (PDT)

Analysis Time	EXISTING SHADOW (PARTIAL AREA ONLY)			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:01 AM	600,646.61	78,084.06	1.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:16 AM	423,174.00	101,561.76	0.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 AM	334,349.53	80,243.89	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	261,043.32	65,260.83	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	213,430.44	53,357.61	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	177,438.63	44,359.66	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	152,133.27	38,033.32	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	133,581.88	33,395.47	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	119,368.55	29,842.14	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	108,858.45	27,214.61	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	99,759.10	24,939.77	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	91,382.76	22,845.69	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	84,187.92	21,046.98	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	77,363.41	19,340.85	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	70,768.14	17,692.04	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	64,807.72	16,201.93	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	59,006.00	14,751.50	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	54,562.13	13,640.53	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	49,642.13	12,410.53	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	45,127.73	11,281.93	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	40,789.66	10,197.42	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	36,486.87	9,121.72	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	33,012.89	8,253.22	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	31,143.65	7,785.91	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	28,904.08	7,226.02	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	30,173.75	7,543.44	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	31,461.07	7,865.27	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	34,035.69	8,508.92	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	36,116.55	9,029.14	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	39,061.49	9,765.37	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	41,600.85	10,400.21	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	46,238.69	11,559.67	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	50,594.39	12,648.60	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	55,532.02	13,883.01	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	60,416.75	15,104.19	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	65,759.97	16,439.99	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	71,967.28	17,991.82	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	79,021.04	19,755.26	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	86,780.18	21,695.04	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	95,914.80	23,978.70	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	105,754.79	26,438.70	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	116,106.19	29,026.55	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	128,996.93	32,249.23	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	143,668.76	35,917.19	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	161,497.13	40,374.28	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	181,900.14	45,475.03	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	211,719.91	52,929.98	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	252,384.83	63,096.21	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 PM	313,452.76	78,363.19	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 PM	431,250.56	107,812.64	1.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 PM	621,331.76	80,773.13	1.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Golden Gate Park

PREVISION DESIGN

JULY 26

Mirror date: May 17
Analysis hours: 7:07 AM-7:25 PM (PDT)

Analysis Time	EXISTING SHADOW (PARTIAL AREA ONLY)			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:07 AM	586,979.95	35,218.80	1.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 AM	481,526.23	91,489.98	1.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 AM	361,083.28	90,270.82	0.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	281,428.69	70,357.17	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	227,061.84	56,765.46	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	186,344.00	46,586.00	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	159,151.76	39,787.94	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	138,836.93	34,709.23	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	123,495.00	30,873.75	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	112,614.58	28,153.64	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	102,845.12	25,711.28	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	93,992.65	23,498.16	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	86,304.05	21,576.01	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	79,038.68	19,759.67	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	72,355.24	18,088.81	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	66,394.81	16,598.70	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	61,086.86	15,271.71	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	55,990.52	13,997.63	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	51,246.86	12,811.72	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	46,467.94	11,616.99	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	42,253.32	10,563.33	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	38,038.70	9,509.67	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	34,829.24	8,707.31	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	32,360.42	8,090.10	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	30,579.35	7,644.84	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	31,937.19	7,984.30	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	33,347.95	8,336.99	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	35,746.22	8,936.56	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	38,038.70	9,509.67	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	40,913.10	10,228.28	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	43,470.09	10,867.52	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	47,631.81	11,907.95	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	52,128.58	13,032.15	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	56,995.68	14,248.92	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	61,792.23	15,448.06	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	67,170.73	16,792.68	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	73,501.48	18,375.37	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	80,749.21	20,187.30	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	88,085.13	22,021.28	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	97,695.87	24,423.97	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	107,624.04	26,906.01	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	118,275.22	29,568.80	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	131,606.83	32,901.71	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	146,772.41	36,693.10	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	164,918.21	41,229.55	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	186,661.42	46,665.36	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	218,826.57	54,706.64	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	263,088.92	65,772.23	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 PM	334,896.19	83,724.05	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 PM	467,894.84	98,257.92	1.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:25 PM	604,226.39	54,380.38	1.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Golden Gate Park

PREVISION DESIGN

AUGUST 2

Mirror date: May 10
Analysis hours: 7:12 AM-7:18 PM (PDT)

Analysis Time	EXISTING SHADOW (PARTIAL AREA ONLY)			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:12 AM	647,906.80	12,958.14	1.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 AM	541,447.93	81,217.19	1.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 AM	411,394.22	102,848.56	0.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	332,321.57	83,080.39	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	285,978.37	71,494.59	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	251,750.00	62,937.50	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	227,714.31	56,928.58	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	209,497.97	52,374.49	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	195,355.18	48,838.80	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	187,790.03	46,947.51	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	177,209.39	44,302.35	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	172,430.46	43,107.62	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	160,051.11	40,012.78	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	158,799.07	39,699.77	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	144,091.98	36,023.00	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	147,565.96	36,891.49	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	128,291.56	32,072.89	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	137,108.76	34,277.19	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	114,184.04	28,546.01	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	124,782.31	31,195.58	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	100,993.51	25,248.38	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	111,380.17	27,845.04	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	87,309.21	21,827.30	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	99,829.64	24,957.41	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	79,444.27	19,861.07	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	94,010.28	23,502.57	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	74,806.42	18,701.61	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	89,143.19	22,285.80	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	69,904.06	17,476.01	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	82,212.87	20,553.22	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	69,075.24	17,268.81	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	75,176.74	18,794.19	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	68,264.06	17,066.01	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	74,153.95	18,538.49	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	70,556.53	17,639.13	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	75,670.51	18,917.63	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	77,663.19	19,415.80	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	83,341.47	20,835.37	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	90,659.75	22,664.94	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	100,129.42	25,032.36	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	110,357.37	27,589.34	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	122,348.77	30,587.19	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	135,168.97	33,792.24	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	150,651.98	37,662.99	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	169,820.57	42,455.14	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	196,307.44	49,076.86	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	230,676.89	57,669.22	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	282,610.20	70,652.55	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 PM	367,237.68	91,809.42	0.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 PM	529,544.71	79,431.71	1.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:18 PM	582,500.81	17,475.02	1.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Golden Gate Park

PREVISION DESIGN

AUGUST 9

Mirror date: May 3
Analysis hours: 7:19 AM-7:10 PM (PDT)

Analysis Time	EXISTING SHADOW (PARTIAL AREA ONLY)			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:19 AM	556,842.76	50,115.85	1.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 AM	432,855.29	90,899.61	1.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	333,185.66	83,296.41	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	261,748.70	65,437.18	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	208,845.50	52,211.37	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	175,481.21	43,870.30	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	152,662.30	38,165.57	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	134,481.23	33,620.31	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	120,691.13	30,172.78	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	109,510.92	27,377.73	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	99,582.75	24,895.69	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	91,488.56	22,872.14	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	83,852.87	20,963.22	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	76,834.38	19,208.59	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	71,085.56	17,771.39	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	65,142.77	16,285.69	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	59,623.20	14,905.80	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	54,756.11	13,689.03	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	50,135.90	12,533.97	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	45,533.32	11,383.33	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	41,777.19	10,444.30	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	38,303.21	9,575.80	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	36,098.91	9,024.73	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	35,393.54	8,848.38	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	36,557.41	9,139.35	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	38,373.75	9,593.44	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	40,772.03	10,193.01	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	43,152.67	10,788.17	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	46,238.69	11,559.67	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	49,007.29	12,251.82	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	52,410.73	13,102.68	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	57,101.48	14,275.37	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	62,003.85	15,500.96	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	66,959.11	16,739.78	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	72,990.08	18,247.52	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	78,985.77	19,746.44	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	86,057.17	21,514.29	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	93,587.06	23,396.76	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	103,726.84	25,931.71	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	113,990.06	28,497.51	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	129,208.55	32,302.14	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	144,532.84	36,133.21	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	164,459.71	41,114.93	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	188,089.81	47,022.45	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	221,559.90	55,389.98	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	262,277.73	65,569.43	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	310,472.55	105,560.67	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:10 PM	522,102.99	109,641.63	1.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Golden Gate Park

PREVISION DESIGN

AUGUST 16

Mirror date: April 26
Analysis hours: 7:25 AM-7:02 PM (PDT)

Analysis Time	EXISTING SHADOW (PARTIAL AREA ONLY)			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:25 AM	548,554.59	21,942.18	1.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 AM	489,373.54	83,193.50	1.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	365,103.92	91,275.98	0.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	285,502.24	71,375.56	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	228,578.39	57,144.60	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	188,742.28	47,185.57	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	161,320.79	40,330.20	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	140,706.18	35,176.54	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	125,099.73	31,274.93	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	113,143.61	28,285.90	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	103,303.61	25,825.90	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	94,627.49	23,656.87	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	87,203.41	21,800.85	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	79,955.67	19,988.92	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	73,818.90	18,454.72	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	67,364.70	16,841.18	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	61,704.06	15,426.02	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	56,766.43	14,191.61	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	51,599.55	12,899.89	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	47,420.20	11,855.05	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	43,910.95	10,977.74	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	40,913.10	10,228.28	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	38,550.09	9,637.52	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	38,021.06	9,505.27	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	39,149.66	9,787.42	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	41,442.14	10,360.53	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	43,946.22	10,986.56	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	46,362.13	11,590.53	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	49,342.35	12,335.59	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	52,393.10	13,098.27	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	55,972.88	13,993.22	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	60,169.87	15,042.47	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	65,283.85	16,320.96	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	70,926.85	17,731.71	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	77,081.26	19,270.31	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	83,376.74	20,844.19	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	90,395.23	22,598.81	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	98,471.79	24,617.95	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	107,888.56	26,972.14	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	118,716.08	29,679.02	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	132,012.42	33,003.10	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	146,895.85	36,723.96	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	165,941.00	41,485.25	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	188,389.59	47,097.40	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	222,494.53	55,623.63	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	271,359.45	67,839.86	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	350,008.87	94,502.40	0.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:02 PM	535,452.23	74,963.31	1.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Golden Gate Park

PREVISION DESIGN

AUGUST 23

Mirror date: April 19
Analysis hours: 7:31 AM-6:52 PM (PDT)

Analysis Time	EXISTING SHADOW (PARTIAL AREA ONLY)			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:31 AM	545,539.11	60,009.30	1.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	408,484.55	93,951.45	0.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	311,336.63	77,834.16	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	248,840.32	62,210.08	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	201,015.83	50,253.96	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	169,820.57	42,455.14	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	147,953.91	36,988.48	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	130,725.11	32,681.28	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	118,275.22	29,568.80	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	107,606.41	26,901.60	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	98,383.62	24,595.90	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	90,095.45	22,523.86	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	82,653.73	20,663.43	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	76,076.10	19,019.02	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	69,710.08	17,427.52	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	63,890.73	15,972.68	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	58,582.77	14,645.69	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	53,415.89	13,353.97	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	49,924.28	12,481.07	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	46,379.77	11,594.94	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	43,099.77	10,774.94	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	41,248.16	10,312.04	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	41,265.79	10,316.45	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	42,976.33	10,744.08	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	44,686.87	11,171.72	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	47,314.39	11,828.60	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	49,783.21	12,445.80	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	53,080.84	13,270.21	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	56,131.59	14,032.90	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	59,552.67	14,888.17	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	63,784.92	15,946.23	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	69,445.56	17,361.39	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	74,612.44	18,653.11	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	81,578.03	20,394.51	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	88,596.52	22,149.13	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	96,214.58	24,053.65	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	104,502.75	26,125.69	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	113,972.43	28,493.11	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	125,099.73	31,274.93	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	138,660.59	34,665.15	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	155,642.51	38,910.63	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	177,015.41	44,253.85	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	205,195.18	51,298.79	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	244,608.06	61,152.02	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	308,920.72	77,230.18	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	417,495.73	79,324.19	0.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:52 PM	516,036.76	30,962.21	1.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Golden Gate Park

PREVISION DESIGN

AUGUST 30

Mirror date: April 12
Analysis hours: 7:37 AM-6:42 PM (PDT)

Analysis Time	EXISTING SHADOW (PARTIAL AREA ONLY)			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:37 AM	721,054.29	43,263.26	1.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	759,920.51	144,384.90	1.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	654,960.56	163,740.14	1.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	576,170.06	144,042.52	1.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	521,080.19	130,270.05	1.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	490,801.93	122,700.48	1.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	465,990.33	116,497.58	1.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	461,687.53	115,421.88	1.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	447,050.98	111,762.75	1.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	452,958.50	113,239.63	1.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	433,454.86	108,363.71	1.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	440,279.37	110,069.84	1.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	413,898.31	103,474.58	0.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	420,370.13	105,092.53	0.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	387,217.46	96,804.36	0.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	392,472.51	98,118.13	0.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	352,618.77	88,154.69	0.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	357,291.88	89,322.97	0.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	313,999.43	78,499.86	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	318,743.08	79,685.77	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	272,964.18	68,241.04	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	280,952.56	70,238.14	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	244,837.31	61,209.33	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	263,582.68	65,895.67	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	225,880.33	56,470.08	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	244,590.43	61,147.61	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	201,104.00	50,276.00	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	214,999.91	53,749.98	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	171,002.08	42,750.52	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	175,057.99	43,764.50	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	145,837.79	36,459.45	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	146,243.38	36,560.84	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	130,548.76	32,637.19	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	134,269.62	33,567.40	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	126,916.07	31,729.02	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	129,508.33	32,377.08	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	127,127.69	31,781.92	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	130,654.57	32,663.64	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	137,267.47	34,316.87	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	148,976.71	37,244.18	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	166,646.38	41,661.59	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	192,639.49	48,159.87	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	229,283.77	57,320.94	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	276,561.60	69,140.40	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	362,599.84	83,397.96	0.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:42 PM	494,857.84	54,434.36	1.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Golden Gate Park

PREVISION DESIGN

SEPTEMBER 6

Mirror date: April 5
Analysis hours: 7:44 AM-6:31 PM (PDT)

Analysis Time	EXISTING SHADOW (PARTIAL AREA ONLY)			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:44 AM	555,044.05	72,155.73	1.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	393,812.73	98,453.18	0.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	303,224.81	75,806.20	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	239,017.96	59,754.49	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	195,460.99	48,865.25	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	164,953.48	41,238.37	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	144,532.84	36,133.21	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	128,767.69	32,191.92	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	116,741.03	29,185.26	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	106,266.19	26,566.55	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	97,660.60	24,415.15	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	89,266.63	22,316.66	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	81,666.20	20,416.55	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	74,965.13	18,741.28	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	69,075.24	17,268.81	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	63,238.25	15,809.56	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	59,323.42	14,830.85	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	55,373.31	13,843.33	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	52,040.41	13,010.10	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	48,830.95	12,207.74	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	48,442.99	12,110.75	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	49,271.81	12,317.95	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	51,088.15	12,772.04	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	53,080.84	13,270.21	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	55,902.34	13,975.59	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	58,371.16	14,592.79	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	62,003.85	15,500.96	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	65,759.97	16,439.99	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	69,674.81	17,418.70	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	73,624.92	18,406.23	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	79,179.75	19,794.94	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	85,334.16	21,333.54	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	92,687.70	23,171.93	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	100,940.60	25,235.15	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	110,286.84	27,571.71	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	119,527.26	29,881.82	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	130,725.11	32,681.28	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	146,313.92	36,578.48	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	167,863.15	41,965.79	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	194,755.61	48,688.90	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	224,222.70	56,055.67	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	266,703.97	66,675.99	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	340,821.35	92,021.77	0.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:31 PM	490,184.72	68,625.86	1.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Golden Gate Park

PREVISION DESIGN

SEPTEMBER 13

Mirror date: March 29
Analysis hours: 7:50 AM-6:21 PM (PDT)

Analysis Time	EXISTING SHADOW (PARTIAL AREA ONLY)			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:50 AM	576,117.16	46,089.37	1.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	462,234.20	97,069.18	1.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	342,214.47	85,553.62	0.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	263,688.48	65,922.12	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	214,594.31	53,648.58	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	176,556.91	44,139.23	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	152,873.91	38,218.48	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	135,080.80	33,770.20	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	122,225.32	30,556.33	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	110,974.58	27,743.64	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	101,610.71	25,402.68	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	92,934.59	23,233.65	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	85,210.72	21,302.68	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	78,139.32	19,534.83	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	71,491.15	17,872.79	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	66,641.69	16,660.42	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	62,550.51	15,637.63	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	58,547.50	14,636.88	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	55,020.62	13,755.16	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	52,498.91	13,124.73	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	52,534.17	13,133.54	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	54,050.73	13,512.68	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	55,972.88	13,993.22	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	58,089.01	14,522.25	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	60,698.90	15,174.73	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	63,344.06	15,836.02	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	67,770.30	16,942.57	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	71,297.18	17,824.29	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	75,476.53	18,869.13	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	79,567.71	19,891.93	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	85,157.81	21,289.45	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	92,229.21	23,057.30	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	99,653.29	24,913.32	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	108,241.24	27,060.31	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	118,575.00	29,643.75	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	129,067.47	32,266.87	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	141,534.99	35,383.75	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	156,312.62	39,078.16	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	175,851.54	43,962.88	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	202,673.46	50,668.36	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	248,857.95	62,214.49	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	307,686.31	76,921.58	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	404,587.34	72,825.72	0.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:21 PM	476,253.55	23,812.68	1.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Golden Gate Park

PREVISION DESIGN

SEPTEMBER 20

Fall equinox (Spring equinox on March 22 similar)
Analysis hours: 7:57 AM-6:09 PM (PDT)

Analysis Time	EXISTING SHADOW (PARTIAL AREA ONLY)			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:57 AM	603,609.19	12,072.18	1.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	553,703.83	83,055.58	1.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	397,868.64	99,467.16	0.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	299,327.61	74,831.90	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	233,727.64	58,431.91	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	193,609.38	48,402.34	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	163,348.75	40,837.19	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	142,504.88	35,626.22	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	128,644.25	32,161.06	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	116,300.17	29,075.04	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	106,125.12	26,531.28	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	96,725.98	24,181.50	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	89,160.82	22,290.21	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	81,401.69	20,350.42	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	75,353.09	18,838.27	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	70,503.63	17,625.91	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	65,918.68	16,479.67	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	62,092.02	15,523.00	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	58,988.36	14,747.09	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	56,642.99	14,160.75	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	57,507.07	14,376.77	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	58,565.14	14,641.28	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	61,192.66	15,298.17	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	63,150.08	15,787.52	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	66,341.91	16,585.48	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	69,110.51	17,277.63	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	73,748.36	18,437.09	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	77,451.58	19,362.90	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	82,212.87	20,553.22	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	86,409.86	21,602.46	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	92,282.11	23,070.53	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	99,388.78	24,847.19	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	108,082.54	27,020.63	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	117,270.06	29,317.51	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	128,291.56	32,072.89	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	140,582.74	35,145.68	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	155,272.19	38,818.05	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	172,747.88	43,186.97	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	196,783.57	49,195.89	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	230,747.42	57,686.86	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	282,874.71	70,718.68	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	373,356.82	78,404.93	0.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:09 PM	464,738.28	37,179.06	1.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Golden Gate Park

PREVISION DESIGN

SEPTEMBER 27

Mirror date: March 15
Analysis hours: 8:03 AM-5:58 PM (PDT)

Analysis Time	EXISTING SHADOW (PARTIAL AREA ONLY)			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
8:03 AM	898,156.58	89,815.66	2.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	604,773.06	133,050.07	1.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	485,088.38	121,272.10	1.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	421,763.25	105,440.81	0.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	366,355.96	91,588.99	0.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	351,437.26	87,859.32	0.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	320,947.38	80,236.85	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	323,998.13	80,999.53	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	297,758.15	74,439.54	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	314,017.06	78,504.27	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	283,721.16	70,930.29	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	301,461.37	75,365.34	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	267,673.86	66,918.46	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	285,343.53	71,335.88	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	248,875.59	62,218.90	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	265,910.42	66,477.60	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	228,860.54	57,215.14	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	244,026.13	61,006.53	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	208,933.67	52,233.42	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	317,949.53	79,487.38	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	264,041.17	66,010.29	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	288,782.24	72,195.56	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	179,977.99	44,994.50	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	192,463.14	48,115.79	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	165,217.99	41,304.50	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	173,629.60	43,407.40	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	157,141.44	39,285.36	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	163,577.99	40,894.50	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	148,624.02	37,156.01	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	153,702.73	38,425.68	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	141,781.87	35,445.47	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	147,865.74	36,966.44	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	144,656.28	36,164.07	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	154,231.76	38,557.94	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	160,104.02	40,026.00	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	173,929.39	43,482.35	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	193,856.26	48,464.06	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	225,598.18	56,399.54	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	270,301.38	67,575.35	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	347,980.92	80,035.61	0.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:58 PM	468,053.55	51,485.89	1.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Golden Gate Park

PREVISION DESIGN

OCTOBER 4

Mirror date: March 8

Analysis hours: 8:09 AM-5:47 PM (PDT)

Analysis Time	EXISTING SHADOW (PARTIAL AREA ONLY)			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
8:09 AM	724,845.69	28,993.83	1.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	621,754.99	105,698.35	1.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	426,066.04	106,516.51	1.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	316,186.09	79,046.52	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	243,655.81	60,913.95	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	198,035.61	49,508.90	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	165,958.64	41,489.66	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	144,515.21	36,128.80	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	129,667.04	32,416.76	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	117,622.75	29,405.69	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	107,288.99	26,822.25	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	97,766.41	24,441.60	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	90,430.50	22,607.63	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	84,646.42	21,161.60	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	78,915.24	19,728.81	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	74,559.54	18,639.89	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	70,662.34	17,665.58	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	67,435.24	16,858.81	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	67,047.29	16,761.82	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	68,122.98	17,030.75	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	69,216.32	17,304.08	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	72,319.97	18,079.99	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	75,000.40	18,750.10	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	78,668.36	19,667.09	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	82,089.43	20,522.36	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	86,833.08	21,708.27	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	91,312.22	22,828.06	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	97,096.30	24,274.08	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	102,686.41	25,671.60	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	109,246.41	27,311.60	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	116,917.37	29,229.34	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	127,427.47	31,856.87	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	367,449.30	91,862.32	0.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	152,397.78	38,099.45	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	328,829.96	82,207.49	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	191,951.74	47,987.94	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	314,528.46	78,632.12	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	334,896.19	83,724.05	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	376,213.59	101,577.67	0.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:47 PM	513,850.09	71,939.01	1.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Golden Gate Park

PREVISION DESIGN

OCTOBER 11

Mirror date: March 1
Analysis hours: 8:16 AM-5:37 PM (PDT)

Analysis Time	EXISTING SHADOW (PARTIAL AREA ONLY)			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
8:16 AM	807,833.18	96,939.98	1.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	549,489.21	131,877.41	1.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	388,839.82	97,209.96	0.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	291,374.49	72,843.62	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	227,608.50	56,902.13	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	183,346.16	45,836.54	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	157,123.80	39,280.95	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	138,819.30	34,704.82	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	125,611.13	31,402.78	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	113,848.98	28,462.25	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	104,608.56	26,152.14	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	96,690.71	24,172.68	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	90,448.13	22,612.03	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	84,875.66	21,218.92	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	80,008.57	20,002.14	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	75,793.95	18,948.49	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	73,042.98	18,260.75	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	72,760.83	18,190.21	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	74,383.20	18,595.80	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	75,652.87	18,913.22	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	78,756.53	19,689.13	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	81,595.67	20,398.92	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	85,193.08	21,298.27	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	89,107.92	22,276.98	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	94,556.95	23,639.24	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	99,247.70	24,811.93	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	105,172.86	26,293.21	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	111,485.97	27,871.49	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	119,350.92	29,837.73	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	127,744.89	31,936.22	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	138,854.56	34,713.64	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	151,692.41	37,923.10	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	168,145.30	42,036.33	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	189,659.27	47,414.82	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	218,720.76	54,680.19	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	258,116.01	64,529.00	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	318,531.47	79,632.87	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	420,405.40	79,877.03	0.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:37 PM	493,976.12	29,638.57	1.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Golden Gate Park

PREVISION DESIGN

OCTOBER 18

Mirror date: February 22
Analysis hours: 8:22 AM-5:27 PM (PDT)

Analysis Time	EXISTING SHADOW (PARTIAL AREA ONLY)			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
8:22 AM	892,848.62	53,570.92	2.0%	10,457.20	627.43	0.0%	10,457.20	627.43	0.0%	10,457.20	627.43	0.0%
8:30 AM	730,453.43	131,481.62	1.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	506,443.64	126,610.91	1.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	356,551.24	89,137.81	0.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	276,879.02	69,219.75	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	215,493.67	53,873.42	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	175,886.80	43,971.70	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	150,493.27	37,623.32	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	134,992.63	33,748.16	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	121,149.63	30,287.41	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	112,279.52	28,069.88	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	103,762.11	25,940.53	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	97,113.94	24,278.48	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	91,047.70	22,761.93	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	86,727.28	21,681.82	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	81,772.01	20,443.00	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	79,726.42	19,931.60	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	79,708.78	19,927.20	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	81,613.30	20,403.33	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	82,918.25	20,729.56	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	85,951.36	21,487.84	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	89,090.29	22,272.57	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	93,269.64	23,317.41	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	97,360.82	24,340.20	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	102,827.48	25,706.87	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	107,765.12	26,941.28	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	114,783.61	28,695.90	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	121,555.22	30,388.80	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	130,090.27	32,522.57	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	140,000.80	35,000.20	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	151,762.95	37,940.74	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	167,157.78	41,789.44	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	188,618.84	47,154.71	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	214,982.27	53,745.57	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	256,828.70	64,207.18	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	306,998.57	76,749.64	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	390,215.31	85,847.37	0.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:27 PM	517,659.12	51,765.91	1.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Golden Gate Park

PREVISION DESIGN

OCTOBER 25

Mirror date: February 15
Analysis hours: 7:30 AM-4:18 PM (PST)

Analysis Time	EXISTING SHADOW (PARTIAL AREA ONLY)			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:30 AM	1,136,503.13	147,745.41	2.5%	67,028.36	8,713.69	0.1%	67,028.36	8,713.69	0.1%	67,028.36	8,713.69	0.1%
7:45 AM	818,290.38	204,572.59	1.8%	123.44	30.86	0.0%	123.44	30.86	0.0%	123.44	30.86	0.0%
8:00 AM	600,822.95	150,205.74	1.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	508,048.37	127,012.09	1.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	418,289.27	104,572.32	0.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	387,605.42	96,901.35	0.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	333,097.48	83,274.37	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	333,626.52	83,406.63	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	295,024.81	73,756.20	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	303,171.91	75,792.98	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	269,878.16	67,469.54	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	283,350.84	70,837.71	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	249,457.52	62,364.38	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	262,313.00	65,578.25	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	227,679.04	56,919.76	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	242,403.76	60,600.94	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	210,168.08	52,542.02	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	225,580.55	56,395.14	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	196,466.15	49,116.54	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	209,938.83	52,484.71	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	182,834.76	45,708.69	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	194,032.60	48,508.15	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	175,199.06	43,799.77	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	184,915.62	46,228.90	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	165,905.73	41,476.43	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	174,687.67	43,671.92	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	159,998.21	39,999.55	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	169,221.00	42,305.25	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	163,048.96	40,762.24	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	175,816.27	43,954.07	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	188,513.04	47,128.26	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	214,347.43	53,586.86	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	251,520.75	62,880.19	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	302,678.14	75,669.54	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	380,516.39	95,129.10	0.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	519,422.56	77,913.38	1.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:18 PM	557,318.89	16,719.57	1.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Golden Gate Park

PREVISION DESIGN

NOVEMBER 1

Mirror date: February 8
Analysis hours: 7:36 AM-4:10 PM (PST)

Analysis Time	EXISTING SHADOW (PARTIAL AREA ONLY)			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:36 AM	1,092,910.90	76,503.76	2.4%	158,162.94	11,071.41	0.4%	158,162.94	11,071.41	0.4%	158,162.94	11,071.41	0.4%
7:45 AM	865,162.62	164,380.90	1.9%	69,232.66	13,154.20	0.2%	69,232.66	13,154.20	0.2%	69,232.66	13,154.20	0.2%
8:00 AM	601,404.89	150,351.22	1.3%	581.94	145.48	0.0%	581.94	145.48	0.0%	581.94	145.48	0.0%
8:15 AM	441,531.41	110,382.85	1.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	330,187.81	82,546.95	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	262,877.30	65,719.33	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	209,392.17	52,348.04	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	169,926.38	42,481.59	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	148,130.26	37,032.56	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	133,158.65	33,289.66	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	122,313.50	30,578.37	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	113,725.54	28,431.39	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	106,019.31	26,504.83	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	100,799.53	25,199.88	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	95,315.23	23,828.81	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	94,592.22	23,648.05	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	94,592.22	23,648.05	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	96,955.23	24,238.81	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	98,401.25	24,600.31	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	101,804.69	25,451.17	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	105,014.15	26,253.54	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	110,322.10	27,580.53	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	651,380.78	162,845.19	1.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	121,202.53	30,300.63	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	567,070.71	141,767.68	1.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	135,927.25	33,981.81	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	480,362.36	120,090.59	1.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	466,713.34	116,678.33	1.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	422,927.12	105,731.78	0.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	424,337.87	106,084.47	0.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	409,154.65	102,288.66	0.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	425,872.07	106,468.02	1.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	430,404.11	107,601.03	1.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	479,939.14	119,984.78	1.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	571,620.39	120,040.28	1.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:10 PM	691,904.63	62,271.42	1.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Golden Gate Park

PREVISION DESIGN

NOVEMBER 8

Mirror date: February 1
Analysis hours: 7:43 AM-4:03 PM (PST)

Analysis Time	EXISTING SHADOW (PARTIAL AREA ONLY)			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:43 AM	1,187,783.97	11,877.84	2.7%	232,597.74	2,325.98	0.5%	232,597.74	2,325.98	0.5%	232,597.74	2,325.98	0.5%
7:45 AM	1,150,857.54	149,611.48	2.6%	220,659.25	28,685.70	0.5%	220,659.25	28,685.70	0.5%	220,659.25	28,685.70	0.5%
8:00 AM	778,912.76	194,728.19	1.7%	55,178.04	13,794.51	0.1%	55,178.04	13,794.51	0.1%	55,178.04	13,794.51	0.1%
8:15 AM	564,901.68	141,225.42	1.3%	2,415.91	603.98	0.0%	2,415.91	603.98	0.0%	2,415.91	603.98	0.0%
8:30 AM	423,667.77	105,916.94	0.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	327,683.72	81,920.93	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	262,806.76	65,701.69	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	212,725.07	53,181.27	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	174,934.55	43,733.64	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	151,586.60	37,896.65	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	133,599.51	33,399.88	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	124,941.02	31,235.26	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	115,506.62	28,876.65	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	109,704.90	27,426.23	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	104,026.62	26,006.66	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	103,003.83	25,750.96	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	103,074.37	25,768.59	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	105,155.22	26,288.81	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	106,936.30	26,734.07	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	110,392.64	27,598.16	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	114,060.60	28,515.15	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	119,192.21	29,798.05	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	124,041.67	31,010.42	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	130,883.82	32,720.95	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	138,078.65	34,519.66	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	147,230.90	36,807.73	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	157,582.30	39,395.57	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	173,911.75	43,477.94	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	189,288.95	47,322.24	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	212,390.01	53,097.50	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	243,250.21	60,812.55	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	289,346.54	72,336.63	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	348,986.08	87,246.52	0.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	448,726.25	112,181.56	1.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	627,151.11	94,072.67	1.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:03 PM	676,386.36	20,291.59	1.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Golden Gate Park

PREVISION DESIGN

NOVEMBER 15

Mirror date: January 25
Analysis hours: 7:51 AM-3:57 PM (PST)

Analysis Time	EXISTING SHADOW (PARTIAL AREA ONLY)			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:51 AM	1,310,819.18	104,865.53	2.9%	271,428.69	21,714.30	0.6%	271,428.69	21,714.30	0.6%	271,428.69	21,714.30	0.6%
8:00 AM	1,011,140.18	202,228.04	2.3%	171,917.77	34,383.55	0.4%	171,917.77	34,383.55	0.4%	171,917.77	34,383.55	0.4%
8:15 AM	714,459.03	178,614.76	1.6%	38,672.24	9,668.06	0.1%	38,672.24	9,668.06	0.1%	38,672.24	9,668.06	0.1%
8:30 AM	528,239.76	132,059.94	1.2%	4,673.12	1,168.28	0.0%	4,673.12	1,168.28	0.0%	4,673.12	1,168.28	0.0%
8:45 AM	412,275.94	103,068.99	0.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	318,178.78	79,544.70	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	267,497.52	66,874.38	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	216,304.85	54,076.21	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	180,401.21	45,100.30	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	154,443.37	38,610.84	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	139,066.18	34,766.54	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	127,180.59	31,795.15	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	119,950.49	29,987.62	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	113,073.07	28,268.27	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	111,256.73	27,814.18	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	110,586.62	27,646.66	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	112,579.31	28,144.83	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	114,607.26	28,651.82	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	117,781.46	29,445.36	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	121,872.64	30,468.16	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	127,427.47	31,856.87	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	133,052.85	33,263.21	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	140,018.43	35,004.61	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	149,435.20	37,358.80	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	160,474.34	40,118.58	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	173,753.04	43,438.26	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	190,858.41	47,714.60	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	210,079.91	52,519.98	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	241,134.09	60,283.52	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	280,758.58	70,189.65	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	334,684.58	83,671.15	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	417,389.92	104,347.48	0.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	562,397.59	129,351.45	1.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:57 PM	745,830.63	82,041.37	1.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Golden Gate Park

PREVISION DESIGN

NOVEMBER 22

Mirror date: January 18
Analysis hours: 7:57 AM-3:54 PM (PST)

Analysis Time	EXISTING SHADOW (PARTIAL AREA ONLY)			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:57 AM	1,441,155.04	28,823.10	3.2%	281,374.49	5,627.49	0.6%	281,374.49	5,627.49	0.6%	281,374.49	5,627.49	0.6%
8:00 AM	1,344,324.54	201,648.68	3.0%	271,040.73	40,656.11	0.6%	271,040.73	40,656.11	0.6%	271,040.73	40,656.11	0.6%
8:15 AM	903,182.38	225,795.60	2.0%	109,262.75	27,315.69	0.2%	109,262.75	27,315.69	0.2%	109,262.75	27,315.69	0.2%
8:30 AM	655,630.67	163,907.67	1.5%	24,070.96	6,017.74	0.1%	24,070.96	6,017.74	0.1%	24,070.96	6,017.74	0.1%
8:45 AM	504,133.53	126,033.38	1.1%	9,064.08	2,266.02	0.0%	9,064.08	2,266.02	0.0%	9,064.08	2,266.02	0.0%
9:00 AM	390,232.94	97,558.24	0.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	316,097.92	79,024.48	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	267,215.36	66,803.84	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	220,889.79	55,222.45	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	183,275.62	45,818.90	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	161,479.50	40,369.87	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	143,016.28	35,754.07	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	131,800.80	32,950.20	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	122,789.63	30,697.41	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	120,990.92	30,247.73	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	119,756.51	29,939.13	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	121,872.64	30,468.16	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	123,248.12	30,812.03	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	126,739.73	31,684.93	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	130,778.01	32,694.50	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	136,985.32	34,246.33	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	142,399.08	35,599.77	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	151,621.87	37,905.47	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	160,421.44	40,105.36	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	176,151.32	44,037.83	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	189,288.95	47,322.24	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	209,215.82	52,303.96	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	234,027.42	58,506.86	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	270,389.56	67,597.39	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	315,480.72	78,870.18	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	385,665.63	96,416.41	0.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	493,323.65	123,330.91	1.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	665,523.57	133,104.71	1.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:54 PM	819,119.20	65,529.54	1.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Golden Gate Park

PREVISION DESIGN

NOVEMBER 29

Mirror date: January 11
Analysis hours: 8:04 AM-3:51 PM (PST)

Analysis Time	EXISTING SHADOW (PARTIAL AREA ONLY)			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
8:04 AM	1,564,772.18	140,829.50	3.5%	281,339.22	25,320.53	0.6%	281,339.22	25,320.53	0.6%	281,339.22	25,320.53	0.6%
8:15 AM	1,123,912.17	236,021.56	2.5%	191,756.47	40,268.86	0.4%	191,756.47	40,268.86	0.4%	191,756.47	40,268.86	0.4%
8:30 AM	795,471.46	198,867.87	1.8%	71,190.07	17,797.52	0.2%	71,190.07	17,797.52	0.2%	71,190.07	17,797.52	0.2%
8:45 AM	602,392.41	150,598.10	1.3%	26,451.60	6,612.90	0.1%	26,451.60	6,612.90	0.1%	26,451.60	6,612.90	0.1%
9:00 AM	464,932.26	116,233.07	1.0%	9,452.04	2,363.01	0.0%	9,452.04	2,363.01	0.0%	9,452.04	2,363.01	0.0%
9:15 AM	374,273.81	93,568.45	0.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	306,310.83	76,577.71	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	265,434.29	66,358.57	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	218,368.08	54,592.02	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	188,548.30	47,137.08	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	163,895.41	40,973.85	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	149,082.52	37,270.63	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	135,962.52	33,990.63	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	130,478.22	32,619.56	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	128,062.31	32,015.58	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	129,279.08	32,319.77	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	129,649.41	32,412.35	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	134,463.60	33,615.90	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	137,725.96	34,431.49	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	145,731.98	36,433.00	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	151,463.16	37,865.79	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	162,008.53	40,502.13	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	172,730.25	43,182.56	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	189,059.70	47,264.93	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	202,885.07	50,721.27	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	227,996.46	56,999.11	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	256,176.23	64,044.06	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	297,934.49	74,483.62	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	348,562.85	87,140.71	0.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	436,241.09	109,060.27	1.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	552,927.92	138,231.98	1.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	752,725.68	135,490.62	1.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:51 PM	879,270.14	43,963.51	2.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Golden Gate Park

PREVISION DESIGN

DECEMBER 6

Mirror date: January 4
Analysis hours: 8:10 AM-3:51 PM (PST)

Analysis Time	EXISTING SHADOW (PARTIAL AREA ONLY)			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
8:10 AM	1,659,169.13	66,366.77	3.7%	281,339.22	11,253.57	0.6%	281,339.22	11,253.57	0.6%	281,339.22	11,253.57	0.6%
8:15 AM	1,423,203.22	241,944.55	3.2%	253,900.10	43,163.02	0.6%	253,900.10	43,163.02	0.6%	253,900.10	43,163.02	0.6%
8:30 AM	946,792.25	236,698.06	2.1%	116,263.60	29,065.90	0.3%	116,263.60	29,065.90	0.3%	116,263.60	29,065.90	0.3%
8:45 AM	706,576.45	176,644.11	1.6%	46,396.11	11,599.03	0.1%	46,396.11	11,599.03	0.1%	46,396.11	11,599.03	0.1%
9:00 AM	542,541.26	135,635.31	1.2%	23,965.15	5,991.29	0.1%	23,965.15	5,991.29	0.1%	23,965.15	5,991.29	0.1%
9:15 AM	431,709.05	107,927.26	1.0%	7,670.96	1,917.74	0.0%	7,670.96	1,917.74	0.0%	7,670.96	1,917.74	0.0%
9:30 AM	350,467.37	87,616.84	0.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	297,599.44	74,399.86	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	252,508.27	63,127.07	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	216,304.85	54,076.21	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	185,991.32	46,497.83	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	166,381.86	41,595.47	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	151,480.79	37,870.20	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	143,227.90	35,806.97	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	137,673.06	34,418.26	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	139,207.25	34,801.81	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	138,607.68	34,651.92	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	142,804.67	35,701.17	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	145,731.98	36,433.00	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	152,962.08	38,240.52	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	159,804.23	39,951.06	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	171,178.42	42,794.61	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	183,028.74	45,757.18	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	197,541.85	49,385.46	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	216,357.75	54,089.44	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	242,879.89	60,719.97	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	271,694.50	67,923.63	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	316,397.71	79,099.43	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	373,074.67	93,268.67	0.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	468,847.10	117,211.77	1.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	590,242.31	147,560.58	1.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	807,392.32	137,256.69	1.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:51 PM	926,389.25	46,319.46	2.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Golden Gate Park

PREVISION DESIGN

DECEMBER 13

Mirror date: December 28
Analysis hours: 8:15 AM-3:52 PM (PST)

Analysis Time	EXISTING SHADOW (PARTIAL AREA ONLY)			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
8:15 AM	1,728,789.74	207,454.77	3.9%	277,424.39	33,290.93	0.6%	277,424.39	33,290.93	0.6%	277,424.39	33,290.93	0.6%
8:30 AM	1,106,348.31	276,587.08	2.5%	158,268.74	39,567.19	0.4%	158,268.74	39,567.19	0.4%	158,268.74	39,567.19	0.4%
8:45 AM	802,913.18	200,728.30	1.8%	79,689.86	19,922.46	0.2%	79,689.86	19,922.46	0.2%	79,689.86	19,922.46	0.2%
9:00 AM	611,773.92	152,943.48	1.4%	36,591.38	9,147.85	0.1%	36,591.38	9,147.85	0.1%	36,591.38	9,147.85	0.1%
9:15 AM	482,601.93	120,650.48	1.1%	20,385.37	5,096.34	0.0%	20,385.37	5,096.34	0.0%	20,385.37	5,096.34	0.0%
9:30 AM	389,827.35	97,456.84	0.9%	1,781.07	445.27	0.0%	1,781.07	445.27	0.0%	1,781.07	445.27	0.0%
9:45 AM	328,477.27	82,119.32	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	278,042.89	69,510.72	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	240,622.69	60,155.67	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	202,620.56	50,655.14	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	182,023.58	45,505.89	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	162,220.14	40,555.04	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	154,972.41	38,743.10	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	146,049.40	36,512.35	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	145,026.60	36,256.65	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	143,651.12	35,912.78	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	148,271.33	37,067.83	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	151,674.77	37,918.69	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	158,428.75	39,607.19	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	164,971.11	41,242.78	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	176,133.69	44,033.42	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	186,820.13	46,705.03	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	202,691.09	50,672.77	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	222,335.82	55,583.95	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	250,480.32	62,620.08	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	279,594.71	69,898.68	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	326,237.70	81,559.43	0.7%	264.52	66.13	0.0%	264.52	66.13	0.0%	264.52	66.13	0.0%
3:00 PM	385,595.10	96,398.77	0.9%	17.63	4.41	0.0%	17.63	4.41	0.0%	17.63	4.41	0.0%
3:15 PM	480,256.56	120,064.14	1.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	603,115.42	150,778.86	1.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	819,225.00	147,460.50	1.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:52 PM	957,461.07	57,447.66	2.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Golden Gate Park

PREVISION DESIGN

DECEMBER 20

Winter solstice (December 21 similar)
Analysis hours: 8:19 AM-3:54 PM (PST)

Analysis Time	EXISTING SHADOW (PARTIAL AREA ONLY)			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
8:19 AM	1,753,477.90	140,278.23	3.9%	276,489.76	22,119.18	0.6%	276,489.76	22,119.18	0.6%	276,489.76	22,119.18	0.6%
8:30 AM	1,258,445.01	264,273.45	2.8%	205,158.61	43,083.31	0.5%	205,158.61	43,083.31	0.5%	205,158.61	43,083.31	0.5%
8:45 AM	882,215.08	220,553.77	2.0%	98,382.32	24,595.58	0.2%	98,382.32	24,595.58	0.2%	98,382.32	24,595.58	0.2%
9:00 AM	659,986.37	164,996.59	1.5%	43,856.75	10,964.19	0.1%	43,856.75	10,964.19	0.1%	43,856.75	10,964.19	0.1%
9:15 AM	525,876.75	131,469.19	1.2%	27,492.03	6,873.01	0.1%	27,492.03	6,873.01	0.1%	27,492.03	6,873.01	0.1%
9:30 AM	417,178.31	104,294.58	0.9%	7,071.39	1,767.85	0.0%	7,071.39	1,767.85	0.0%	7,071.39	1,767.85	0.0%
9:45 AM	349,673.82	87,418.46	0.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	293,896.21	73,474.05	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	255,417.95	63,854.49	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	216,287.22	54,071.80	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	190,946.58	47,736.65	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	167,898.42	41,974.61	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	159,610.25	39,902.56	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	150,316.92	37,579.23	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	149,029.61	37,257.40	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	147,442.52	36,860.63	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	149,823.16	37,455.79	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	152,344.88	38,086.22	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	158,940.15	39,735.04	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	165,694.12	41,423.53	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	176,116.05	44,029.01	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	187,790.03	46,947.51	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	202,514.75	50,628.69	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	222,653.23	55,663.31	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	250,497.95	62,624.49	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	276,685.04	69,171.26	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	321,388.24	80,347.06	0.7%	440.86	110.22	0.0%	440.86	110.22	0.0%	440.86	110.22	0.0%
3:00 PM	377,871.23	94,467.81	0.8%	35.27	8.82	0.0%	35.27	8.82	0.0%	35.27	8.82	0.0%
3:15 PM	471,192.47	117,798.12	1.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	584,634.57	146,158.64	1.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	789,387.60	165,771.40	1.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:54 PM	969,646.44	77,571.72	2.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

THEORETICAL ANNUAL AVAILABLE SUNLIGHT (TAAS) CALCULATION	GRATTAN PLAYGROUND
Total plan area of Grattan Playground	1.52 acres (66,249 sf)
Total hours of annual sunlight from 1-hr after sunrise through 1-hr before sunset	3721.4 hrs
Theoretical Annual Available Sunlight (plan area x hours of annual sunlight)	246,539,029 sfh

EXISTING SHADOW CONDITIONS SUMMARY	GRATTAN PLAYGROUND
Total annual existing shadow load (existing shadow sfh ÷ TAAS sfh)	13.85%
Total annual existing shadow in square-foot-hours (sfh)	34,143,738 sfh
Range in existing shadow area coverage throughout the year	Between 5% - 100%
Time of year / time of day most affected by existing shadow	Fall / Early Morning (before 8:00 AM)

UCSF HOSPITAL PROJECT NET NEW SHADOW SCENARIO SUMMARY	GRATTAN PLAYGROUND
Annual net new hospital project-only shadow load / total existing + hospital project shadow load	0.25% / 14.10%
Annual net new sfh hospital project shadow / total existing + hospital project sfh	624,447 sfh / 34,768,185 sfh
Number of days annually when new shading from hospital project would occur	Up to 167 days a year
Dates when net new shadow from hospital project would be cast annually	March 30 - September 12
Date(s) with most annual sfh net new hospital project shadow (shadow load / net new sfh)	August 2 & May 10
Time of year / time of day most affected by hospital project net new shadow overall	Spring / Late Afternoon (after 4:00 PM)
Date(s) with largest shadow area from the hospital project (area and time shadow occurs)	Aug 2/May 10 (30,224 sf @ 7:15 PM)
Range in hospital project net new shadow percentage coverage (area range)	Between 0% - 46% (0 - 30,224 sf)
Average hospital project net new shadow coverage on affected dates (shadow area)	25.29% (16,752 sf)
Date(s) with the longest duration of net new shadow (duration)	Jul 26/May 17 (32 min +/- 7 min)
Range in daily hospital project net new shadow duration (margin of error)	Between zero minutes up to 32 min (+/- 7 min)
Average daily hospital project net new shadow duration on affected dates	22.4 minutes

NEAR TERM CUMULATIVE (2030) NET NEW SHADOW SCENARIO SUMMARY	GRATTAN PLAYGROUND
Annual net new 2030 cumulative condition shadow load / total existing + 2030 cumulative shadow load	0.25% / 14.10%
Annual net new sfh 2030 cumulative shadow / total existing + 2030 cumulative sfh	624,447 sfh / 34,768,185 sfh
Number of days annually when new shading from 2030 cumulative would occur	Up to 167 days a year
Dates when net new shadow from 2030 cumulative would be cast annually	March 30 - September 12
Date(s) with most annual sfh net new 2030 cumulative shadow (shadow load / net new sfh)	August 2 & May 10
Time of year / time of day most affected by 2030 cumulative net new shadow overall	Spring / Late Afternoon (after 4:00 PM)
Date(s) with largest shadow area from the 2030 cumulative (area and time shadow occurs)	Aug 2/May 10 (30,224 sf @ 7:15 PM)
Range in 2030 cumulative net new shadow percentage coverage (area range)	Between 0% - 46% (0 - 30,224 sf)
Average 2030 cumulative net new shadow coverage on affected dates (shadow area)	25.29% (16,752 sf)
Date(s) with the longest duration of net new shadow (duration)	Jul 26/May 17 (32 min +/- 7 min)
Range in daily 2030 cumulative net new shadow duration (margin of error)	Between zero minutes up to 32 min (+/- 7 min)
Average daily 2030 cumulative net new shadow duration on affected dates	22.4 minutes

LONG TERM CUMULATIVE (2050) NET NEW SHADOW SCENARIO SUMMARY	GRATTAN PLAYGROUND
Annual net new 2050 cumulative shadow load / total existing + 2050 cumulative shadow load	0.25% / 14.10%
Annual net new sfh 2050 cumulative shadow / total existing + 2050 cumulative sfh	624,447 sfh / 34,768,185 sfh
Number of days annually when new shading from 2050 cumulative would occur	Up to 167 days a year
Dates when net new shadow from 2050 cumulative would be cast annually	March 30 - September 12
Date(s) with most annual sfh net new 2050 cumulative shadow (shadow load / net new sfh)	August 2 & May 10
Time of year / time of day most affected by 2050 cumulative net new shadow overall	Spring / Late Afternoon (after 4:00 PM)
Date(s) with largest shadow area from the 2050 cumulative (area and time shadow occurs)	Aug 2/May 10 (30,224 sf @ 7:15 PM)
Range in 2050 cumulative net new shadow percentage coverage (area range)	Between 0% - 46% (0 - 30,224 sf)
Average 2050 cumulative net new shadow coverage on affected dates (shadow area)	25.29% (16,752 sf)
Date(s) with the longest duration of net new shadow (duration)	Jul 26/May 17 (32 min +/- 7 min)
Range in daily 2050 cumulative net new shadow duration (margin of error)	Between zero minutes up to 32 min (+/- 7 min)
Average daily 2050 cumulative net new shadow duration on affected dates	22.4 minutes

THEORETICAL ANNUAL AVAILABLE SUNLIGHT (TAAS)	GRATTAN PLAYGROUND
Area of Grattan Playground	1.52 acres (66,249 sf)
Hours of annual available sunlight	3721.4 hrs
TAAS for Grattan Playground	246,538,524 sfh

EXISTING (CURRENT) LEVELS OF SHADOW (ROUGH APPROXIMATE)	GRATTAN PLAYGROUND
Existing annual total shading on park (sfh)	34,143,738 sfh
Existing shading as percentage of TAAS	13.85%

NEW SHADOW CAST BY THE PROPOSED CPHP PROJECT	GRATTAN PLAYGROUND
Additional annual shading on Grattan Playground from Project	716,661 sfh
Additional annual shading from Project as percentage of TAAS	0.29%
Combined total annual shading existing + Project (sfh)	34,860,399 sfh
Combined total annual shading from existing + Project as percentage of TAAS	14.14%
Number of days when new shading from Project would occur	141-153 days annually
Dates when new shadow from Project would be cast on Grattan Playground	Between Apr 6 - Sep 5
Annual range in duration of new Project shadow (duration variance +/- 7 min.)	Zero to approx. 37 min
Range in area of new Project shadow (sf)	Zero to 30,117 sf
Average daily duration of new Project shadow (when present)	Approx. 24 min.
MAXIMUM NEW SHADING BY THE PROPOSED PROJECT	GRATTAN PLAYGROUND
Dates of maximum new shading from proposed Project (max sfh)	May 10 & Aug 2
Total new shading on date(s) of maximum shading (sfh)	8,983.32 sfh
Percentage new shadow on date(s) of maximum shading	1.12%
Date and duration of longest duration of new shading (duration variance +/- 7 min.)	Approx. 37 min on Jul 19 & May 24
Date and time of largest area of new Project shadow	30,117 sf on Aug 2/May 10 at 7:15 PM
Percentage of Grattan Playground covered by largest new shadow	45.46%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Playground

PREVISION DESIGN

JUNE 21

Summer solstice

Analysis hours: 6:46 AM-7:36 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
6:46 AM	58,239.18	6,406.31	87.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 AM	9,793.88	2,252.59	14.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 AM	7,277.10	1,819.27	11.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 AM	5,862.39	1,465.60	8.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	4,767.86	1,191.96	7.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	4,001.56	1,000.39	6.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	3,434.47	858.62	5.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	3,334.61	833.65	5.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	3,484.85	871.21	5.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	3,609.27	902.32	5.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	3,713.22	928.31	5.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	3,794.80	948.70	5.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	3,867.94	966.98	5.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	3,908.34	977.09	5.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	3,943.51	985.88	6.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	3,960.77	990.19	6.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	3,981.35	995.34	6.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	3,979.56	994.89	6.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	3,961.79	990.45	6.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	3,914.35	978.59	5.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	3,887.63	971.91	5.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	3,828.30	957.07	5.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	3,796.72	949.18	5.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	3,723.96	930.99	5.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	3,683.68	920.92	5.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	3,597.37	899.34	5.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	3,709.77	927.44	5.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	3,777.41	944.35	5.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	3,886.99	971.75	5.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	3,947.09	986.77	6.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	4,044.26	1,011.07	6.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	4,096.18	1,024.04	6.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	4,179.42	1,044.85	6.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	4,229.29	1,057.32	6.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	4,299.49	1,074.87	6.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	4,343.60	1,085.90	6.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	4,401.65	1,100.41	6.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	4,442.82	1,110.71	6.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	4,647.79	1,161.95	7.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	4,880.12	1,220.03	7.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	5,131.51	1,282.88	7.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	5,407.83	1,351.96	8.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	5,714.19	1,428.55	8.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	6,061.22	1,515.31	9.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	6,453.77	1,613.44	9.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	6,910.76	1,727.69	10.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	7,444.98	1,861.25	11.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	8,257.70	2,064.42	12.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	9,178.33	2,294.58	13.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 PM	11,503.06	2,875.77	17.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 PM	17,559.94	5,267.98	26.5%	2,034.86	610.46	3.1%	2,034.86	610.46	3.1%	2,034.86	610.46	3.1%
7:36 PM	37,220.46	6,699.68	56.2%	831.64	149.70	1.3%	831.64	149.70	1.3%	831.64	149.70	1.3%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Playground

PREVISION DESIGN

JUNE 28

Mirror date: June 14
Analysis hours: 6:48 AM-7:36 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
6:48 AM	12,946.28	1,294.63	19.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 AM	10,237.70	2,252.29	15.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 AM	7,542.67	1,885.67	11.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 AM	6,030.53	1,507.63	9.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	4,905.70	1,226.42	7.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	4,089.91	1,022.48	6.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	3,488.43	872.11	5.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	3,337.81	834.45	5.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	3,487.03	871.76	5.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	3,613.36	903.34	5.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	3,719.10	929.78	5.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	3,801.58	950.39	5.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	3,875.74	968.93	5.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	3,917.17	979.29	5.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	3,954.38	988.59	6.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	3,970.87	992.72	6.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	3,992.86	998.22	6.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	3,991.20	997.80	6.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	3,976.50	994.12	6.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	3,930.46	982.62	5.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	3,902.59	975.65	5.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	3,844.28	961.07	5.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	3,812.44	953.11	5.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	3,739.94	934.99	5.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	3,700.69	925.17	5.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	3,615.15	903.79	5.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	3,712.58	928.15	5.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	3,780.86	945.22	5.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	3,891.08	972.77	5.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	3,951.95	987.99	6.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	4,048.74	1,012.19	6.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	4,101.93	1,025.48	6.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	4,185.56	1,046.39	6.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	4,236.19	1,059.05	6.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	4,307.67	1,076.92	6.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	4,353.19	1,088.30	6.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	4,413.41	1,103.35	6.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	4,452.67	1,113.17	6.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	4,629.38	1,157.34	7.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	4,860.69	1,215.17	7.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	5,109.64	1,277.41	7.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	5,386.22	1,346.55	8.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	5,690.28	1,422.57	8.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	6,035.52	1,508.88	9.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	6,424.62	1,606.15	9.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	6,877.39	1,719.35	10.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	7,405.86	1,851.46	11.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	8,189.68	2,047.42	12.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	9,134.60	2,283.65	13.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 PM	11,245.54	2,811.39	17.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 PM	17,094.38	5,128.31	25.8%	1,888.58	566.57	2.9%	1,888.58	566.57	2.9%	1,888.58	566.57	2.9%
7:36 PM	37,126.35	6,682.74	56.0%	1,059.11	190.64	1.6%	1,059.11	190.64	1.6%	1,059.11	190.64	1.6%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Playground

PREVISION DESIGN

JULY 5

Mirror date: June 7
Analysis hours: 6:52 AM-7:36 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
6:52 AM	13,032.85	781.97	19.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 AM	10,995.44	2,089.13	16.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 AM	8,015.14	2,003.78	12.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 AM	6,315.16	1,578.79	9.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	5,120.00	1,280.00	7.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	4,219.44	1,054.86	6.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	3,568.99	892.25	5.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	3,386.27	846.57	5.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	3,524.87	881.22	5.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	3,652.48	913.12	5.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	3,758.87	939.72	5.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	3,839.94	959.98	5.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	3,911.67	977.92	5.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	3,956.42	989.11	6.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	3,993.37	998.34	6.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	4,010.00	1,002.50	6.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	4,030.71	1,007.68	6.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	4,029.05	1,007.26	6.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	4,017.67	1,004.42	6.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	3,970.49	992.62	6.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	3,942.87	985.72	6.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	3,883.03	970.76	5.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	3,851.57	962.89	5.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	3,779.45	944.86	5.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	3,738.92	934.73	5.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	3,654.15	913.54	5.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	3,739.43	934.86	5.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	3,809.89	952.47	5.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	3,922.92	980.73	5.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	3,983.27	995.82	6.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	4,081.86	1,020.46	6.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	4,138.37	1,034.59	6.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	4,221.74	1,055.44	6.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	4,273.53	1,068.38	6.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	4,348.33	1,087.08	6.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	4,394.62	1,098.65	6.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	4,458.29	1,114.57	6.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	4,499.34	1,124.83	6.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	4,624.52	1,156.13	7.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	4,856.60	1,214.15	7.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	5,108.49	1,277.12	7.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	5,384.30	1,346.07	8.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	5,690.03	1,422.51	8.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	6,036.03	1,509.01	9.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	6,428.07	1,607.02	9.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	6,883.14	1,720.79	10.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	7,417.24	1,854.31	11.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	8,219.08	2,054.77	12.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	9,199.94	2,299.99	13.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 PM	11,258.20	2,814.55	17.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 PM	17,221.86	5,166.56	26.0%	3,348.29	1,004.49	5.1%	3,348.29	1,004.49	5.1%	3,348.29	1,004.49	5.1%
7:36 PM	36,843.77	6,631.88	55.6%	2,204.41	396.79	3.3%	2,204.41	396.79	3.3%	2,204.41	396.79	3.3%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Playground

PREVISION DESIGN

JULY 12

Mirror date: May 31
Analysis hours: 6:56 AM-7:33 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
6:56 AM	13,173.12	395.19	19.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 AM	12,142.14	1,821.32	18.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 AM	8,774.15	2,193.54	13.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 AM	6,737.50	1,684.38	10.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	5,422.40	1,355.60	8.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	4,394.75	1,098.69	6.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	3,693.91	923.48	5.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	3,489.33	872.33	5.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	3,604.41	901.10	5.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	3,727.67	931.92	5.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	3,828.68	957.17	5.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	3,910.52	977.63	5.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	3,979.82	994.96	6.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	4,027.90	1,006.97	6.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	4,062.55	1,015.64	6.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	4,077.13	1,019.28	6.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	4,096.69	1,024.17	6.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	4,093.11	1,023.28	6.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	4,083.65	1,020.91	6.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	4,034.80	1,008.70	6.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	4,006.29	1,001.57	6.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	3,945.55	986.39	6.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	3,914.10	978.52	5.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	3,840.57	960.14	5.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	3,800.55	950.14	5.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	3,715.01	928.75	5.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	3,793.52	948.38	5.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	3,866.15	966.54	5.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	3,978.16	994.54	6.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	4,042.35	1,010.59	6.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	4,141.57	1,035.39	6.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	4,199.24	1,049.81	6.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	4,288.23	1,072.06	6.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	4,340.02	1,085.00	6.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	4,418.53	1,104.63	6.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	4,468.14	1,117.04	6.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	4,534.63	1,133.66	6.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	4,580.15	1,145.04	6.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	4,638.20	1,159.55	7.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	4,866.06	1,216.51	7.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	5,121.28	1,280.32	7.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	5,401.94	1,350.49	8.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	5,713.94	1,428.48	8.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	6,063.14	1,515.78	9.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	6,463.23	1,615.81	9.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	6,930.84	1,732.71	10.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	7,477.46	1,869.37	11.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	8,362.81	2,090.70	12.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	9,384.58	2,346.15	14.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 PM	11,578.38	2,894.59	17.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 PM	18,269.21	5,115.38	27.6%	7,366.99	2,062.76	11.1%	7,366.99	2,062.76	11.1%	7,366.99	2,062.76	11.1%
7:33 PM	36,549.30	5,482.39	55.2%	4,786.53	717.98	7.2%	4,786.53	717.98	7.2%	4,786.53	717.98	7.2%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Playground

PREVISION DESIGN

JULY 19

Mirror date: May 24
Analysis hours: 7:01 AM-7:30 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:01 AM	13,358.91	1,736.66	20.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:16 AM	9,557.71	2,293.85	14.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 AM	7,377.22	1,770.53	11.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	5,803.57	1,450.89	8.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	4,613.78	1,153.44	7.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	3,955.14	988.79	6.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	3,669.11	917.28	5.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	3,726.52	931.63	5.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	3,842.11	960.53	5.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	3,941.33	985.33	5.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	4,015.62	1,003.91	6.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	4,083.78	1,020.94	6.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	4,127.76	1,031.94	6.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	4,159.86	1,039.96	6.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	4,171.87	1,042.97	6.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	4,188.63	1,047.16	6.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	4,182.49	1,045.62	6.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	4,174.94	1,043.74	6.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	4,123.80	1,030.95	6.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	4,093.75	1,023.44	6.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	4,033.78	1,008.44	6.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	3,996.70	999.17	6.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	3,923.18	980.79	5.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	3,880.85	970.21	5.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	3,795.31	948.83	5.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	3,873.69	968.42	5.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	3,950.41	987.60	6.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	4,062.29	1,015.57	6.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	4,128.14	1,032.04	6.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	4,230.31	1,057.58	6.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	4,291.56	1,072.89	6.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	4,383.11	1,095.78	6.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	4,440.01	1,110.00	6.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	4,519.16	1,129.79	6.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	4,573.25	1,143.31	6.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	4,645.23	1,161.31	7.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	4,695.87	1,173.97	7.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	4,759.29	1,189.82	7.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	4,894.32	1,223.58	7.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	5,155.04	1,288.76	7.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	5,444.40	1,361.10	8.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	5,765.47	1,441.37	8.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	6,125.79	1,531.45	9.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	6,539.06	1,634.76	9.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	7,025.58	1,756.40	10.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	7,597.66	1,899.41	11.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	8,597.70	2,149.42	13.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	9,741.20	2,435.30	14.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 PM	12,336.75	3,084.19	18.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 PM	20,389.48	5,097.37	30.8%	14,008.60	3,502.15	21.1%	14,008.60	3,502.15	21.1%	14,008.60	3,502.15	21.1%
7:30 PM	36,578.45	4,755.20	55.2%	9,367.84	1,217.82	14.1%	9,367.84	1,217.82	14.1%	9,367.84	1,217.82	14.1%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Playground

PREVISION DESIGN

JULY 26

Mirror date: May 17
Analysis hours: 7:07 AM-7:25 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:07 AM	13,523.47	811.41	20.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 AM	11,281.22	2,143.43	17.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 AM	8,215.50	2,053.88	12.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	6,285.50	1,571.37	9.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	4,915.93	1,228.98	7.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	4,332.35	1,083.09	6.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	3,948.88	987.22	6.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	3,894.15	973.54	5.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	3,993.63	998.41	6.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	4,087.87	1,021.97	6.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	4,157.55	1,039.39	6.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	4,221.10	1,055.28	6.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	4,260.23	1,065.06	6.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	4,290.66	1,072.67	6.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	4,292.58	1,073.15	6.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	4,307.92	1,076.98	6.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	4,299.49	1,074.87	6.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	4,292.84	1,073.21	6.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	4,238.11	1,059.53	6.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	4,204.22	1,051.06	6.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	4,138.37	1,034.59	6.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	4,101.04	1,025.26	6.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	4,025.85	1,006.46	6.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	3,981.61	995.40	6.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	3,896.96	974.24	5.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	3,980.46	995.11	6.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	4,059.35	1,014.84	6.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	4,173.41	1,043.35	6.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	4,243.10	1,060.77	6.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	4,346.67	1,086.67	6.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	4,412.01	1,103.00	6.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	4,507.14	1,126.78	6.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	4,566.85	1,141.71	6.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	4,653.42	1,163.35	7.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	4,711.21	1,177.80	7.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	4,789.47	1,197.37	7.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	4,846.37	1,211.59	7.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	4,919.38	1,229.84	7.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	4,974.11	1,243.53	7.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	5,209.51	1,302.38	7.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	5,508.46	1,377.11	8.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	5,838.86	1,459.72	8.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	6,220.92	1,555.23	9.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	6,656.95	1,664.24	10.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	7,168.79	1,792.20	10.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	7,818.35	1,954.59	11.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	8,904.83	2,226.21	13.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	10,417.87	2,604.47	15.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 PM	13,698.65	3,424.66	20.7%	328.62	82.15	0.5%	328.62	82.15	0.5%	328.62	82.15	0.5%
7:15 PM	24,161.78	5,073.97	36.5%	25,066.56	5,263.98	37.8%	25,066.56	5,263.98	37.8%	25,066.56	5,263.98	37.8%
7:25 PM	36,883.15	3,319.48	55.7%	18,234.05	1,641.06	27.5%	18,234.05	1,641.06	27.5%	18,234.05	1,641.06	27.5%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Playground

PREVISION DESIGN

AUGUST 2

Mirror date: May 10
Analysis hours: 7:12 AM-7:18 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:12 AM	13,811.94	276.24	20.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 AM	13,078.50	1,961.77	19.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 AM	9,386.12	2,346.53	14.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	6,879.18	1,719.79	10.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	5,560.37	1,390.09	8.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	4,805.96	1,201.49	7.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	4,325.31	1,081.33	6.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	4,118.17	1,029.54	6.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	4,190.03	1,047.51	6.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	4,275.70	1,068.93	6.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	4,336.05	1,084.01	6.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	4,391.80	1,097.95	6.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	4,424.79	1,106.20	6.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	4,446.40	1,111.60	6.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	4,446.91	1,111.73	6.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	4,456.25	1,114.06	6.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	4,442.06	1,110.51	6.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	4,433.87	1,108.47	6.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	4,372.62	1,093.16	6.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	4,334.65	1,083.66	6.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	4,266.62	1,066.66	6.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	4,226.22	1,056.55	6.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	4,149.11	1,037.28	6.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	4,102.70	1,025.67	6.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	4,016.13	1,004.03	6.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	4,115.10	1,028.78	6.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	4,196.55	1,049.14	6.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	4,312.02	1,078.00	6.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	4,386.43	1,096.61	6.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	4,492.95	1,123.24	6.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	4,560.97	1,140.24	6.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	4,661.60	1,165.40	7.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	4,725.66	1,181.42	7.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	4,817.60	1,204.40	7.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	4,883.19	1,220.80	7.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	4,970.78	1,242.70	7.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	5,034.84	1,258.71	7.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	5,117.83	1,279.46	7.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	5,184.44	1,296.11	7.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	5,293.26	1,323.31	8.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	5,603.08	1,400.77	8.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	5,956.11	1,489.03	9.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	6,358.64	1,589.66	9.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	6,825.60	1,706.40	10.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	7,376.32	1,844.08	11.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	8,217.81	2,054.45	12.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	9,448.00	2,362.00	14.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	11,575.69	2,893.92	17.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 PM	16,643.14	4,160.79	25.1%	13,386.91	3,346.73	20.2%	13,386.91	3,346.73	20.2%	13,386.91	3,346.73	20.2%
7:15 PM	31,898.43	4,784.76	48.1%	30,224.29	4,533.64	45.6%	30,224.29	4,533.64	45.6%	30,224.29	4,533.64	45.6%
7:18 PM	37,337.46	1,120.12	56.4%	25,729.04	771.87	38.8%	25,729.04	771.87	38.8%	25,729.04	771.87	38.8%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Playground

PREVISION DESIGN

AUGUST 9

Mirror date: May 3
Analysis hours: 7:19 AM-7:10 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:19 AM	14,283.63	1,285.53	21.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 AM	10,908.36	2,290.76	16.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	7,912.33	1,978.08	11.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	6,379.99	1,595.00	9.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	5,382.25	1,345.56	8.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	4,791.64	1,197.91	7.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	4,413.80	1,103.45	6.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	4,431.70	1,107.92	6.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	4,502.02	1,125.51	6.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	4,548.82	1,137.21	6.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	4,592.94	1,148.23	6.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	4,616.85	1,154.21	7.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	4,633.98	1,158.50	7.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	4,626.44	1,156.61	7.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	4,628.87	1,157.22	7.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	4,607.64	1,151.91	7.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	4,595.88	1,148.97	6.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	4,531.31	1,132.83	6.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	4,489.62	1,122.41	6.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	4,418.53	1,104.63	6.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	4,373.14	1,093.28	6.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	4,293.73	1,073.43	6.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	4,241.82	1,060.45	6.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	4,156.02	1,039.00	6.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	4,276.72	1,069.18	6.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	4,361.12	1,090.28	6.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	4,478.88	1,119.72	6.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	4,557.52	1,139.38	6.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	4,667.36	1,166.84	7.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	4,741.13	1,185.28	7.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	4,844.70	1,211.18	7.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	4,916.95	1,229.24	7.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	5,015.79	1,253.95	7.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	5,089.44	1,272.36	7.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	5,187.00	1,296.75	7.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	5,261.68	1,315.42	7.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	5,358.34	1,339.59	8.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	5,438.00	1,359.50	8.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	5,538.89	1,384.72	8.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	5,730.30	1,432.58	8.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	6,109.04	1,527.26	9.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	6,542.64	1,635.66	9.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	7,052.05	1,763.01	10.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	7,668.75	1,917.19	11.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	8,738.22	2,184.55	13.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	10,377.46	2,594.36	15.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	13,593.03	4,621.63	20.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:10 PM	37,776.94	7,933.16	57.0%	28,472.14	5,979.15	43.0%	28,472.14	5,979.15	43.0%	28,472.14	5,979.15	43.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Playground

PREVISION DESIGN

AUGUST 16

Mirror date: April 26
Analysis hours: 7:25 AM-7:02 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:25 AM	14,623.25	584.93	22.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 AM	13,085.53	2,224.54	19.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	9,381.90	2,345.47	14.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	7,384.89	1,846.22	11.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	6,103.80	1,525.95	9.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	5,347.22	1,336.80	8.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	4,823.73	1,205.93	7.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	4,724.64	1,181.16	7.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	4,769.65	1,192.41	7.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	4,801.36	1,200.34	7.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	4,833.58	1,208.40	7.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	4,840.23	1,210.06	7.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	4,853.14	1,213.29	7.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	4,833.96	1,208.49	7.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	4,830.26	1,207.56	7.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	4,801.10	1,200.28	7.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	4,783.97	1,195.99	7.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	4,711.34	1,177.84	7.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	4,664.16	1,166.04	7.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	4,587.95	1,146.99	6.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	4,538.98	1,134.74	6.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	4,456.38	1,114.09	6.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	4,402.80	1,100.70	6.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	4,336.31	1,084.08	6.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	4,465.07	1,116.27	6.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	4,551.64	1,137.91	6.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	4,673.62	1,168.41	7.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	4,753.92	1,188.48	7.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	4,868.87	1,217.22	7.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	4,947.51	1,236.88	7.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	5,060.16	1,265.04	7.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	5,139.56	1,284.89	7.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	5,246.20	1,311.55	7.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	5,330.34	1,332.58	8.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	5,438.51	1,359.63	8.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	5,528.15	1,382.04	8.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	5,640.93	1,410.23	8.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	5,740.53	1,435.13	8.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	5,863.28	1,465.82	8.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	5,978.24	1,494.56	9.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	6,300.20	1,575.05	9.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	6,775.73	1,693.93	10.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	7,338.22	1,834.55	11.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	8,171.39	2,042.85	12.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	9,532.39	2,383.10	14.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	11,891.26	2,972.82	17.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	17,139.13	4,627.57	25.9%	7,061.26	1,906.54	10.7%	7,061.26	1,906.54	10.7%	7,061.26	1,906.54	10.7%
7:02 PM	37,319.69	5,224.76	56.3%	28,929.39	4,050.11	43.7%	28,929.39	4,050.11	43.7%	28,929.39	4,050.11	43.7%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Playground

PREVISION DESIGN

AUGUST 23

Mirror date: April 19
Analysis hours: 7:31 AM-6:52 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:31 AM	15,384.81	1,692.33	23.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	11,336.45	2,607.38	17.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	8,572.12	2,143.03	12.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	6,995.15	1,748.79	10.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	5,993.07	1,498.27	9.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	5,345.56	1,336.39	8.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	5,072.31	1,268.08	7.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	5,079.72	1,269.93	7.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	5,092.38	1,273.10	7.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	5,106.57	1,276.64	7.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	5,102.23	1,275.56	7.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	5,098.39	1,274.60	7.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	5,071.03	1,267.76	7.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	5,056.58	1,264.14	7.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	5,017.20	1,254.30	7.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	4,994.44	1,248.61	7.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	4,912.86	1,228.21	7.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	4,860.43	1,215.11	7.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	4,778.60	1,194.65	7.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	4,724.51	1,181.13	7.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	4,638.46	1,159.61	7.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	4,581.43	1,145.36	6.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	4,551.00	1,137.75	6.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	4,681.29	1,170.32	7.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	4,772.97	1,193.24	7.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	4,894.19	1,223.55	7.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	4,983.57	1,245.89	7.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	5,101.84	1,275.46	7.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	5,188.02	1,297.01	7.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	5,305.02	1,326.26	8.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	5,396.06	1,349.02	8.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	5,514.59	1,378.65	8.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	5,610.49	1,402.62	8.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	5,734.01	1,433.50	8.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	5,839.76	1,459.94	8.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	5,974.27	1,493.57	9.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	6,095.49	1,523.87	9.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	6,249.18	1,562.30	9.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	6,398.91	1,599.73	9.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	6,584.19	1,646.05	9.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	7,079.03	1,769.76	10.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	7,748.54	1,937.13	11.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	8,934.88	2,233.72	13.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	10,866.04	2,716.51	16.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	14,624.40	3,656.10	22.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	24,565.58	4,667.46	37.1%	25,587.49	4,861.62	38.6%	25,587.49	4,861.62	38.6%	25,587.49	4,861.62	38.6%
6:52 PM	37,969.76	2,278.19	57.3%	26,908.09	1,614.49	40.6%	26,908.09	1,614.49	40.6%	26,908.09	1,614.49	40.6%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Playground

PREVISION DESIGN

AUGUST 30

Mirror date: April 12
Analysis hours: 7:37 AM-6:42 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:37 AM	16,191.78	971.51	24.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	13,682.41	2,599.66	20.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	10,081.32	2,520.33	15.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	8,065.77	2,016.44	12.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	6,757.07	1,689.27	10.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	5,957.14	1,489.28	9.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	5,477.13	1,369.28	8.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	5,434.93	1,358.73	8.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	5,417.67	1,354.42	8.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	5,414.99	1,353.75	8.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	5,391.08	1,347.77	8.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	5,379.57	1,344.89	8.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	5,334.43	1,333.61	8.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	5,307.58	1,326.89	8.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	5,259.12	1,314.78	7.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	5,227.41	1,306.85	7.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	5,137.90	1,284.48	7.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	5,077.42	1,269.36	7.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	4,989.70	1,247.43	7.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	4,930.12	1,232.53	7.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	4,840.36	1,210.09	7.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	4,779.75	1,194.94	7.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	4,792.28	1,198.07	7.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	4,925.00	1,231.25	7.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	5,018.35	1,254.59	7.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	5,146.21	1,286.55	7.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	5,239.30	1,309.82	7.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	5,363.46	1,340.86	8.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	5,457.18	1,364.30	8.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	5,585.94	1,396.49	8.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	5,684.66	1,421.16	8.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	5,819.81	1,454.95	8.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	5,927.98	1,482.00	8.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	6,071.19	1,517.80	9.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	6,197.27	1,549.32	9.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	6,358.38	1,589.60	9.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	6,511.69	1,627.92	9.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	6,702.47	1,675.62	10.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	6,896.44	1,724.11	10.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	7,140.28	1,785.07	10.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	7,461.74	1,865.43	11.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	8,441.44	2,110.36	12.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	10,039.25	2,509.81	15.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	12,909.59	3,227.40	19.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	19,753.73	4,543.36	29.8%	379.38	87.26	0.6%	379.38	87.26	0.6%	379.38	87.26	0.6%
6:42 PM	40,258.94	4,428.48	60.8%	13,807.08	1,518.78	20.8%	13,807.08	1,518.78	20.8%	13,807.08	1,518.78	20.8%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Playground

PREVISION DESIGN

SEPTEMBER 6

Mirror date: April 5
Analysis hours: 7:44 AM-6:31 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:44 AM	17,036.84	2,214.79	25.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	11,990.74	2,997.69	18.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	9,348.27	2,337.07	14.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	7,656.73	1,914.18	11.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	6,662.06	1,665.52	10.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	5,964.43	1,491.11	9.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	5,838.35	1,459.59	8.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	5,785.93	1,446.48	8.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	5,758.05	1,439.51	8.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	5,712.27	1,428.07	8.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	5,684.91	1,421.23	8.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	5,624.56	1,406.14	8.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	5,585.69	1,396.42	8.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	5,524.70	1,381.17	8.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	5,483.27	1,370.82	8.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	5,384.43	1,346.11	8.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	5,315.00	1,328.75	8.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	5,220.63	1,305.16	7.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	5,155.93	1,288.98	7.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	5,061.82	1,265.46	7.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	4,995.46	1,248.86	7.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	5,056.20	1,264.05	7.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	5,191.86	1,297.97	7.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	5,291.85	1,322.96	8.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	5,423.04	1,355.76	8.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	5,522.27	1,380.57	8.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	5,655.89	1,413.97	8.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	5,761.12	1,440.28	8.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	5,899.34	1,474.84	8.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	6,012.89	1,503.22	9.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	6,161.08	1,540.27	9.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	6,289.59	1,572.40	9.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	6,457.48	1,614.37	9.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	6,609.13	1,652.28	10.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	6,800.92	1,700.23	10.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	6,991.83	1,747.96	10.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	7,232.47	1,808.12	10.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	7,484.75	1,871.19	11.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	7,807.36	1,951.84	11.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	8,292.35	2,073.09	12.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	9,468.59	2,367.15	14.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	11,942.92	2,985.73	18.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	16,539.44	4,465.65	25.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:31 PM	43,167.89	6,043.50	65.2%	1,240.43	173.66	1.9%	1,240.43	173.66	1.9%	1,240.43	173.66	1.9%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Playground

PREVISION DESIGN

SEPTEMBER 13

Mirror date: March 29
Analysis hours: 7:50 AM-6:21 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:50 AM	18,005.30	1,440.42	27.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	14,499.47	3,044.89	21.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	10,886.88	2,721.72	16.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	8,793.46	2,198.36	13.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	7,489.61	1,872.40	11.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	6,599.28	1,649.82	10.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	6,296.24	1,574.06	9.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	6,192.28	1,548.07	9.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	6,136.92	1,534.23	9.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	6,065.82	1,516.46	9.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	6,019.66	1,504.92	9.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	5,941.92	1,485.48	9.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	5,891.16	1,472.79	8.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	5,815.59	1,453.90	8.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	5,761.12	1,440.28	8.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	5,651.92	1,412.98	8.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	5,574.95	1,393.74	8.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	5,474.19	1,368.55	8.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	5,402.84	1,350.71	8.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	5,303.87	1,325.97	8.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	5,247.10	1,311.77	7.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	5,349.14	1,337.28	8.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	5,486.85	1,371.71	8.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	5,592.46	1,398.12	8.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	5,729.54	1,432.38	8.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	5,836.18	1,459.04	8.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	5,977.72	1,494.43	9.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	6,094.98	1,523.74	9.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	6,247.27	1,561.82	9.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	6,376.28	1,594.07	9.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	6,545.06	1,636.27	9.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	6,696.20	1,674.05	10.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	6,890.81	1,722.70	10.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	7,075.07	1,768.77	10.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	7,309.06	1,827.27	11.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	7,550.09	1,887.52	11.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	7,854.41	1,963.60	11.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	8,184.05	2,046.01	12.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	8,644.49	2,161.12	13.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	9,608.73	2,402.18	14.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	11,366.76	2,841.69	17.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	15,076.91	3,769.23	22.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	31,889.48	5,740.11	48.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:21 PM	46,446.11	2,322.31	70.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Playground

PREVISION DESIGN

SEPTEMBER 20

Fall equinox (Spring equinox on March 22 similar)
Analysis hours: 7:57 AM-6:09 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:57 AM	19,559.63	391.19	29.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	18,084.45	2,712.67	27.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	12,995.51	3,248.88	19.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	10,100.50	2,525.13	15.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	8,401.68	2,100.42	12.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	7,321.85	1,830.46	11.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	6,794.40	1,698.60	10.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	6,639.05	1,659.76	10.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	6,556.70	1,639.18	9.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	6,459.27	1,614.82	9.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	6,393.03	1,598.26	9.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	6,291.38	1,572.84	9.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	6,223.10	1,555.77	9.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	6,128.99	1,532.25	9.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	6,063.14	1,515.78	9.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	5,941.03	1,485.26	9.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	5,854.21	1,463.55	8.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	5,746.29	1,436.57	8.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	5,668.93	1,417.23	8.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	5,565.36	1,391.34	8.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	5,558.20	1,389.55	8.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	5,668.42	1,417.10	8.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	5,808.94	1,452.24	8.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	5,919.93	1,479.98	8.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	6,065.95	1,516.49	9.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	6,181.29	1,545.32	9.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	6,334.60	1,583.65	9.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	6,465.02	1,616.26	9.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	6,635.08	1,658.77	10.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	6,784.17	1,696.04	10.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	6,977.00	1,744.25	10.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	7,151.66	1,787.92	10.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	7,382.97	1,845.74	11.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	7,606.99	1,901.75	11.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	7,893.92	1,973.48	11.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	8,195.69	2,048.92	12.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	8,583.37	2,145.84	13.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	9,018.25	2,254.56	13.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	9,913.05	2,478.26	15.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	11,473.65	2,868.41	17.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	14,627.08	3,656.77	22.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	25,633.64	5,383.07	38.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:09 PM	52,645.18	4,211.61	79.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Playground

PREVISION DESIGN

SEPTEMBER 27

Mirror date: March 15
Analysis hours: 8:03 AM-5:58 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
8:03 AM	22,961.76	2,296.18	34.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	16,914.86	3,721.27	25.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	12,275.88	3,068.97	18.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	9,691.59	2,422.90	14.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	8,205.91	2,051.48	12.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	7,330.03	1,832.51	11.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	7,080.31	1,770.08	10.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	6,961.27	1,740.32	10.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	6,845.17	1,711.29	10.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	6,767.42	1,691.86	10.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	6,657.33	1,664.33	10.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	6,576.78	1,644.19	9.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	6,471.29	1,617.82	9.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	6,391.37	1,597.84	9.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	6,256.86	1,564.21	9.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	6,161.47	1,540.37	9.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	6,042.42	1,510.61	9.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	5,960.33	1,490.08	9.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	5,849.86	1,462.46	8.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	5,901.39	1,475.35	8.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	6,015.83	1,503.96	9.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	6,161.08	1,540.27	9.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	6,274.76	1,568.69	9.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	6,428.58	1,607.14	9.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	6,553.12	1,638.28	9.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	6,721.14	1,680.28	10.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	6,866.52	1,716.63	10.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	7,054.87	1,763.72	10.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	7,228.12	1,807.03	10.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	7,450.48	1,862.62	11.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	7,663.76	1,915.94	11.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	7,936.50	1,984.13	12.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	8,211.28	2,052.82	12.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	8,564.45	2,141.11	12.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	8,944.98	2,236.24	13.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	9,440.20	2,360.05	14.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	10,177.35	2,544.34	15.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	11,640.14	2,910.03	17.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	14,359.59	3,589.90	21.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	20,470.93	4,708.31	30.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:58 PM	57,293.23	6,302.25	86.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Playground

PREVISION DESIGN

OCTOBER 4

Mirror date: March 8
Analysis hours: 8:09 AM-5:47 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
8:09 AM	26,681.51	1,067.26	40.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	23,264.80	3,955.02	35.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	16,050.48	4,012.62	24.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	12,382.52	3,095.63	18.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	9,869.96	2,467.49	14.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	8,430.57	2,107.64	12.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	7,804.93	1,951.23	11.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	7,520.94	1,880.23	11.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	7,309.57	1,827.39	11.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	7,177.49	1,794.37	10.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	7,028.27	1,757.07	10.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	6,931.86	1,732.96	10.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	6,815.88	1,703.97	10.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	6,727.66	1,681.91	10.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	6,588.92	1,647.23	9.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	6,488.68	1,622.17	9.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	6,362.60	1,590.65	9.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	6,275.40	1,568.85	9.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	6,156.35	1,539.09	9.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	6,250.59	1,562.65	9.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	6,360.30	1,590.07	9.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	6,523.71	1,630.93	9.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	6,649.66	1,662.41	10.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	6,816.27	1,704.07	10.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	6,953.72	1,738.43	10.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	7,138.75	1,784.69	10.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	7,301.39	1,825.35	11.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	7,515.31	1,878.83	11.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	7,715.55	1,928.89	11.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	7,975.24	1,993.81	12.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	8,224.97	2,056.24	12.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	8,548.85	2,137.21	12.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	8,888.46	2,222.12	13.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	9,323.72	2,330.93	14.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	9,805.77	2,451.44	14.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	10,520.93	2,630.23	15.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	11,795.24	2,948.81	17.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	14,062.55	3,515.64	21.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	18,073.58	4,879.87	27.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:47 PM	61,751.40	8,645.20	93.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Playground

PREVISION DESIGN

OCTOBER 11

Mirror date: March 1

Analysis hours: 8:16 AM-5:37 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
8:16 AM	30,649.31	3,677.92	46.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	21,529.28	5,167.03	32.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	16,033.35	4,008.34	24.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	12,396.59	3,099.15	18.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	10,318.26	2,579.56	15.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	9,175.78	2,293.94	13.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	8,639.00	2,159.75	13.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	8,159.50	2,039.87	12.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	7,863.75	1,965.94	11.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	7,607.89	1,901.97	11.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	7,451.38	1,862.84	11.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	7,263.80	1,815.95	11.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	7,128.39	1,782.10	10.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	6,938.51	1,734.63	10.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	6,816.91	1,704.23	10.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	6,672.04	1,668.01	10.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	6,578.31	1,644.58	9.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	6,478.96	1,619.74	9.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	6,631.25	1,657.81	10.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	6,758.09	1,689.52	10.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	6,919.84	1,729.96	10.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	7,050.39	1,762.60	10.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	7,228.76	1,807.19	10.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	7,380.03	1,845.01	11.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	7,583.08	1,895.77	11.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	7,766.31	1,941.58	11.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	8,009.64	2,002.41	12.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	8,239.93	2,059.98	12.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	8,540.28	2,135.07	12.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	8,841.66	2,210.42	13.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	9,229.61	2,307.40	13.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	9,640.44	2,410.11	14.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	10,177.99	2,544.50	15.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	10,815.02	2,703.75	16.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	12,020.92	3,005.23	18.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	13,790.71	3,447.68	20.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	17,463.02	4,365.75	26.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	41,424.82	7,870.72	62.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:37 PM	64,353.98	3,861.24	97.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Playground

PREVISION DESIGN

OCTOBER 18

Mirror date: February 22
Analysis hours: 8:22 AM-5:27 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
8:22 AM	34,596.66	2,075.80	52.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	29,133.33	5,244.00	44.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	21,094.79	5,273.70	31.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	15,900.62	3,975.16	24.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	12,782.74	3,195.69	19.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	10,955.80	2,738.95	16.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	10,157.79	2,539.45	15.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	9,482.27	2,370.57	14.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	9,015.05	2,253.76	13.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	8,533.89	2,133.47	12.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	8,239.29	2,059.82	12.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	7,912.72	1,978.18	11.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	7,722.71	1,930.68	11.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	7,494.09	1,873.52	11.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	7,331.95	1,832.99	11.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	7,125.06	1,781.27	10.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	6,996.05	1,749.01	10.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	6,889.02	1,722.26	10.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	7,028.27	1,757.07	10.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	7,129.16	1,782.29	10.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	7,296.79	1,824.20	11.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	7,440.64	1,860.16	11.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	7,635.63	1,908.91	11.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	7,811.32	1,952.83	11.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	8,037.51	2,009.38	12.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	8,252.97	2,063.24	12.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	8,534.53	2,133.63	12.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	8,807.65	2,201.91	13.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	9,169.51	2,292.38	13.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	9,541.35	2,385.34	14.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	10,039.64	2,509.91	15.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	10,573.86	2,643.47	16.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	11,269.84	2,817.46	17.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	12,311.56	3,077.89	18.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	13,698.14	3,424.53	20.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	16,684.57	4,171.14	25.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	25,515.75	5,613.47	38.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:27 PM	66,019.69	6,601.97	99.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Playground

PREVISION DESIGN

OCTOBER 25

Mirror date: February 15
Analysis hours: 7:30 AM-4:18 PM (PST)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:30 AM	38,552.06	5,011.77	58.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	27,670.55	6,917.64	41.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	20,778.32	5,194.58	31.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	16,102.65	4,025.66	24.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	13,259.68	3,314.92	20.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	12,014.27	3,003.57	18.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	11,096.83	2,774.21	16.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	10,433.98	2,608.49	15.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	9,823.42	2,455.85	14.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	9,399.03	2,349.76	14.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	8,911.22	2,227.81	13.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	8,608.95	2,152.24	13.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	8,246.06	2,061.52	12.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	8,013.60	2,003.40	12.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	7,752.12	1,938.03	11.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	7,596.25	1,899.06	11.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	7,488.46	1,872.11	11.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	7,608.01	1,902.00	11.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	7,673.61	1,918.40	11.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	7,824.23	1,956.06	11.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	7,930.49	1,982.62	12.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	8,126.77	2,031.69	12.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	8,298.11	2,074.53	12.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	8,560.87	2,140.22	12.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	8,803.30	2,200.83	13.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	9,148.54	2,287.14	13.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	9,484.96	2,371.24	14.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	9,932.87	2,483.22	15.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	10,390.37	2,597.59	15.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	11,021.26	2,755.32	16.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	11,717.37	2,929.34	17.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	12,826.99	3,206.75	19.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	14,041.46	3,510.36	21.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	16,385.11	4,096.28	24.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	20,981.50	5,245.38	31.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	66,247.80	9,937.17	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:18 PM	66,249.08	1,987.47	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Playground

PREVISION DESIGN

NOVEMBER 1

Mirror date: February 8
Analysis hours: 7:36 AM-4:10 PM (PST)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:36 AM	42,445.57	2,971.19	64.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	35,444.79	6,734.51	53.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	26,491.50	6,622.87	40.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	20,297.29	5,074.32	30.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	16,344.19	4,086.05	24.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	14,249.11	3,562.28	21.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	13,012.26	3,253.07	19.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	12,129.35	3,032.34	18.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	11,301.67	2,825.42	17.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	10,745.97	2,686.49	16.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	10,127.74	2,531.93	15.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	9,745.93	2,436.48	14.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	9,284.97	2,321.24	14.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	8,980.53	2,245.13	13.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	8,620.97	2,155.24	13.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	8,412.93	2,103.23	12.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	8,250.16	2,062.54	12.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	8,343.88	2,085.97	12.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	8,365.11	2,091.28	12.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	8,503.07	2,125.77	12.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	8,582.35	2,145.59	13.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	8,776.84	2,194.21	13.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	8,950.48	2,237.62	13.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	9,232.93	2,308.23	13.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	9,487.51	2,371.88	14.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	9,858.58	2,464.65	14.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	10,232.20	2,558.05	15.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	10,791.87	2,697.97	16.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	11,390.80	2,847.70	17.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	12,244.81	3,061.20	18.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	13,273.37	3,318.34	20.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	14,880.51	3,720.13	22.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	16,560.16	4,140.04	25.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	20,292.82	5,073.20	30.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	52,705.02	11,068.05	79.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:10 PM	66,249.08	5,962.42	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Playground

PREVISION DESIGN

NOVEMBER 8

Mirror date: February 1
Analysis hours: 7:43 AM-4:03 PM (PST)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:43 AM	46,085.15	460.85	69.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	45,018.36	5,852.39	68.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	33,205.22	8,301.31	50.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	25,595.41	6,398.85	38.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	19,966.63	4,991.66	30.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	16,924.19	4,231.05	25.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	15,146.60	3,786.65	22.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	14,005.91	3,501.48	21.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	12,960.73	3,240.18	19.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	12,280.23	3,070.06	18.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	11,486.70	2,871.67	17.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	11,002.47	2,750.62	16.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	10,461.34	2,615.33	15.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	10,112.14	2,528.03	15.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	9,694.66	2,423.66	14.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	9,444.42	2,361.11	14.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	9,242.78	2,310.69	14.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	9,305.56	2,326.39	14.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	9,279.22	2,319.81	14.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	9,398.39	2,349.60	14.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	9,440.46	2,360.11	14.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	9,647.60	2,411.90	14.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	9,801.42	2,450.36	14.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	10,121.60	2,530.40	15.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	10,396.64	2,599.16	15.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	10,881.25	2,720.31	16.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	11,355.76	2,838.94	17.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	12,153.00	3,038.25	18.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	12,967.51	3,241.88	19.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	14,129.17	3,532.29	21.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	15,556.67	3,889.17	23.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	17,166.37	4,291.59	25.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	19,857.94	4,964.49	30.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	24,920.03	6,230.01	37.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	66,249.08	9,937.36	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:03 PM	66,249.08	1,987.47	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Playground

PREVISION DESIGN

NOVEMBER 15

Mirror date: January 25
Analysis hours: 7:51 AM-3:57 PM (PST)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:51 AM	49,304.94	3,944.39	74.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	40,963.22	8,192.64	61.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	31,690.14	7,922.53	47.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	24,209.60	6,052.40	36.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	20,078.26	5,019.56	30.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	17,500.23	4,375.06	26.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	16,030.03	4,007.51	24.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	14,705.59	3,676.40	22.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	13,882.26	3,470.57	21.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	12,975.05	3,243.76	19.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	12,353.88	3,088.47	18.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	11,704.58	2,926.14	17.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	11,296.69	2,824.17	17.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	10,824.35	2,706.09	16.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	10,555.83	2,638.96	15.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	10,332.20	2,583.05	15.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	10,381.30	2,595.32	15.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	10,300.87	2,575.22	15.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	10,408.91	2,602.23	15.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	10,425.15	2,606.29	15.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	10,652.76	2,663.19	16.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	10,817.06	2,704.27	16.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	11,205.90	2,801.48	16.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	11,554.08	2,888.52	17.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	12,150.45	3,037.61	18.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	12,754.87	3,188.72	19.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	13,717.95	3,429.49	20.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	14,714.80	3,678.70	22.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	16,087.31	4,021.83	24.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	17,688.57	4,422.14	26.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	19,663.97	4,915.99	29.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	23,479.74	5,869.94	35.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	48,259.12	11,099.60	72.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:57 PM	66,249.08	7,287.40	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Playground

PREVISION DESIGN

NOVEMBER 22

Mirror date: January 18
Analysis hours: 7:57 AM-3:54 PM (PST)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:57 AM	51,526.22	1,030.52	77.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	49,694.03	7,454.10	75.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	38,209.51	9,552.38	57.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	29,244.32	7,311.08	44.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	23,580.50	5,895.13	35.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	20,022.64	5,005.66	30.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	18,134.57	4,533.64	27.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	16,513.10	4,128.28	24.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	15,511.02	3,877.75	23.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	14,479.78	3,619.94	21.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	13,738.03	3,434.51	20.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	12,981.06	3,245.27	19.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	12,505.40	3,126.35	18.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	11,957.75	2,989.44	18.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	11,657.78	2,914.45	17.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	11,405.88	2,851.47	17.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	11,451.41	2,862.85	17.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	11,346.43	2,836.61	17.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	11,457.54	2,864.39	17.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	11,478.51	2,869.63	17.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	11,740.51	2,935.13	17.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	11,914.41	2,978.60	18.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	12,344.04	3,086.01	18.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	12,729.94	3,182.48	19.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	13,400.98	3,350.24	20.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	14,094.01	3,523.50	21.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	15,194.29	3,798.57	22.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	16,319.77	4,079.94	24.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	17,884.08	4,471.02	27.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	19,557.20	4,889.30	29.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	22,134.72	5,533.68	33.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	28,369.85	7,092.46	42.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	66,249.08	13,249.82	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:54 PM	66,249.08	5,299.93	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Playground

PREVISION DESIGN

NOVEMBER 29

Mirror date: January 11
Analysis hours: 8:04 AM-3:51 PM (PST)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
8:04 AM	53,186.05	4,786.74	80.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	44,932.82	9,435.89	67.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	34,809.68	8,702.42	52.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	27,364.56	6,841.14	41.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	22,724.95	5,681.24	34.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	20,192.44	5,048.11	30.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	18,274.07	4,568.52	27.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	17,047.33	4,261.83	25.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	15,903.95	3,975.99	24.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	15,049.68	3,762.42	22.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	14,197.32	3,549.33	21.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	13,638.04	3,409.51	20.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	13,020.32	3,255.08	19.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	12,682.37	3,170.59	19.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	12,369.23	3,092.31	18.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	12,399.27	3,099.82	18.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	12,281.25	3,070.31	18.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	12,394.54	3,098.64	18.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	12,405.67	3,101.42	18.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	12,689.91	3,172.48	19.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	12,871.87	3,217.97	19.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	13,331.03	3,332.76	20.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	13,739.44	3,434.86	20.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	14,468.91	3,617.23	21.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	15,226.00	3,806.50	23.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	16,431.14	4,107.79	24.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	17,635.25	4,408.81	26.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	19,379.34	4,844.84	29.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	21,112.31	5,278.08	31.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	25,407.32	6,351.83	38.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	50,633.21	12,658.30	76.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	66,249.08	11,924.83	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:51 PM	66,249.08	3,312.45	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Playground

PREVISION DESIGN

DECEMBER 6

Mirror date: January 4
Analysis hours: 8:10 AM-3:51 PM (PST)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
8:10 AM	54,557.79	2,182.31	82.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	50,971.92	8,665.23	76.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	40,114.58	10,028.64	60.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	31,292.09	7,823.02	47.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	25,414.35	6,353.59	38.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	22,113.50	5,528.37	33.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	19,840.94	4,960.23	29.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	18,392.86	4,598.21	27.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	17,125.58	4,281.39	25.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	16,187.68	4,046.92	24.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	15,236.49	3,809.12	23.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	14,609.95	3,652.49	22.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	13,914.87	3,478.72	21.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	13,536.77	3,384.19	20.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	13,150.10	3,287.53	19.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	13,182.84	3,295.71	19.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	13,023.52	3,255.88	19.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	13,122.48	3,280.62	19.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	13,129.39	3,282.35	19.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	13,420.03	3,355.01	20.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	13,609.01	3,402.25	20.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	14,083.65	3,520.91	21.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	14,503.43	3,625.86	21.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	15,264.88	3,816.22	23.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	16,054.58	4,013.64	24.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	17,319.68	4,329.92	26.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	18,582.23	4,645.56	28.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	20,427.46	5,106.86	30.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	22,208.12	5,552.03	33.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	32,357.60	8,089.40	48.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	65,409.64	16,352.41	98.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	66,249.08	11,262.34	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:51 PM	66,249.08	3,312.45	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Playground

PREVISION DESIGN

DECEMBER 13

Mirror date: December 28
Analysis hours: 8:15 AM-3:52 PM (PST)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
8:15 AM	55,525.87	6,663.10	83.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	45,019.51	11,254.88	68.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	35,003.01	8,750.75	52.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	27,926.41	6,981.60	42.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	23,788.03	5,947.01	35.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	21,105.79	5,276.45	31.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	19,448.65	4,862.16	29.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	18,045.96	4,511.49	27.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	17,059.09	4,264.77	25.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	16,010.33	4,002.58	24.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	15,327.15	3,831.79	23.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	14,575.68	3,643.92	22.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	14,148.10	3,537.02	21.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	13,672.43	3,418.11	20.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	13,705.55	3,426.39	20.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	13,532.29	3,383.07	20.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	13,619.11	3,404.78	20.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	13,607.73	3,401.93	20.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	13,881.75	3,470.44	21.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	14,062.81	3,515.70	21.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	14,540.26	3,635.07	21.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	14,954.55	3,738.64	22.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	15,714.58	3,928.65	23.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	16,501.08	4,125.27	24.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	17,784.09	4,446.02	26.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	19,059.68	4,764.92	28.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	20,913.86	5,228.47	31.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	22,729.94	5,682.48	34.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	34,326.86	8,581.71	51.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	66,249.08	16,562.27	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	66,249.08	11,924.83	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:52 PM	66,249.08	3,974.94	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Playground

PREVISION DESIGN

DECEMBER 20

Winter solstice (December 21 similar)
Analysis hours: 8:19 AM-3:54 PM (PST)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
8:19 AM	55,901.79	4,472.14	84.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	48,349.01	10,153.29	73.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	38,040.34	9,510.08	57.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	29,758.09	7,439.52	44.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	25,120.39	6,280.10	37.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	21,949.96	5,487.49	33.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	20,120.20	5,030.05	30.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	18,586.19	4,646.55	28.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	17,569.02	4,392.25	26.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	16,434.21	4,108.55	24.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	15,723.02	3,930.75	23.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	14,923.22	3,730.80	22.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	14,467.12	3,616.78	21.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	13,919.22	3,479.80	21.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	13,930.34	3,482.59	21.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	13,736.75	3,434.19	20.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	13,803.88	3,450.97	20.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	13,771.91	3,442.98	20.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	14,025.34	3,506.34	21.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	14,194.00	3,548.50	21.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	14,654.70	3,663.68	22.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	15,046.35	3,761.59	22.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	15,782.60	3,945.65	23.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	16,529.09	4,132.27	24.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	17,778.85	4,444.71	26.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	19,041.27	4,760.32	28.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	20,823.59	5,205.90	31.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	22,654.50	5,663.62	34.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	28,804.08	7,201.02	43.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	66,249.08	16,562.27	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	66,249.08	13,912.31	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:54 PM	66,249.08	5,299.93	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

THEORETICAL ANNUAL AVAILABLE SUNLIGHT (TAAS) CALCULATION	GRATTAN ELEMENTARY SCHOOL
Total plan area of Grattan Elementary School	0.70 acres (30,398 sf)
Total hours of annual sunlight from 1-hr after sunrise through 1-hr before sunset	3721.4 hrs
Theoretical Annual Available Sunlight (plan area x hours of annual sunlight)	113,121,457 sfh

EXISTING SHADOW CONDITIONS SUMMARY	GRATTAN ELEMENTARY SCHOOL
Total annual existing shadow load (existing shadow sfh ÷ TAAS sfh)	28.01%
Total annual existing shadow in square-foot-hours (sfh)	31,685,678 sfh
Range in existing shadow area coverage throughout the year	Between 10% - 100%
Time of year / time of day most affected by existing shadow	Fall / Early Morning (before 8:00 AM)

UCSF HOSPITAL PROJECT NET NEW SHADOW SCENARIO SUMMARY	GRATTAN ELEMENTARY SCHOOL
Annual net new hospital project-only shadow load / total existing + hospital project shadow load	0.05% / 28.06%
Annual net new sfh hospital project shadow / total existing + hospital project sfh	60,949 sfh / 31,746,627 sfh
Number of days annually when new shading from hospital project would occur	Up to 68 days a year
Dates when net new shadow from hospital project would be cast annually	3/23 - 4/25 & 8/17 - 9/19
Date(s) with most annual sfh net new hospital project shadow (shadow load / net new sfh)	September 6 & April 5
Time of year / time of day most affected by hospital project net new shadow overall	Spring / Late Afternoon (after 4:00 PM)
Date(s) with largest shadow area from the hospital project (area and time shadow occurs)	Sep 6/Apr 5 (11,902 sf @ 6:31 PM)
Range in hospital project net new shadow percentage coverage (area range)	Between 0% - 39% (0 - 11,902 sf)
Average hospital project net new shadow coverage on affected dates (shadow area)	36.44% (11,077 sf)
Date(s) with the longest duration of net new shadow (duration)	Aug 30/Apr 12 (20 min +/- 7 min)
Range in daily hospital project net new shadow duration (margin of error)	Between zero minutes up to 20 min (+/- 7 min)
Average daily hospital project net new shadow duration on affected dates	13.8 minutes

NEAR TERM CUMULATIVE (2030) NET NEW SHADOW SCENARIO SUMMARY	GRATTAN ELEMENTARY SCHOOL
Annual net new 2030 cumulative condition shadow load / total existing + 2030 cumulative shadow load	0.05% / 28.06%
Annual net new sfh 2030 cumulative shadow / total existing + 2030 cumulative sfh	60,949 sfh / 31,746,627 sfh
Number of days annually when new shading from 2030 cumulative would occur	Up to 68 days a year
Dates when net new shadow from 2030 cumulative would be cast annually	3/23 - 4/25 & 8/17 - 9/19
Date(s) with most annual sfh net new 2030 cumulative shadow (shadow load / net new sfh)	September 6 & April 5
Time of year / time of day most affected by 2030 cumulative net new shadow overall	Spring / Late Afternoon (after 4:00 PM)
Date(s) with largest shadow area from the 2030 cumulative (area and time shadow occurs)	Sep 6/Apr 5 (11,902 sf @ 6:31 PM)
Range in 2030 cumulative net new shadow percentage coverage (area range)	Between 0% - 39% (0 - 11,902 sf)
Average 2030 cumulative net new shadow coverage on affected dates (shadow area)	36.44% (11,077 sf)
Date(s) with the longest duration of net new shadow (duration)	Aug 30/Apr 12 (20 min +/- 7 min)
Range in daily 2030 cumulative net new shadow duration (margin of error)	Between zero minutes up to 20 min (+/- 7 min)
Average daily 2030 cumulative net new shadow duration on affected dates	13.8 minutes

LONG TERM CUMULATIVE (2050) NET NEW SHADOW SCENARIO SUMMARY	GRATTAN ELEMENTARY SCHOOL
Annual net new 2050 cumulative shadow load / total existing + 2050 cumulative shadow load	0.05% / 28.06%
Annual net new sfh 2050 cumulative shadow / total existing + 2050 cumulative sfh	60,949 sfh / 31,746,627 sfh
Number of days annually when new shading from 2050 cumulative would occur	Up to 68 days a year
Dates when net new shadow from 2050 cumulative would be cast annually	3/23 - 4/25 & 8/17 - 9/19
Date(s) with most annual sfh net new 2050 cumulative shadow (shadow load / net new sfh)	September 6 & April 5
Time of year / time of day most affected by 2050 cumulative net new shadow overall	Spring / Late Afternoon (after 4:00 PM)
Date(s) with largest shadow area from the 2050 cumulative (area and time shadow occurs)	Sep 6/Apr 5 (11,902 sf @ 6:31 PM)
Range in 2050 cumulative net new shadow percentage coverage (area range)	Between 0% - 39% (0 - 11,902 sf)
Average 2050 cumulative net new shadow coverage on affected dates (shadow area)	36.44% (11,077 sf)
Date(s) with the longest duration of net new shadow (duration)	Aug 30/Apr 12 (20 min +/- 7 min)
Range in daily 2050 cumulative net new shadow duration (margin of error)	Between zero minutes up to 20 min (+/- 7 min)
Average daily 2050 cumulative net new shadow duration on affected dates	13.8 minutes

THEORETICAL ANNUAL AVAILABLE SUNLIGHT (TAAS)	GRATTAN ELEMENTARY
Area of Grattan Elementary	0.70 acres (30,398 sf)
Hours of annual available sunlight	3721.4 hrs
TAAS for Grattan Elementary	113,121,457 sfh

EXISTING (CURRENT) LEVELS OF SHADOW	GRATTAN ELEMENTARY
Existing annual total shading on park (sfh)	31,685,678 sfh
Existing shading as percentage of TAAS	28.01%

NEW SHADOW CAST BY THE PROPOSED UCSF PARNASSUS PROJECT	GRATTAN ELEMENTARY
Additional annual shading on Grattan Elementary from Project	72,263 sfh
Additional annual shading from Project as percentage of TAAS	0.06%
Combined total annual shading existing + Project (sfh)	31,757,941 sfh
Combined total annual shading from existing + Project as percentage of TAAS	28.07%
Number of days when new shading from Project would occur	56-68 days annually
Dates when new shadow from Project would be cast on Grattan Elementary	Between 3/23 - 4/25 & 8/17 - 9/19
Annual range in duration of new Project shadow (duration variance +/- 6 min.)	Zero to approx. 20 min
Range in area of new Project shadow (sf)	Zero to 11,866 sf
Average daily duration of new Project shadow (when present)	Approx. 15 min.
MAXIMUM NEW SHADING BY THE PROPOSED PROJECT	GRATTAN ELEMENTARY
Dates of maximum new shading from proposed Project (max sfh)	Apr 5 & Sep 6
Total new shading on date(s) of maximum shading (sfh)	1,661.22 sfh
Percentage new shadow on date(s) of maximum shading	0.51%
Date and duration of longest duration of new shading (duration variance +/- 6 min.)	Approx. 20 min on Aug 30 & Apr 12
Date and time of largest area of new Project shadow	11,866 sf on Sep 6/Apr 5 at 6:31 PM
Percentage of Grattan Elementary covered by largest new shadow	39.04%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Elementary School

PREVISION DESIGN

JUNE 21

Summer solstice

Analysis hours: 6:46 AM-7:36 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
6:46 AM	18,419.87	2,026.19	60.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 AM	16,065.15	3,694.98	52.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 AM	14,053.63	3,513.41	46.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 AM	12,342.20	3,085.55	40.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	10,784.44	2,696.11	35.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	9,580.16	2,395.04	31.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	8,711.33	2,177.83	28.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	7,970.96	1,992.74	26.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	7,278.26	1,819.56	23.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	6,706.62	1,676.66	22.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	6,213.16	1,553.29	20.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	5,917.13	1,479.28	19.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	5,637.97	1,409.49	18.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	5,369.11	1,342.28	17.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	5,118.50	1,279.63	16.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	4,866.95	1,216.74	16.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	4,631.34	1,157.84	15.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	4,400.52	1,100.13	14.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	4,181.50	1,045.37	13.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	3,967.77	991.94	13.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	3,758.24	939.56	12.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	3,550.96	887.74	11.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	3,345.71	836.43	11.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	3,150.89	787.72	10.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	3,025.11	756.28	10.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	2,965.77	741.44	9.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	3,119.08	779.77	10.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	3,315.42	828.86	10.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	3,560.16	890.04	11.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	3,800.48	950.12	12.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	4,048.48	1,012.12	13.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	4,302.05	1,075.51	14.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	4,562.80	1,140.70	15.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	4,825.08	1,206.27	15.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	5,108.29	1,277.07	16.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	5,388.89	1,347.22	17.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	5,688.76	1,422.19	18.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	5,989.58	1,497.39	19.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	6,332.27	1,583.07	20.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	6,705.32	1,676.33	22.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	7,124.81	1,781.20	23.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	7,690.79	1,922.70	25.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	8,357.34	2,089.33	27.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	9,021.71	2,255.43	29.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	9,682.97	2,420.74	31.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	10,434.64	2,608.66	34.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	11,401.50	2,850.37	37.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	12,710.25	3,177.56	41.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	14,329.01	3,582.25	47.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 PM	16,650.99	4,162.75	54.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 PM	19,059.32	5,717.80	62.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:36 PM	24,543.98	4,417.92	80.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Elementary School

PREVISION DESIGN

JUNE 28

Mirror date: June 14
Analysis hours: 6:48 AM-7:36 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
6:48 AM	18,370.68	1,837.07	60.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 AM	16,363.57	3,599.99	53.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 AM	14,281.78	3,570.44	47.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 AM	12,562.16	3,140.54	41.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	10,978.68	2,744.67	36.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	9,723.40	2,430.85	32.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	8,812.55	2,203.14	29.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	8,068.19	2,017.05	26.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	7,358.46	1,839.61	24.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	6,776.39	1,694.10	22.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	6,263.66	1,565.91	20.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	5,962.91	1,490.73	19.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	5,679.49	1,419.87	18.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	5,408.09	1,352.02	17.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	5,154.80	1,288.70	17.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	4,899.48	1,224.87	16.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	4,662.28	1,165.57	15.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	4,429.79	1,107.45	14.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	4,208.52	1,052.13	13.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	3,992.40	998.10	13.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	3,783.74	945.94	12.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	3,576.46	894.12	11.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	3,368.24	842.06	11.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	3,171.10	792.77	10.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	3,039.09	759.77	10.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	2,970.85	742.71	9.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	3,105.10	776.27	10.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	3,300.93	825.23	10.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	3,541.03	885.26	11.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	3,781.86	945.46	12.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	4,031.38	1,007.84	13.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	4,284.16	1,071.04	14.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	4,545.63	1,136.41	15.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	4,809.93	1,202.48	15.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	5,085.17	1,271.29	16.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	5,370.27	1,342.57	17.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	5,668.76	1,417.19	18.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	5,974.14	1,493.54	19.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	6,312.85	1,578.21	20.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	6,681.84	1,670.46	22.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	7,088.80	1,772.20	23.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	7,639.21	1,909.80	25.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	8,292.78	2,073.20	27.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	8,962.59	2,240.65	29.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	9,613.85	2,403.46	31.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	10,371.10	2,592.78	34.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	11,295.21	2,823.80	37.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	12,590.20	3,147.55	41.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	14,166.51	3,541.63	46.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 PM	16,438.42	4,109.60	54.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 PM	18,885.29	5,665.59	62.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:36 PM	24,490.95	4,408.37	80.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Elementary School

PREVISION DESIGN

JULY 5

Mirror date: June 7
Analysis hours: 6:52 AM-7:36 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
6:52 AM	18,211.43	1,092.69	59.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 AM	16,774.15	3,187.09	55.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 AM	14,610.05	3,652.51	48.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 AM	12,872.90	3,218.22	42.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	11,269.93	2,817.48	37.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	9,948.57	2,487.14	32.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	8,970.49	2,242.62	29.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	8,226.78	2,056.70	27.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	7,493.87	1,873.47	24.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	6,885.14	1,721.28	22.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	6,362.19	1,590.55	20.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	6,044.78	1,511.20	19.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	5,751.94	1,437.98	18.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	5,474.60	1,368.65	18.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	5,207.62	1,301.90	17.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	4,947.95	1,236.99	16.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	4,704.45	1,176.11	15.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	4,469.85	1,117.46	14.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	4,246.12	1,061.53	14.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	4,025.87	1,006.47	13.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	3,814.75	953.69	12.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	3,604.43	901.11	11.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	3,399.83	849.96	11.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	3,196.89	799.22	10.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	3,056.19	764.05	10.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	2,983.38	745.84	9.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	3,100.32	775.08	10.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	3,297.96	824.49	10.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	3,539.15	884.79	11.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	3,776.21	944.05	12.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	4,031.38	1,007.84	13.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	4,282.06	1,070.51	14.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	4,548.60	1,137.15	15.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	4,811.60	1,202.90	15.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	5,090.97	1,272.74	16.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	5,376.28	1,344.07	17.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	5,678.55	1,419.64	18.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	5,988.20	1,497.05	19.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	6,326.11	1,581.53	20.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	6,697.49	1,674.37	22.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	7,109.45	1,777.36	23.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	7,609.94	1,902.48	25.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	8,252.94	2,063.23	27.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	8,918.90	2,229.73	29.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	9,560.67	2,390.17	31.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	10,315.17	2,578.79	33.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	11,234.14	2,808.53	37.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	12,511.08	3,127.77	41.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	14,079.28	3,519.82	46.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 PM	16,364.52	4,091.13	53.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 PM	18,874.64	5,662.39	62.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:36 PM	24,312.57	4,376.26	80.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Elementary School

PREVISION DESIGN

JULY 12

Mirror date: May 31
Analysis hours: 6:56 AM-7:33 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
6:56 AM	17,954.37	538.63	59.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 AM	17,269.71	2,590.46	56.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 AM	15,032.15	3,758.04	49.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 AM	13,280.65	3,320.16	43.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	11,664.64	2,916.16	38.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	10,263.52	2,565.88	33.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	9,193.49	2,298.37	30.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	8,425.37	2,106.34	27.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	7,676.37	1,919.09	25.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	7,016.28	1,754.07	23.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	6,506.51	1,626.63	21.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	6,159.47	1,539.87	20.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	5,851.78	1,462.94	19.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	5,560.38	1,390.09	18.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	5,281.59	1,320.40	17.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	5,010.55	1,252.64	16.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	4,761.75	1,190.44	15.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	4,519.62	1,129.91	14.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	4,291.84	1,072.96	14.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	4,069.20	1,017.30	13.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	3,852.35	963.09	12.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	3,639.64	909.91	12.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	3,429.60	857.40	11.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	3,223.99	806.00	10.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	3,078.94	769.74	10.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	2,998.88	749.72	9.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	3,110.68	777.67	10.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	3,307.02	826.75	10.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	3,546.97	886.74	11.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	3,789.76	947.44	12.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	4,049.06	1,012.26	13.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	4,302.34	1,075.59	14.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	4,571.64	1,142.91	15.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	4,837.03	1,209.26	15.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	5,116.33	1,279.08	16.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	5,406.49	1,351.62	17.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	5,712.09	1,428.02	18.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	6,033.48	1,508.37	19.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	6,376.68	1,594.17	21.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	6,751.25	1,687.81	22.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	7,169.65	1,792.41	23.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	7,605.73	1,901.43	25.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	8,247.07	2,061.77	27.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	8,878.40	2,219.60	29.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	9,527.13	2,381.78	31.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	10,271.85	2,567.96	33.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	11,224.94	2,806.23	36.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	12,478.41	3,119.60	41.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	14,061.82	3,515.45	46.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 PM	16,402.77	4,100.69	54.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 PM	19,070.84	5,339.83	62.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:33 PM	24,024.87	3,603.73	79.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Elementary School

PREVISION DESIGN

JULY 19

Mirror date: May 24
Analysis hours: 7:01 AM-7:30 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:01 AM	17,627.55	2,291.58	58.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:16 AM	15,381.07	3,691.46	50.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 AM	13,757.38	3,301.77	45.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	12,150.71	3,037.68	40.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	10,663.15	2,665.79	35.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	9,499.16	2,374.79	31.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	8,679.96	2,169.99	28.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	7,905.61	1,976.40	26.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	7,186.24	1,796.56	23.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	6,695.83	1,673.96	22.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	6,303.51	1,575.88	20.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	5,978.78	1,494.70	19.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	5,659.85	1,414.96	18.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	5,364.62	1,341.15	17.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	5,084.02	1,271.00	16.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	4,827.54	1,206.88	15.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	4,578.60	1,144.65	15.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	4,343.79	1,085.95	14.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	4,114.84	1,028.71	13.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	3,894.16	973.54	12.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	3,676.52	919.13	12.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	3,460.61	865.15	11.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	3,252.82	813.21	10.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	3,103.21	775.80	10.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	3,020.91	755.23	9.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	3,131.69	782.92	10.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	3,334.26	833.56	11.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	3,576.90	894.22	11.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	3,823.08	955.77	12.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	4,083.47	1,020.87	13.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	4,341.25	1,085.31	14.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	4,614.61	1,153.65	15.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	4,884.12	1,221.03	16.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	5,171.39	1,292.85	17.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	5,465.76	1,366.44	18.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	5,783.24	1,445.81	19.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	6,110.35	1,527.59	20.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	6,471.52	1,617.88	21.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	6,852.03	1,713.01	22.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	7,277.10	1,819.27	23.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	7,709.48	1,927.37	25.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	8,284.96	2,071.24	27.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	8,854.71	2,213.68	29.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	9,523.58	2,380.89	31.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	10,265.33	2,566.33	33.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	11,276.74	2,819.18	37.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	12,505.86	3,126.47	41.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	14,143.97	3,535.99	46.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 PM	16,608.38	4,152.10	54.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 PM	19,465.55	4,866.39	64.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 PM	23,618.42	3,070.40	77.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Elementary School

PREVISION DESIGN

JULY 26

Mirror date: May 17
Analysis hours: 7:07 AM-7:25 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:07 AM	17,388.10	1,043.29	57.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 AM	16,196.72	3,077.38	53.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 AM	14,345.46	3,586.36	47.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	12,756.76	3,189.19	42.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	11,195.01	2,798.75	36.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	9,918.14	2,479.54	32.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	8,995.56	2,248.89	29.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	8,167.88	2,041.97	26.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	7,444.31	1,861.08	24.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	6,918.10	1,729.53	22.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	6,475.79	1,618.95	21.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	6,116.29	1,529.07	20.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	5,772.51	1,443.13	19.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	5,462.43	1,365.61	18.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	5,169.36	1,292.34	17.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	4,899.85	1,224.96	16.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	4,643.73	1,160.93	15.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	4,401.60	1,100.40	14.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	4,164.69	1,041.17	13.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	3,939.08	984.77	13.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	3,715.93	928.98	12.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	3,493.79	873.45	11.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	3,281.44	820.36	10.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	3,129.30	782.32	10.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	3,047.64	761.91	10.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	3,168.06	792.01	10.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	3,376.50	844.12	11.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	3,625.73	906.43	11.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	3,875.25	968.81	12.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	4,138.61	1,034.65	13.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	4,399.57	1,099.89	14.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	4,677.78	1,169.45	15.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	4,957.23	1,239.31	16.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	5,255.07	1,313.77	17.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	5,553.06	1,388.27	18.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	5,877.28	1,469.32	19.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	6,218.52	1,554.63	20.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	6,596.28	1,649.07	21.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	6,998.52	1,749.63	23.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	7,432.43	1,858.11	24.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	7,877.57	1,969.39	25.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	8,335.60	2,083.90	27.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	8,856.31	2,214.08	29.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	9,529.81	2,382.45	31.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	10,305.75	2,576.44	33.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	11,351.65	2,837.91	37.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	12,577.45	3,144.36	41.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	14,350.60	3,587.65	47.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 PM	16,936.51	4,234.13	55.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 PM	20,056.24	4,211.81	66.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:25 PM	23,058.38	2,075.25	75.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Elementary School

PREVISION DESIGN

AUGUST 2

Mirror date: May 10
Analysis hours: 7:12 AM-7:18 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:12 AM	17,254.50	345.09	56.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 AM	16,898.48	2,534.77	55.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 AM	14,988.60	3,747.15	49.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	13,432.87	3,358.22	44.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	11,871.92	2,967.98	39.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	10,431.02	2,607.76	34.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	9,346.51	2,336.63	30.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	8,493.40	2,123.35	27.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	7,747.74	1,936.93	25.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	7,167.48	1,791.87	23.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	6,652.07	1,663.02	21.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	6,261.70	1,565.43	20.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	5,897.13	1,474.28	19.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	5,567.77	1,391.94	18.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	5,262.10	1,315.52	17.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	4,979.76	1,244.94	16.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	4,712.49	1,178.12	15.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	4,461.66	1,115.42	14.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	4,217.00	1,054.25	13.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	3,981.97	995.49	13.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	3,752.59	938.15	12.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	3,527.99	882.00	11.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	3,308.47	827.12	10.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	3,152.41	788.10	10.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	3,078.07	769.52	10.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	3,219.13	804.78	10.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	3,440.25	860.06	11.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	3,693.11	923.28	12.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	3,949.07	987.27	13.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	4,216.78	1,054.20	13.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	4,490.79	1,122.70	14.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	4,772.62	1,193.16	15.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	5,057.72	1,264.43	16.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	5,361.07	1,340.27	17.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	5,670.65	1,417.66	18.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	6,012.83	1,503.21	19.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	6,366.54	1,591.63	20.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	6,765.16	1,691.29	22.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	7,193.27	1,798.32	23.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	7,640.22	1,910.06	25.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	8,109.12	2,027.28	26.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	8,491.37	2,122.84	27.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	8,886.81	2,221.70	29.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	9,512.78	2,378.20	31.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	10,407.40	2,601.85	34.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	11,481.56	2,870.39	37.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	12,847.11	3,211.78	42.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	14,761.91	3,690.48	48.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 PM	17,545.61	4,386.40	57.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 PM	21,242.11	3,186.32	69.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:18 PM	22,402.12	672.06	73.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Elementary School

PREVISION DESIGN

AUGUST 9

Mirror date: May 3
Analysis hours: 7:19 AM-7:10 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:19 AM	17,250.37	1,552.53	56.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 AM	15,789.33	3,315.76	51.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	14,256.27	3,564.07	46.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	12,661.13	3,165.28	41.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	11,024.97	2,756.24	36.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	9,768.39	2,442.10	32.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	8,905.14	2,226.28	29.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	8,095.79	2,023.95	26.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	7,420.48	1,855.12	24.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	6,844.64	1,711.16	22.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	6,421.17	1,605.29	21.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	6,032.76	1,508.19	19.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	5,683.62	1,420.90	18.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	5,361.07	1,340.27	17.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	5,064.53	1,266.13	16.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	4,786.89	1,196.72	15.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	4,523.10	1,130.78	14.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	4,271.70	1,067.92	14.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	4,027.18	1,006.79	13.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	3,789.68	947.42	12.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	3,559.07	889.77	11.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	3,332.37	833.09	11.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	3,181.24	795.31	10.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	3,114.52	778.63	10.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	3,288.54	822.14	10.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	3,518.28	879.57	11.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	3,778.02	944.50	12.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	4,038.48	1,009.62	13.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	4,314.08	1,078.52	14.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	4,593.45	1,148.36	15.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	4,886.01	1,221.50	16.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	5,183.49	1,295.87	17.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	5,497.64	1,374.41	18.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	5,819.46	1,454.87	19.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	6,177.66	1,544.41	20.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	6,555.20	1,638.80	21.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	6,974.40	1,743.60	22.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	7,419.25	1,854.81	24.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	7,890.47	1,972.62	26.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	8,383.56	2,095.89	27.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	8,699.59	2,174.90	28.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	9,056.49	2,264.12	29.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	9,540.10	2,385.02	31.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	10,532.74	2,633.19	34.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	11,694.13	2,923.53	38.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	13,242.33	3,310.58	43.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	15,394.62	5,234.17	50.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:10 PM	21,590.60	4,534.03	71.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Elementary School

PREVISION DESIGN

AUGUST 16

Mirror date: April 26
Analysis hours: 7:25 AM-7:02 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:25 AM	17,534.88	701.40	57.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 AM	16,937.60	2,879.39	55.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	15,217.26	3,804.31	50.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	13,543.29	3,385.82	44.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	11,732.53	2,933.13	38.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	10,386.32	2,596.58	34.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	9,379.62	2,344.90	30.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	8,462.46	2,115.62	27.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	7,695.07	1,923.77	25.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	7,074.45	1,768.61	23.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	6,598.96	1,649.74	21.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	6,183.74	1,545.94	20.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	5,810.62	1,452.66	19.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	5,470.47	1,367.62	18.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	5,158.57	1,289.64	17.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	4,864.13	1,216.03	16.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	4,590.77	1,147.69	15.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	4,327.48	1,081.87	14.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	4,072.89	1,018.22	13.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	3,829.02	957.26	12.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	3,589.36	897.34	11.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	3,357.23	839.31	11.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	3,214.21	803.55	10.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	3,174.58	793.64	10.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	3,375.19	843.80	11.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	3,613.92	903.48	11.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	3,882.35	970.59	12.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	4,151.72	1,037.93	13.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	4,436.74	1,109.19	14.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	4,721.91	1,180.48	15.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	5,023.30	1,255.83	16.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	5,333.32	1,333.33	17.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	5,661.88	1,415.47	18.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	6,005.30	1,501.32	19.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	6,380.81	1,595.20	21.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	6,778.93	1,694.73	22.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	7,231.45	1,807.86	23.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	7,697.24	1,924.31	25.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	8,191.43	2,047.86	26.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	8,601.79	2,150.45	28.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	8,946.22	2,236.55	29.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	9,221.53	2,305.38	30.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	9,686.81	2,421.70	31.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	10,636.49	2,659.12	35.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	12,013.63	3,003.41	39.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	13,806.57	3,451.64	45.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	16,091.74	4,344.77	52.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:02 PM	20,660.70	2,892.50	68.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Elementary School

PREVISION DESIGN

AUGUST 23

Mirror date: April 19
Analysis hours: 7:31 AM-6:52 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:31 AM	18,151.95	1,996.71	59.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	16,254.75	3,738.59	53.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	14,427.26	3,606.81	47.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	12,682.79	3,170.70	41.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	11,063.52	2,765.88	36.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	9,853.52	2,463.38	32.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	8,840.29	2,210.07	29.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	7,984.58	1,996.14	26.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	7,313.03	1,828.26	24.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	6,783.13	1,695.78	22.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	6,338.50	1,584.62	20.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	5,941.69	1,485.42	19.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	5,579.65	1,394.91	18.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	5,250.58	1,312.64	17.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	4,942.95	1,235.74	16.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	4,655.76	1,163.94	15.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	4,378.35	1,094.59	14.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	4,118.75	1,029.69	13.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	3,863.37	965.84	12.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	3,614.21	903.55	11.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	3,378.45	844.61	11.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	3,247.61	811.90	10.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	3,264.05	816.01	10.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	3,483.22	870.80	11.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	3,730.71	932.68	12.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	4,006.46	1,001.61	13.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	4,285.25	1,071.31	14.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	4,581.42	1,145.36	15.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	4,877.89	1,219.47	16.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	5,191.82	1,297.96	17.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	5,514.44	1,378.61	18.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	5,860.83	1,465.21	19.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	6,221.42	1,555.35	20.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	6,622.65	1,655.66	21.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	7,057.64	1,764.41	23.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	7,531.11	1,882.78	24.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	8,015.01	2,003.75	26.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	8,518.32	2,129.58	28.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	8,870.51	2,217.63	29.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	9,196.90	2,299.22	30.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	9,491.34	2,372.83	31.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	10,005.81	2,501.45	32.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	10,835.73	2,708.93	35.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	12,499.71	3,124.93	41.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	14,537.16	3,634.29	47.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	17,576.54	3,339.54	57.8%	2,393.55	454.78	7.9%	2,393.70	454.80	7.9%	2,393.55	454.78	7.9%
6:52 PM	19,638.13	1,178.29	64.6%	5,913.79	354.83	19.5%	5,913.86	354.83	19.5%	5,913.79	354.83	19.5%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Elementary School

PREVISION DESIGN

AUGUST 30

Mirror date: April 12
Analysis hours: 7:37 AM-6:42 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:37 AM	18,499.71	1,109.98	60.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	17,361.22	3,298.63	57.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	15,490.54	3,872.64	51.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	13,674.28	3,418.57	45.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	11,780.34	2,945.09	38.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	10,368.35	2,592.09	34.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	9,259.57	2,314.89	30.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	8,307.56	2,076.89	27.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	7,574.15	1,893.54	24.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	6,986.93	1,746.73	23.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	6,510.35	1,627.59	21.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	6,087.60	1,521.90	20.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	5,701.95	1,425.49	18.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	5,351.87	1,337.97	17.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	5,026.92	1,256.73	16.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	4,726.83	1,181.71	15.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	4,438.33	1,109.58	14.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	4,163.75	1,040.94	13.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	3,896.40	974.10	12.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	3,636.74	909.18	12.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	3,407.00	851.75	11.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	3,289.34	822.33	10.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	3,365.63	841.41	11.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	3,601.46	900.36	11.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	3,863.51	965.88	12.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	4,151.72	1,037.93	13.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	4,436.38	1,109.09	14.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	4,745.60	1,186.40	15.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	5,056.48	1,264.12	16.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	5,386.42	1,346.61	17.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	5,723.46	1,430.87	18.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	6,089.41	1,522.35	20.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	6,472.75	1,618.19	21.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	6,908.98	1,727.24	22.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	7,379.40	1,844.85	24.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	7,865.54	1,966.39	25.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	8,387.55	2,096.89	27.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	8,800.59	2,200.15	29.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	9,166.54	2,291.63	30.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	9,434.53	2,358.63	31.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	9,825.41	2,456.35	32.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	10,358.14	2,589.53	34.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	11,296.15	2,824.04	37.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	13,117.93	3,279.48	43.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	15,738.47	3,619.85	51.8%	35.43	8.15	0.1%	35.21	8.10	0.1%	35.43	8.15	0.1%
6:42 PM	18,893.77	2,078.31	62.2%	11,314.77	1,244.62	37.2%	11,314.84	1,244.63	37.2%	11,314.77	1,244.62	37.2%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Elementary School

PREVISION DESIGN

SEPTEMBER 6

Mirror date: April 5
Analysis hours: 7:44 AM-6:31 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:44 AM	18,860.30	2,451.84	62.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	16,480.58	4,120.15	54.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	14,644.83	3,661.21	48.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	12,576.21	3,144.05	41.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	10,959.98	2,740.00	36.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	9,742.67	2,435.67	32.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	8,689.52	2,172.38	28.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	7,863.88	1,965.97	25.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	7,214.43	1,803.61	23.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	6,700.61	1,675.15	22.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	6,243.81	1,560.95	20.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	5,832.00	1,458.00	19.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	5,465.18	1,366.29	18.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	5,119.37	1,279.84	16.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	4,801.24	1,200.31	15.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	4,498.25	1,124.56	14.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	4,211.49	1,052.87	13.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	3,931.54	982.89	12.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	3,661.01	915.25	12.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	3,440.69	860.17	11.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	3,340.56	835.14	11.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	3,480.17	870.04	11.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	3,739.55	934.89	12.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	4,010.80	1,002.70	13.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	4,313.50	1,078.38	14.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	4,608.52	1,152.13	15.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	4,932.59	1,233.15	16.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	5,255.29	1,313.82	17.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	5,602.54	1,400.64	18.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	5,955.45	1,488.86	19.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	6,348.79	1,587.20	20.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	6,762.19	1,690.55	22.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	7,237.32	1,809.33	23.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	7,721.66	1,930.41	25.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	8,242.72	2,060.68	27.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	8,714.30	2,178.58	28.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	9,138.21	2,284.55	30.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	9,405.19	2,351.30	30.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	9,808.45	2,452.11	32.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	10,252.72	2,563.18	33.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	10,838.48	2,709.62	35.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	11,865.76	2,966.44	39.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	14,019.29	3,785.21	46.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:31 PM	18,457.69	2,584.08	60.7%	11,901.91	1,666.27	39.2%	11,901.91	1,666.27	39.2%	11,901.91	1,666.27	39.2%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Elementary School

PREVISION DESIGN

SEPTEMBER 13

Mirror date: March 29
Analysis hours: 7:50 AM-6:21 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:50 AM	19,063.45	1,525.08	62.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	17,538.43	3,683.07	57.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	15,605.81	3,901.45	51.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	13,523.72	3,380.93	44.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	11,687.53	2,921.88	38.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	10,295.25	2,573.81	33.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	9,122.20	2,280.55	30.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	8,181.57	2,045.39	26.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	7,459.38	1,864.85	24.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	6,903.90	1,725.98	22.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	6,415.30	1,603.82	21.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	5,973.13	1,493.28	19.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	5,580.59	1,395.15	18.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	5,214.79	1,303.70	17.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	4,879.05	1,219.76	16.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	4,560.56	1,140.14	15.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	4,260.32	1,065.08	14.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	3,966.03	991.51	13.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	3,685.43	921.36	12.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	3,474.67	868.67	11.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	3,410.62	852.66	11.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	3,611.38	902.85	11.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	3,892.71	973.18	12.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	4,177.37	1,044.34	13.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	4,490.28	1,122.57	14.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	4,804.14	1,201.03	15.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	5,139.08	1,284.77	16.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	5,477.13	1,369.28	18.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	5,843.81	1,460.95	19.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	6,220.55	1,555.14	20.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	6,643.44	1,660.86	21.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	7,096.62	1,774.16	23.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	7,597.76	1,899.44	25.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	8,103.40	2,025.85	26.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	8,639.03	2,159.76	28.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	9,065.18	2,266.30	29.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	9,401.21	2,350.30	30.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	9,746.94	2,436.74	32.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	10,192.08	2,548.02	33.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	10,741.62	2,685.40	35.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	11,485.25	2,871.31	37.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	12,664.60	3,166.15	41.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	15,931.04	2,867.59	52.4%	1,821.19	327.81	6.0%	1,821.34	327.84	6.0%	1,821.19	327.81	6.0%
6:21 PM	18,262.36	913.12	60.1%	9,155.52	457.78	30.1%	9,155.23	457.76	30.1%	9,155.52	457.78	30.1%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Elementary School

PREVISION DESIGN

SEPTEMBER 20

Fall equinox (Spring equinox on March 22 similar)
Analysis hours: 7:57 AM-6:09 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:57 AM	19,325.43	386.51	63.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	18,737.93	2,810.69	61.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	16,560.71	4,140.18	54.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	14,562.09	3,640.52	47.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	12,536.44	3,134.11	41.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	10,917.89	2,729.47	35.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	9,584.29	2,396.07	31.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	8,541.22	2,135.30	28.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	7,741.00	1,935.25	25.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	7,125.60	1,781.40	23.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	6,598.96	1,649.74	21.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	6,125.71	1,531.43	20.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	5,708.18	1,427.04	18.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	5,321.22	1,330.30	17.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	4,966.07	1,241.52	16.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	4,627.36	1,156.84	15.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	4,310.97	1,077.74	14.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	4,002.83	1,000.71	13.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	3,711.36	927.84	12.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	3,519.22	879.81	11.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	3,541.03	885.26	11.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	3,755.78	938.94	12.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	4,061.74	1,015.43	13.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	4,360.16	1,090.04	14.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	4,685.83	1,171.46	15.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	5,011.85	1,252.96	16.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	5,362.52	1,340.63	17.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	5,720.42	1,430.11	18.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	6,106.66	1,526.66	20.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	6,512.45	1,628.11	21.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	6,968.96	1,742.24	22.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	7,470.11	1,867.53	24.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	7,987.55	1,996.89	26.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	8,529.34	2,132.33	28.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	8,996.93	2,249.23	29.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	9,389.18	2,347.30	30.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	9,694.70	2,423.68	31.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	10,091.52	2,522.88	33.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	10,599.61	2,649.90	34.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	11,284.56	2,821.14	37.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	12,266.41	3,066.60	40.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	14,438.41	3,032.07	47.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:09 PM	17,778.54	1,422.28	58.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Elementary School

PREVISION DESIGN

SEPTEMBER 27

Mirror date: March 15
Analysis hours: 8:03 AM-5:58 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
8:03 AM	20,047.76	2,004.78	66.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	17,884.46	3,934.58	58.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	15,781.72	3,945.43	51.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	13,579.08	3,394.77	44.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	11,637.25	2,909.31	38.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	10,128.39	2,532.10	33.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	8,965.85	2,241.46	29.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	8,064.35	2,016.09	26.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	7,369.62	1,842.40	24.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	6,801.60	1,700.40	22.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	6,289.81	1,572.45	20.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	5,844.10	1,461.02	19.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	5,433.01	1,358.25	17.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	5,056.77	1,264.19	16.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	4,695.90	1,173.97	15.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	4,362.55	1,090.64	14.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	4,041.74	1,010.43	13.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	3,741.87	935.47	12.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	3,577.62	894.41	11.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	3,692.38	923.10	12.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	3,940.16	985.04	13.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	4,250.61	1,062.65	14.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	4,557.44	1,139.36	15.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	4,898.76	1,224.69	16.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	5,242.46	1,310.62	17.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	5,609.07	1,402.27	18.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	5,985.74	1,496.43	19.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	6,402.11	1,600.53	21.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	6,840.44	1,710.11	22.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	7,338.61	1,834.65	24.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	7,858.88	1,964.72	25.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	8,407.55	2,101.89	27.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	8,910.79	2,227.70	29.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	9,383.75	2,345.94	30.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	9,670.80	2,417.70	31.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	10,033.34	2,508.33	33.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	10,467.03	2,616.76	34.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	11,053.23	2,763.31	36.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	11,871.99	2,968.00	39.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	13,427.73	3,088.38	44.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:58 PM	17,520.03	1,927.20	57.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Elementary School

PREVISION DESIGN

OCTOBER 4

Mirror date: March 8

Analysis hours: 8:09 AM-5:47 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
8:09 AM	21,479.90	859.20	70.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	20,174.63	3,429.69	66.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	17,442.00	4,360.50	57.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	14,952.89	3,738.22	49.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	12,646.42	3,161.60	41.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	10,829.21	2,707.30	35.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	9,486.63	2,371.66	31.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	8,447.97	2,111.99	27.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	7,646.31	1,911.58	25.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	7,027.65	1,756.91	23.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	6,472.39	1,618.10	21.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	5,999.57	1,499.89	19.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	5,556.10	1,389.03	18.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	5,156.97	1,289.24	17.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	4,773.93	1,193.48	15.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	4,423.26	1,105.82	14.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	4,086.66	1,021.66	13.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	3,790.55	947.64	12.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	3,650.65	912.66	12.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	3,824.10	956.02	12.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	4,071.15	1,017.79	13.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	4,418.77	1,104.69	14.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	4,766.68	1,191.67	15.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	5,123.65	1,280.91	16.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	5,484.31	1,371.08	18.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	5,871.26	1,467.82	19.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	6,271.05	1,567.76	20.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	6,715.60	1,678.90	22.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	7,188.49	1,797.12	23.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	7,732.81	1,933.20	25.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	8,265.76	2,066.44	27.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	8,811.39	2,202.85	29.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	9,296.08	2,324.02	30.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	9,712.24	2,428.06	32.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	10,047.83	2,511.96	33.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	10,464.13	2,616.03	34.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	10,947.38	2,736.84	36.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	11,662.03	2,915.51	38.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	12,671.63	3,421.34	41.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:47 PM	16,494.42	2,309.22	54.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Elementary School

PREVISION DESIGN

OCTOBER 11

Mirror date: March 1

Analysis hours: 8:16 AM-5:37 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
8:16 AM	22,311.78	2,677.41	73.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	19,696.23	4,727.10	64.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	16,893.62	4,223.41	55.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	14,092.61	3,523.15	46.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	11,954.08	2,988.52	39.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	10,232.87	2,558.22	33.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	8,924.77	2,231.19	29.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	7,965.45	1,991.36	26.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	7,283.69	1,820.92	24.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	6,682.28	1,670.57	22.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	6,172.44	1,543.11	20.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	5,700.93	1,425.23	18.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	5,271.08	1,317.77	17.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	4,864.27	1,216.07	16.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	4,492.09	1,123.02	14.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	4,140.13	1,035.03	13.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	3,845.11	961.28	12.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	3,744.84	936.21	12.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	3,993.27	998.32	13.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	4,287.56	1,071.89	14.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	4,636.56	1,159.14	15.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	4,981.50	1,245.37	16.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	5,358.24	1,339.56	17.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	5,733.03	1,433.26	18.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	6,141.87	1,535.47	20.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	6,567.52	1,641.88	21.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	7,045.98	1,761.49	23.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	7,567.99	1,892.00	24.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	8,124.34	2,031.08	26.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	8,690.10	2,172.53	28.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	9,198.71	2,299.68	30.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	9,691.08	2,422.77	31.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	10,097.60	2,524.40	33.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	10,516.37	2,629.09	34.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	11,019.68	2,754.92	36.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	11,755.64	2,938.91	38.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	12,717.13	3,179.28	41.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	14,745.03	2,801.55	48.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:37 PM	17,368.46	1,042.11	57.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Elementary School

PREVISION DESIGN

OCTOBER 18

Mirror date: February 22
Analysis hours: 8:22 AM-5:27 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
8:22 AM	22,879.06	1,372.74	75.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	21,600.45	3,888.08	71.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	18,976.36	4,744.09	62.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	15,879.02	3,969.76	52.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	13,361.51	3,340.38	44.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	11,225.01	2,806.25	36.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	9,709.27	2,427.32	31.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	8,478.04	2,119.51	27.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	7,622.98	1,905.74	25.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	6,916.73	1,729.18	22.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	6,364.58	1,591.15	20.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	5,857.64	1,464.41	19.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	5,403.02	1,350.75	17.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	4,967.66	1,241.91	16.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	4,575.85	1,143.96	15.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	4,202.65	1,050.66	13.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	3,911.84	977.96	12.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	3,886.26	971.57	12.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	4,152.37	1,038.09	13.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	4,470.43	1,117.61	14.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	4,834.49	1,208.62	15.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	5,196.39	1,299.10	17.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	5,587.19	1,396.80	18.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	5,985.23	1,496.31	19.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	6,421.96	1,605.49	21.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	6,876.23	1,719.06	22.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	7,395.55	1,848.89	24.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	7,942.27	1,985.57	26.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	8,515.57	2,128.89	28.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	9,046.27	2,261.57	29.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	9,600.01	2,400.00	31.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	10,085.00	2,521.25	33.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	10,594.76	2,648.69	34.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	11,126.48	2,781.62	36.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	11,890.98	2,972.74	39.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	12,903.98	3,226.00	42.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	14,385.81	3,164.88	47.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:27 PM	18,498.33	1,849.83	60.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Elementary School

PREVISION DESIGN

OCTOBER 25

Mirror date: February 15
Analysis hours: 7:30 AM-4:18 PM (PST)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:30 AM	23,413.68	3,043.78	77.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	20,731.84	5,182.96	68.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	17,678.84	4,419.71	58.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	15,028.67	3,757.17	49.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	12,602.73	3,150.68	41.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	10,790.45	2,697.61	35.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	9,257.90	2,314.47	30.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	8,172.95	2,043.24	26.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	7,348.32	1,837.08	24.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	6,681.41	1,670.35	22.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	6,075.43	1,518.86	20.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	5,549.95	1,387.49	18.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	5,081.55	1,270.39	16.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	4,665.39	1,166.35	15.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	4,272.71	1,068.18	14.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	3,989.29	997.32	13.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	4,033.26	1,008.32	13.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	4,307.34	1,076.84	14.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	4,645.83	1,161.46	15.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	5,025.69	1,256.42	16.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	5,400.12	1,350.03	17.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	5,809.97	1,452.49	19.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	6,225.11	1,556.28	20.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	6,685.25	1,671.31	22.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	7,170.16	1,792.54	23.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	7,727.60	1,931.90	25.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	8,292.35	2,073.09	27.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	8,882.46	2,220.62	29.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	9,414.90	2,353.73	31.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	10,004.36	2,501.09	32.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	10,561.36	2,640.34	34.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	11,255.66	2,813.91	37.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	12,061.81	3,015.45	39.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	13,162.34	3,290.58	43.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	14,474.86	3,618.71	47.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	17,418.38	2,612.76	57.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:18 PM	19,554.88	586.65	64.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Elementary School

PREVISION DESIGN

NOVEMBER 1

Mirror date: February 8
Analysis hours: 7:36 AM-4:10 PM (PST)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:36 AM	23,829.55	1,668.07	78.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	22,311.70	4,239.22	73.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	19,456.64	4,864.16	64.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	16,550.93	4,137.73	54.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	14,131.95	3,532.99	46.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	12,171.07	3,042.77	40.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	10,429.57	2,607.39	34.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	9,129.81	2,282.45	30.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	7,992.98	1,998.25	26.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	7,166.03	1,791.51	23.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	6,460.51	1,615.13	21.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	5,869.38	1,467.35	19.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	5,302.67	1,325.67	17.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	4,828.55	1,207.14	15.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	4,374.43	1,093.61	14.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	4,079.99	1,020.00	13.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	4,174.61	1,043.65	13.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	4,455.22	1,113.80	14.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	4,809.93	1,202.48	15.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	5,205.23	1,301.31	17.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	5,595.59	1,398.90	18.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	6,020.30	1,505.07	19.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	6,452.68	1,613.17	21.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	6,941.29	1,735.32	22.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	7,455.69	1,863.92	24.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	8,042.68	2,010.67	26.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	8,618.09	2,154.52	28.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	9,225.37	2,306.34	30.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	9,823.88	2,455.97	32.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	10,554.84	2,638.71	34.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	11,335.42	2,833.86	37.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	12,199.76	3,049.94	40.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	13,121.98	3,280.50	43.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	14,037.54	3,509.39	46.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	15,912.64	3,341.65	52.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:10 PM	30,359.60	2,732.36	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Elementary School

PREVISION DESIGN

NOVEMBER 8

Mirror date: February 1
Analysis hours: 7:43 AM-4:03 PM (PST)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:43 AM	24,119.49	241.19	79.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	23,898.16	3,106.76	78.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	21,274.14	5,318.53	70.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	18,404.65	4,601.16	60.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	15,777.88	3,944.47	51.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	13,630.44	3,407.61	44.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	11,838.74	2,959.68	38.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	10,373.86	2,593.46	34.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	8,995.48	2,248.87	29.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	7,956.54	1,989.14	26.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	7,037.00	1,759.25	23.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	6,312.34	1,578.09	20.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	5,636.60	1,409.15	18.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	5,100.17	1,275.04	16.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	4,609.25	1,152.31	15.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	4,302.34	1,075.59	14.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	4,385.66	1,096.42	14.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	4,660.40	1,165.10	15.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	5,006.20	1,251.55	16.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	5,407.29	1,351.82	17.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	5,796.42	1,449.11	19.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	6,241.05	1,560.26	20.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	6,684.09	1,671.02	22.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	7,203.92	1,800.98	23.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	7,737.81	1,934.45	25.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	8,352.85	2,088.21	27.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	8,951.87	2,237.97	29.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	9,567.41	2,391.85	31.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	10,271.05	2,567.76	33.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	11,184.51	2,796.13	36.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	12,107.24	3,026.81	39.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	13,071.41	3,267.85	43.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	13,873.66	3,468.42	45.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	15,213.49	3,803.37	50.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	30,359.60	4,553.94	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:03 PM	30,359.60	910.79	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Elementary School

PREVISION DESIGN

NOVEMBER 15

Mirror date: January 25
Analysis hours: 7:51 AM-3:57 PM (PST)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:51 AM	24,502.76	1,960.22	80.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	23,011.21	4,602.24	75.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	20,263.67	5,065.92	66.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	17,597.92	4,399.48	57.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	15,250.95	3,812.74	50.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	13,243.70	3,310.93	43.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	11,684.20	2,921.05	38.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	10,186.86	2,546.72	33.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	8,940.57	2,235.14	29.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	7,838.88	1,959.72	25.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	6,986.86	1,746.72	23.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	6,147.08	1,536.77	20.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	5,484.09	1,371.02	18.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	4,907.81	1,226.95	16.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	4,553.46	1,138.36	15.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	4,628.66	1,157.17	15.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	4,912.23	1,228.06	16.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	5,256.30	1,314.08	17.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	5,670.36	1,417.59	18.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	6,063.55	1,515.89	19.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	6,525.93	1,631.48	21.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	6,989.03	1,747.26	23.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	7,547.56	1,886.89	24.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	8,108.83	2,027.21	26.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	8,777.84	2,194.46	28.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	9,426.35	2,356.59	31.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	10,035.15	2,508.79	33.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	10,789.51	2,697.38	35.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	11,746.73	2,936.68	38.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	12,765.53	3,191.38	42.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	13,790.85	3,447.71	45.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	14,606.86	3,651.72	48.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	16,376.69	3,766.64	53.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:57 PM	30,359.60	3,339.56	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Elementary School

PREVISION DESIGN

NOVEMBER 22

Mirror date: January 18
Analysis hours: 7:57 AM-3:54 PM (PST)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:57 AM	25,194.52	503.89	82.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	24,804.66	3,720.70	81.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	22,082.54	5,520.64	72.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	19,369.84	4,842.46	63.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	17,042.00	4,260.50	56.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	14,826.39	3,706.60	48.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	13,059.68	3,264.92	43.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	11,352.88	2,838.22	37.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	9,995.52	2,498.88	32.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	8,740.89	2,185.22	28.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	7,754.48	1,938.62	25.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	6,788.20	1,697.05	22.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	6,015.22	1,503.81	19.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	5,335.13	1,333.78	17.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	4,894.41	1,223.60	16.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	4,909.34	1,227.33	16.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	5,198.63	1,299.66	17.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	5,528.21	1,382.05	18.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	5,956.39	1,489.10	19.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	6,352.84	1,588.21	20.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	6,849.93	1,712.48	22.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	7,328.83	1,832.21	24.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	7,937.34	1,984.34	26.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	8,506.88	2,126.72	28.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	9,229.28	2,307.32	30.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	9,895.61	2,473.90	32.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	10,489.49	2,622.37	34.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	11,220.44	2,805.11	36.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	12,171.87	3,042.97	40.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	13,339.77	3,334.94	43.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	14,514.20	3,628.55	47.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	15,628.71	3,907.18	51.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	18,767.42	3,753.48	61.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:54 PM	30,359.60	2,428.77	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Elementary School

PREVISION DESIGN

NOVEMBER 29

Mirror date: January 11
Analysis hours: 8:04 AM-3:51 PM (PST)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
8:04 AM	25,855.48	2,326.99	85.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	23,783.97	4,994.63	78.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	20,978.90	5,244.73	69.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	18,654.61	4,663.65	61.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	16,320.61	4,080.15	53.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	14,498.19	3,624.55	47.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	12,647.36	3,161.84	41.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	11,032.87	2,758.22	36.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	9,596.17	2,399.04	31.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	8,509.63	2,127.41	28.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	7,466.70	1,866.68	24.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	6,592.00	1,648.00	21.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	5,813.81	1,453.45	19.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	5,297.96	1,324.49	17.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	5,236.38	1,309.09	17.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	5,498.51	1,374.63	18.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	5,766.14	1,441.53	19.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	6,237.94	1,559.48	20.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	6,658.59	1,664.65	21.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	7,177.33	1,794.33	23.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	7,681.23	1,920.31	25.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	8,322.71	2,080.68	27.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	8,899.49	2,224.87	29.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	9,626.53	2,406.63	31.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	10,272.86	2,568.22	33.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	10,851.45	2,712.86	35.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	11,523.36	2,880.84	37.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	12,589.40	3,147.35	41.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	13,939.16	3,484.79	45.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	15,229.87	3,807.47	50.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	16,693.08	4,173.27	54.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	30,359.60	5,464.73	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:51 PM	30,359.60	1,517.98	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Elementary School

PREVISION DESIGN

DECEMBER 6

Mirror date: January 4
Analysis hours: 8:10 AM-3:51 PM (PST)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
8:10 AM	26,483.41	1,059.34	87.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	25,343.62	4,308.42	83.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	22,430.88	5,607.72	73.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	19,975.46	4,993.86	65.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	17,606.39	4,401.60	57.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	15,767.59	3,941.90	51.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	13,895.25	3,473.81	45.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	12,182.44	3,045.61	40.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	10,455.29	2,613.82	34.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	9,202.76	2,300.69	30.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	8,072.10	2,018.02	26.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	7,141.54	1,785.39	23.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	6,279.89	1,569.97	20.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	5,668.55	1,417.14	18.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	5,498.72	1,374.68	18.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	5,788.16	1,447.04	19.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	6,074.13	1,518.53	20.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	6,509.48	1,627.37	21.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	6,900.57	1,725.14	22.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	7,431.27	1,857.82	24.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	7,938.36	1,984.59	26.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	8,579.83	2,144.96	28.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	9,154.37	2,288.59	30.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	9,886.26	2,471.57	32.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	10,527.24	2,631.81	34.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	11,096.92	2,774.23	36.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	11,771.58	2,942.89	38.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	12,986.07	3,246.52	42.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	14,326.04	3,581.51	47.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	15,880.33	3,970.08	52.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	21,192.41	5,298.10	69.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	30,359.60	5,161.13	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:51 PM	30,359.60	1,517.98	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Elementary School

PREVISION DESIGN

DECEMBER 13

Mirror date: December 28

Analysis hours: 8:15 AM-3:52 PM (PST)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
8:15 AM	26,809.30	3,217.12	88.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	23,679.50	5,919.88	77.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	21,031.50	5,257.87	69.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	18,647.44	4,661.86	61.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	16,699.96	4,174.99	54.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	14,883.84	3,720.96	49.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	13,167.19	3,291.80	43.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	11,290.21	2,822.55	37.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	9,846.34	2,461.59	32.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	8,581.43	2,145.36	28.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	7,600.59	1,900.15	25.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	6,675.90	1,668.98	22.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	5,981.10	1,495.27	19.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	5,670.58	1,417.64	18.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	5,934.37	1,483.59	19.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	6,176.50	1,544.12	20.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	6,618.23	1,654.56	21.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	7,012.07	1,753.02	23.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	7,539.95	1,884.99	24.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	8,046.16	2,011.54	26.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	8,686.12	2,171.53	28.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	9,258.26	2,314.57	30.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	9,988.35	2,497.09	32.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	10,642.94	2,660.73	35.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	11,229.28	2,807.32	36.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	11,953.07	2,988.27	39.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	13,134.23	3,283.56	43.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	14,472.97	3,618.24	47.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	16,158.83	4,039.71	53.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	25,596.26	6,399.06	84.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	30,359.60	5,464.73	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:52 PM	30,359.60	1,821.58	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Grattan Elementary School

PREVISION DESIGN

DECEMBER 20

Winter solstice (December 21 similar)
Analysis hours: 8:19 AM-3:54 PM (PST)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
8:19 AM	26,920.15	2,153.61	88.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	24,597.38	5,165.45	80.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	21,815.05	5,453.76	71.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	19,391.72	4,847.93	63.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	17,312.10	4,328.02	57.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	15,498.01	3,874.50	51.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	13,814.69	3,453.67	45.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	11,889.09	2,972.27	39.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	10,341.40	2,585.35	34.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	8,969.76	2,242.44	29.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	7,931.98	1,982.99	26.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	6,950.49	1,737.62	22.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	6,210.04	1,552.51	20.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	5,760.05	1,440.01	18.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	5,965.88	1,491.47	19.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	6,176.14	1,544.03	20.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	6,605.55	1,651.39	21.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	6,995.12	1,748.78	23.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	7,508.14	1,877.04	24.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	8,005.88	2,001.47	26.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	8,643.74	2,160.93	28.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	9,214.94	2,303.73	30.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	9,923.29	2,480.82	32.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	10,596.50	2,649.12	34.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	11,207.62	2,801.91	36.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	11,910.75	2,977.69	39.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	13,016.57	3,254.14	42.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	14,331.33	3,582.83	47.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	16,044.94	4,011.23	52.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	20,822.99	5,205.75	68.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	30,359.60	6,375.52	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:54 PM	30,359.60	2,428.77	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

THEORETICAL ANNUAL AVAILABLE SUNLIGHT (TAAS) CALCULATION	INDEPENDENCE HIGH SCHOOL
Total plan area of Independence High School	0.46 acres (20,211 sf)
Total hours of annual sunlight from 1-hr after sunrise through 1-hr before sunset	3721.4 hrs
Theoretical Annual Available Sunlight (plan area x hours of annual sunlight)	75,213,781 sfh

EXISTING SHADOW CONDITIONS SUMMARY	INDEPENDENCE HIGH SCHOOL
Total annual existing shadow load (existing shadow sfh ÷ TAAS sfh)	27.51%
Total annual existing shadow in square-foot-hours (sfh)	20,691,122 sfh
Range in existing shadow area coverage throughout the year	Between 0% - 100%
Time of year / time of day most affected by existing shadow	Fall / Early Morning (before 8:00 AM)

UCSF HOSPITAL PROJECT NET NEW SHADOW SCENARIO SUMMARY	INDEPENDENCE HIGH SCHOOL
Annual net new hospital project-only shadow load / total existing + hospital project shadow load	0.02% / 27.53%
Annual net new sfh hospital project shadow / total existing + hospital project sfh	15,069 sfh / 20,706,191 sfh
Number of days annually when new shading from hospital project would occur	Up to 54 days a year
Dates when net new shadow from hospital project would be cast annually	3/30 - 4/25 & 8/17 - 9/12
Date(s) with most annual sfh net new hospital project shadow (shadow load / net new sfh)	September 6 & April 5
Time of year / time of day most affected by hospital project net new shadow overall	Summer / Early Morning (before 8:00 AM)
Date(s) with largest shadow area from the hospital project (area and time shadow occurs)	Aug 30/Apr 12 (6,001 sf @ 7:37 AM)
Range in hospital project net new shadow percentage coverage (area range)	Between 0% - 30% (0 - 6,001 sf)
Average hospital project net new shadow coverage on affected dates (shadow area)	29.68% (6,000 sf)
Date(s) with the longest duration of net new shadow (duration)	Aug 30/Apr 12 (15 min +/- 7 min)
Range in daily hospital project net new shadow duration (margin of error)	Between zero minutes up to 15 min (+/- 7 min)
Average daily hospital project net new shadow duration on affected dates	10.2 minutes

NEAR TERM CUMULATIVE (2030) NET NEW SHADOW SCENARIO SUMMARY	INDEPENDENCE HIGH SCHOOL
Annual net new 2030 cumulative condition shadow load / total existing + 2030 cumulative shadow load	0.08% / 27.59%
Annual net new sfh 2030 cumulative shadow / total existing + 2030 cumulative sfh	62,849 sfh / 20,753,971 sfh
Number of days annually when new shading from 2030 cumulative would occur	Up to 138 days a year
Dates when net new shadow from 2030 cumulative would be cast annually	2/16 - 4/25 & 8/17 - 10/24
Date(s) with most annual sfh net new 2030 cumulative shadow (shadow load / net new sfh)	October 11 & March 1
Time of year / time of day most affected by 2030 cumulative net new shadow overall	Winter / Early Morning (before 8:00 AM)
Date(s) with largest shadow area from the 2030 cumulative (area and time shadow occurs)	Aug 30/Apr 12 (6,001 sf @ 7:37 AM)
Range in 2030 cumulative net new shadow percentage coverage (area range)	Between 0% - 30% (0 - 6,001 sf)
Average 2030 cumulative net new shadow coverage on affected dates (shadow area)	16.22% (3,278 sf)
Date(s) with the longest duration of net new shadow (duration)	Oct 4/Mar 8 (28 min +/- 7 min)
Range in daily 2030 cumulative net new shadow duration (margin of error)	Between zero minutes up to 28 min (+/- 7 min)
Average daily 2030 cumulative net new shadow duration on affected dates	15.2 minutes

LONG TERM CUMULATIVE (2050) NET NEW SHADOW SCENARIO SUMMARY	INDEPENDENCE HIGH SCHOOL
Annual net new 2050 cumulative shadow load / total existing + 2050 cumulative shadow load	0.10% / 27.61%
Annual net new sfh 2050 cumulative shadow / total existing + 2050 cumulative sfh	77,452 sfh / 20,768,574 sfh
Number of days annually when new shading from 2050 cumulative would occur	Up to 152 days a year
Dates when net new shadow from 2050 cumulative would be cast annually	2/9 - 4/25 & 8/17 - 10/31
Date(s) with most annual sfh net new 2050 cumulative shadow (shadow load / net new sfh)	October 11 & March 1
Time of year / time of day most affected by 2050 cumulative net new shadow overall	Winter / Early Morning (before 8:00 AM)
Date(s) with largest shadow area from the 2050 cumulative (area and time shadow occurs)	Aug 30/Apr 12 (6,001 sf @ 7:37 AM)
Range in 2050 cumulative net new shadow percentage coverage (area range)	Between 0% - 30% (0 - 6,001 sf)
Average 2050 cumulative net new shadow coverage on affected dates (shadow area)	17.00% (3,436 sf)
Date(s) with the longest duration of net new shadow (duration)	Oct 4/Mar 8 (28 min +/- 7 min)
Range in daily 2050 cumulative net new shadow duration (margin of error)	Between zero minutes up to 28 min (+/- 7 min)
Average daily 2050 cumulative net new shadow duration on affected dates	15.2 minutes

THEORETICAL ANNUAL AVAILABLE SUNLIGHT (TAAS) CALCULATION	INDEPENDENCE HIGH SCHOOL
Total plan area of Independence High School	0.46 acres (20,211 sf)
Total hours of annual sunlight from 1-hr after sunrise through 1-hr before sunset	3721.4 hrs
Theoretical Annual Available Sunlight (plan area x hours of annual sunlight)	75,213,781 sfh

EXISTING SHADOW CONDITIONS SUMMARY	INDEPENDENCE HIGH SCHOOL
Total annual existing shadow load (existing shadow sfh ÷ TAAS sfh)	27.51%
Total annual existing shadow in square-foot-hours (sfh)	20,691,122 sfh
Range in existing shadow area coverage throughout the year	Between 0% - 100%
Time of year / time of day most affected by existing shadow	Fall / Early Morning (before 8:00 AM)

UCSF PARNASSUS NET NEW SHADOW SCENARIO SUMMARY	INDEPENDENCE HIGH SCHOOL
Annual net new project-only shadow load / Total existing + project shadow load	0.10% / 27.61%
Annual net new sfh project shadow / Total existing + project sfh	71,604 sfh / 20,762,727 sfh
Number of days annually when new shading from project would occur	Up to 152 days a year
Dates when net new shadow from project would be cast annually	2/9 - 4/25 & 8/17 - 10/31
Date(s) with most annual sfh net new project shadow (shadow load / net new sfh)	October 11 & March 1
Time of year / time of day most affected by project net new shadow overall	Winter / Early Morning (before 8:00 AM)
Date(s) with largest shadow area from the project (area and time shadow occurs)	Aug 30/Apr 12 (6,002 sf @ 7:37 AM)
Range in project net new shadow percentage coverage (area range)	Between 0% - 30% (0 - 6,002 sf)
Average project net new shadow coverage on affected dates (shadow area)	16.08% (3,251 sf)
Date(s) with the longest duration of net new shadow (duration)	Oct 4/Mar 8 (28 min +/- 7 min)
Range in daily project net new shadow duration (margin of error)	Between zero minutes up to 28 min (+/- 7 min)
Average daily project net new shadow duration on affected dates	15.2 minutes

PROJECT: UCSF Hospital Project
OPEN SPACE: Independence High School

PREVISION DESIGN

JUNE 21

Summer solstice

Analysis hours: 6:46 AM-7:36 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
6:46 AM	14,142.40	1,555.66	70.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 AM	10,068.66	2,315.79	49.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 AM	6,792.20	1,698.05	33.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 AM	4,382.27	1,095.57	21.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	2,554.36	638.59	12.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	1,210.88	302.72	6.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	593.00	148.25	2.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	297.53	74.38	1.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	132.18	33.04	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	18.84	4.71	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	55.41	13.85	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	125.99	31.50	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	186.91	46.73	0.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	232.73	58.18	1.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	274.38	68.59	1.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	303.22	75.80	1.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	332.27	83.07	1.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	348.61	87.15	1.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	368.74	92.19	1.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	375.38	93.85	1.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	389.50	97.37	1.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	387.50	96.88	1.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	397.65	99.41	2.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	387.74	96.94	1.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	393.50	98.38	1.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	377.42	94.36	1.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	384.80	96.20	1.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	572.42	143.10	2.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	785.55	196.39	3.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	1,016.59	254.15	5.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	1,414.26	353.57	7.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	1,811.65	452.91	9.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	2,228.34	557.08	11.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	2,635.16	658.79	13.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	3,066.70	766.68	15.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	3,499.37	874.84	17.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	3,962.12	990.53	19.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	4,434.81	1,108.70	21.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	4,943.06	1,235.77	24.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	5,471.62	1,367.91	27.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	6,191.00	1,547.75	30.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	7,092.42	1,773.11	35.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	8,109.74	2,027.44	40.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	9,234.54	2,308.64	45.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	10,269.89	2,567.47	50.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	11,414.80	2,853.70	56.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	12,688.14	3,172.03	62.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	14,135.83	3,533.96	69.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	15,727.89	3,931.97	77.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 PM	16,265.46	4,066.37	80.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 PM	15,990.21	4,797.06	79.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:36 PM	15,594.25	2,806.97	77.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Independence High School

PREVISION DESIGN

JUNE 28

Mirror date: June 14
Analysis hours: 6:48 AM-7:36 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
6:48 AM	13,842.40	1,384.24	68.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 AM	10,585.81	2,328.88	52.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 AM	7,180.05	1,795.01	35.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 AM	4,653.35	1,163.34	23.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	2,768.87	692.22	13.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	1,314.89	328.72	6.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	635.55	158.89	3.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	308.86	77.22	1.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	137.87	34.47	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	21.26	5.31	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	54.67	13.67	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	126.41	31.60	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	188.17	47.04	0.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	234.63	58.66	1.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	276.84	69.21	1.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	306.13	76.53	1.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	335.47	83.87	1.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	352.14	88.04	1.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	372.52	93.13	1.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	379.46	94.87	1.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	393.95	98.49	1.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	391.87	97.97	1.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	402.14	100.53	2.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	392.56	98.14	1.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	398.37	99.59	2.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	382.57	95.64	1.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	388.19	97.05	1.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	557.12	139.28	2.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	770.47	192.62	3.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	985.57	246.39	4.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	1,383.24	345.81	6.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	1,780.01	445.00	8.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	2,196.51	549.13	10.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	2,607.44	651.86	12.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	3,038.81	759.70	15.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	3,471.46	867.87	17.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	3,934.26	983.56	19.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	4,406.68	1,101.67	21.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	4,914.82	1,228.70	24.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	5,442.38	1,360.59	26.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	6,118.57	1,529.64	30.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	7,011.43	1,752.86	34.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	8,019.83	2,004.96	39.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	9,170.27	2,292.57	45.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	10,203.72	2,550.93	50.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	11,343.54	2,835.88	56.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	12,614.79	3,153.70	62.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	14,052.78	3,513.20	69.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	15,679.04	3,919.76	77.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 PM	16,310.33	4,077.58	80.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 PM	16,033.99	4,810.20	79.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:36 PM	15,624.82	2,812.47	77.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Independence High School

PREVISION DESIGN

JULY 5

Mirror date: June 7
Analysis hours: 6:52 AM-7:36 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
6:52 AM	13,798.17	827.89	68.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 AM	11,400.15	2,166.03	56.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 AM	7,768.35	1,942.09	38.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 AM	5,049.10	1,262.27	25.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	3,075.93	768.98	15.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	1,495.54	373.88	7.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	679.99	170.00	3.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	300.66	75.16	1.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	123.28	30.82	0.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	16.66	4.16	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	68.78	17.20	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	141.95	35.49	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	203.82	50.96	1.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	250.47	62.62	1.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	292.69	73.17	1.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	321.81	80.45	1.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	351.22	87.80	1.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	367.51	91.88	1.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	388.17	97.04	1.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	394.81	98.70	2.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	408.75	102.19	2.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	407.00	101.75	2.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	416.72	104.18	2.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	407.19	101.80	2.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	412.88	103.22	2.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	397.30	99.32	2.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	401.78	100.45	2.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	555.75	138.94	2.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	770.56	192.64	3.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	976.51	244.13	4.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	1,375.56	343.89	6.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	1,772.90	443.22	8.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	2,189.94	547.49	10.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	2,614.06	653.51	12.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	3,048.65	762.16	15.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	3,485.34	871.33	17.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	3,951.88	987.97	19.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	4,427.95	1,106.99	21.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	4,941.12	1,235.28	24.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	5,473.97	1,368.49	27.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	6,083.71	1,520.93	30.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	6,972.73	1,743.18	34.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	7,981.68	1,995.42	39.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	9,145.44	2,286.36	45.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	10,238.54	2,559.63	50.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	11,396.61	2,849.15	56.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	12,685.81	3,171.45	62.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	14,156.49	3,539.12	70.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	15,790.67	3,947.67	78.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 PM	16,389.90	4,097.47	81.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 PM	16,114.82	4,834.44	79.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:36 PM	15,719.68	2,829.54	77.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Independence High School

PREVISION DESIGN

JULY 12

Mirror date: May 31
Analysis hours: 6:56 AM-7:33 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
6:56 AM	13,712.88	411.39	67.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 AM	12,558.29	1,883.74	62.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 AM	8,589.02	2,147.25	42.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 AM	5,596.75	1,399.19	27.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	3,484.88	871.22	17.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	1,790.64	447.66	8.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	753.04	188.26	3.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	274.02	68.51	1.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	88.35	22.09	0.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	22.54	5.63	0.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	101.99	25.50	0.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	173.80	43.45	0.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	235.27	58.82	1.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	281.00	70.25	1.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	322.50	80.62	1.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	350.82	87.70	1.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	379.61	94.90	1.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	395.26	98.81	2.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	415.11	103.78	2.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	421.18	105.30	2.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	434.70	108.67	2.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	432.35	108.09	2.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	441.72	110.43	2.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	432.02	108.00	2.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	436.86	109.21	2.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	421.44	105.36	2.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	424.67	106.17	2.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	568.62	142.16	2.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	786.07	196.52	3.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	993.28	248.32	4.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	1,391.12	347.78	6.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	1,790.40	447.60	8.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	2,209.91	552.48	10.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	2,642.35	660.59	13.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	3,097.34	774.34	15.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	3,540.95	885.24	17.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	4,015.86	1,003.97	19.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	4,500.78	1,125.20	22.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	5,023.51	1,255.88	24.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	5,567.67	1,391.92	27.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	6,160.22	1,540.05	30.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	6,979.56	1,744.89	34.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	7,996.36	1,999.09	39.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	9,173.85	2,293.46	45.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	10,376.90	2,594.22	51.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	11,570.76	2,892.69	57.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	12,905.24	3,226.31	63.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	14,456.50	3,614.12	71.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	16,062.95	4,015.74	79.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 PM	16,501.41	4,125.35	81.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 PM	16,225.21	4,543.06	80.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:33 PM	15,874.64	2,381.20	78.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Independence High School

PREVISION DESIGN

JULY 19

Mirror date: May 24
Analysis hours: 7:01 AM-7:30 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:01 AM	13,657.51	1,775.48	67.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:16 AM	9,344.02	2,242.56	46.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 AM	6,323.26	1,517.58	31.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	3,984.51	996.13	19.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	2,173.89	543.47	10.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	860.05	215.01	4.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	245.37	61.34	1.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	35.16	8.79	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	61.27	15.32	0.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	153.47	38.37	0.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	223.51	55.88	1.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	283.44	70.86	1.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	327.05	81.76	1.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	367.30	91.82	1.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	393.62	98.41	1.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	421.30	105.32	2.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	435.03	108.76	2.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	454.26	113.57	2.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	459.03	114.76	2.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	471.79	117.95	2.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	468.35	117.09	2.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	476.77	119.19	2.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	466.48	116.62	2.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	470.53	117.63	2.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	455.00	113.75	2.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	457.37	114.34	2.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	599.26	149.82	3.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	819.75	204.94	4.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	1,030.71	257.68	5.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	1,435.89	358.97	7.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	1,838.05	459.51	9.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	2,261.73	565.43	11.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	2,698.91	674.73	13.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	3,163.75	790.94	15.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	3,645.18	911.30	18.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	4,133.14	1,033.28	20.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	4,631.20	1,157.80	22.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	5,170.85	1,292.71	25.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	5,732.43	1,433.11	28.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	6,346.46	1,586.61	31.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	7,041.69	1,760.42	34.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	8,077.99	2,019.50	40.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	9,286.27	2,321.57	45.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	10,638.34	2,659.59	52.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	11,895.08	2,973.77	58.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	13,309.14	3,327.29	65.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	14,997.60	3,749.40	74.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	16,539.81	4,134.95	81.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 PM	16,638.80	4,159.70	82.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 PM	16,364.07	4,091.02	81.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 PM	16,082.23	2,090.69	79.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Independence High School

PREVISION DESIGN

JULY 26

Mirror date: May 17
Analysis hours: 7:07 AM-7:25 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:07 AM	13,610.50	816.63	67.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 AM	11,131.47	2,114.98	55.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 AM	7,273.94	1,818.49	36.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	4,608.86	1,152.21	22.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	2,644.63	661.16	13.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	1,037.32	259.33	5.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	240.96	60.24	1.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	38.45	9.61	0.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	135.78	33.95	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	224.88	56.22	1.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	291.41	72.85	1.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	348.54	87.13	1.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	389.02	97.26	1.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	426.47	106.62	2.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	450.35	112.59	2.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	475.87	118.97	2.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	487.89	121.97	2.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	504.99	126.25	2.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	508.27	127.07	2.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	519.41	129.85	2.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	514.74	128.69	2.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	521.85	130.46	2.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	510.80	127.70	2.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	513.36	128.34	2.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	497.33	124.33	2.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	499.06	124.77	2.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	645.82	161.45	3.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	870.79	217.70	4.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	1,095.36	273.84	5.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	1,505.64	376.41	7.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	1,913.18	478.29	9.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	2,342.01	585.50	11.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	2,786.35	696.59	13.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	3,258.63	814.66	16.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	3,754.51	938.63	18.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	4,290.45	1,072.61	21.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	4,819.22	1,204.80	23.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	5,381.03	1,345.26	26.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	5,967.36	1,491.84	29.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	6,611.58	1,652.89	32.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	7,300.91	1,825.23	36.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	8,221.52	2,055.38	40.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	9,474.00	2,368.50	46.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	10,941.86	2,735.46	54.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	12,376.65	3,094.16	61.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	13,911.81	3,477.95	68.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	15,799.11	3,949.78	78.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	17,036.94	4,259.24	84.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 PM	16,799.95	4,199.99	83.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 PM	16,528.45	3,470.97	81.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:25 PM	16,340.12	1,470.61	80.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Independence High School

PREVISION DESIGN

AUGUST 2

Mirror date: May 10
Analysis hours: 7:12 AM-7:18 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:12 AM	13,589.18	271.78	67.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 AM	12,781.20	1,917.18	63.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 AM	8,463.87	2,115.97	41.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	5,368.20	1,342.05	26.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	3,165.22	791.30	15.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	1,374.52	343.63	6.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	330.16	82.54	1.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	150.63	37.66	0.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	236.20	59.05	1.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	319.06	79.76	1.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	379.80	94.95	1.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	432.11	108.03	2.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	467.85	116.96	2.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	501.98	125.50	2.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	521.83	130.46	2.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	544.43	136.11	2.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	553.35	138.34	2.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	568.36	142.09	2.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	569.07	142.27	2.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	578.39	144.60	2.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	571.99	143.00	2.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	577.26	144.31	2.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	564.90	141.22	2.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	566.06	141.52	2.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	549.56	137.39	2.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	550.41	137.60	2.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	711.77	177.94	3.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	942.98	235.74	4.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	1,192.97	298.24	5.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	1,608.47	402.12	8.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	2,022.51	505.63	10.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	2,458.84	614.71	12.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	2,911.95	727.99	14.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	3,395.00	848.75	16.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	3,903.04	975.76	19.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	4,453.66	1,113.41	22.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	5,045.47	1,261.37	25.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	5,668.68	1,417.17	28.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	6,288.78	1,572.19	31.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	6,973.91	1,743.48	34.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	7,710.39	1,927.60	38.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	8,536.01	2,134.00	42.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	9,766.54	2,441.64	48.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	11,324.90	2,831.22	56.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	13,067.74	3,266.93	64.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	14,805.31	3,701.33	73.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	16,730.01	4,182.50	82.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	17,240.97	4,310.24	85.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:00 PM	16,976.56	4,244.14	84.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:15 PM	16,703.87	2,505.58	82.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:18 PM	16,637.92	499.14	82.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Independence High School

PREVISION DESIGN

AUGUST 9

Mirror date: May 3
Analysis hours: 7:19 AM-7:10 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:19 AM	13,531.91	1,217.87	67.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 AM	10,002.63	2,100.55	49.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	6,378.02	1,594.51	31.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	3,778.84	944.71	18.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	1,832.19	458.05	9.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	723.56	180.89	3.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	358.95	89.74	1.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	366.63	91.66	1.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	436.83	109.21	2.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	489.55	122.39	2.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	535.04	133.76	2.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	564.07	141.02	2.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	593.17	148.29	2.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	608.16	152.04	3.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	626.54	156.63	3.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	631.83	157.96	3.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	643.42	160.86	3.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	641.00	160.25	3.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	647.95	161.99	3.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	639.39	159.85	3.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	642.52	160.63	3.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	628.67	157.17	3.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	627.77	156.94	3.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	609.98	152.50	3.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	611.38	152.85	3.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	796.98	199.25	3.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	1,034.33	258.58	5.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	1,318.76	329.69	6.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	1,739.91	434.98	8.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	2,161.89	540.47	10.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	2,608.65	652.16	12.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	3,072.44	768.11	15.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	3,568.06	892.01	17.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	4,091.97	1,022.99	20.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	4,660.89	1,165.22	23.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	5,273.36	1,318.34	26.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	5,955.10	1,488.77	29.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	6,698.81	1,674.70	33.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	7,438.22	1,859.56	36.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	8,236.65	2,059.16	40.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	9,139.77	2,284.94	45.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	10,178.89	2,544.72	50.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	11,839.82	2,959.95	58.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	13,914.64	3,478.66	68.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	16,085.15	4,021.29	79.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	17,667.43	4,416.86	87.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	17,430.53	5,926.38	86.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:10 PM	16,968.31	3,563.34	84.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Independence High School

PREVISION DESIGN

AUGUST 16

Mirror date: April 26
Analysis hours: 7:25 AM-7:02 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:25 AM	13,631.54	545.26	67.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:30 AM	12,027.72	2,044.71	59.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	7,665.92	1,916.48	37.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	4,566.52	1,141.63	22.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	2,720.94	680.24	13.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	1,365.01	341.25	6.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	696.38	174.10	3.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	533.90	133.48	2.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	579.98	145.00	2.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	621.06	155.26	3.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	657.61	164.40	3.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	678.33	169.58	3.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	700.89	175.22	3.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	709.45	177.36	3.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	722.99	180.75	3.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	723.35	180.84	3.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	730.94	182.73	3.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	724.70	181.17	3.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	728.87	182.22	3.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	717.23	179.31	3.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	717.49	179.37	3.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	701.95	175.49	3.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	698.78	174.69	3.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	679.57	169.89	3.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	684.52	171.13	3.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	898.77	224.69	4.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	1,144.76	286.19	5.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	1,471.14	367.78	7.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	1,897.15	474.29	9.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	2,328.94	582.24	11.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	2,786.50	696.62	13.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	3,263.83	815.96	16.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	3,775.43	943.86	18.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	4,317.13	1,079.28	21.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	4,908.63	1,227.16	24.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	5,549.31	1,387.33	27.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	6,262.86	1,565.71	31.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	7,055.68	1,763.92	34.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	7,963.20	1,990.80	39.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	8,892.30	2,223.07	44.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	9,897.22	2,474.30	49.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	11,024.86	2,756.22	54.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	12,506.26	3,126.57	61.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	14,852.30	3,713.07	73.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	17,485.51	4,371.38	86.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	17,980.01	4,495.00	89.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	17,634.59	4,761.34	87.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:02 PM	17,324.83	2,425.48	85.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Independence High School

PREVISION DESIGN

AUGUST 23

Mirror date: April 19
Analysis hours: 7:31 AM-6:52 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:31 AM	13,849.37	1,523.43	68.5%	1,317.76	144.95	6.5%	1,317.61	144.94	6.5%	1,317.76	144.95	6.5%
7:45 AM	9,283.61	2,135.23	45.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	5,931.07	1,482.77	29.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	3,861.49	965.37	19.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	2,235.48	558.87	11.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	1,200.94	300.23	5.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	769.19	192.30	3.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	753.01	188.25	3.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	777.11	194.28	3.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	801.70	200.43	4.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	811.78	202.95	4.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	825.63	206.41	4.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	826.01	206.50	4.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	832.80	208.20	4.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	827.22	206.81	4.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	830.09	207.52	4.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	819.23	204.81	4.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	819.13	204.78	4.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	804.60	201.15	4.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	801.92	200.48	4.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	783.99	196.00	3.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	778.22	194.56	3.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	757.21	189.30	3.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	793.97	198.49	3.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	1,023.97	255.99	5.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	1,279.75	319.94	6.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	1,658.23	414.56	8.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	2,088.98	522.25	10.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	2,532.36	633.09	12.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	3,003.85	750.96	14.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	3,496.98	874.24	17.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	4,027.60	1,006.90	19.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	4,592.30	1,148.08	22.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	5,211.05	1,302.76	25.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	5,885.04	1,471.26	29.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	6,640.27	1,660.07	32.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	7,484.68	1,871.17	37.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	8,458.08	2,114.52	41.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	9,585.85	2,396.46	47.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	10,865.37	2,716.34	53.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	12,162.97	3,040.74	60.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	13,745.59	3,436.40	68.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	16,250.07	4,062.52	80.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	18,259.43	4,564.86	90.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	18,605.45	4,651.36	92.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:45 PM	18,096.86	3,438.40	89.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:52 PM	17,716.48	1,062.99	87.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Independence High School

PREVISION DESIGN

AUGUST 30

Mirror date: April 12
Analysis hours: 7:37 AM-6:42 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:37 AM	14,167.71	850.06	70.1%	6,001.05	360.06	29.7%	6,001.05	360.06	29.7%	6,001.05	360.06	29.7%
7:45 AM	11,638.52	2,211.32	57.6%	564.16	107.19	2.8%	563.82	107.13	2.8%	564.16	107.19	2.8%
8:00 AM	7,728.25	1,932.06	38.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	5,164.83	1,291.21	25.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	3,318.54	829.64	16.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	1,884.88	471.22	9.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	1,144.78	286.19	5.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	965.13	241.28	4.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	958.23	239.56	4.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	967.17	241.79	4.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	963.19	240.80	4.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	965.84	241.46	4.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	956.24	239.06	4.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	955.93	238.98	4.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	942.65	235.66	4.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	939.68	234.92	4.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	923.98	231.00	4.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	919.69	229.92	4.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	901.24	225.31	4.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	894.98	223.74	4.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	874.11	218.53	4.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	866.64	216.66	4.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	843.47	210.87	4.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	923.03	230.76	4.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	1,167.69	291.92	5.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	1,434.38	358.59	7.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	1,864.77	466.19	9.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	2,305.20	576.30	11.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	2,761.45	690.36	13.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	3,249.43	812.36	16.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	3,760.54	940.13	18.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	4,313.19	1,078.30	21.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	4,903.62	1,225.91	24.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	5,554.82	1,388.70	27.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	6,267.70	1,566.92	31.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	7,071.05	1,767.76	35.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	7,977.12	1,994.28	39.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	9,030.30	2,257.58	44.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	10,261.97	2,565.49	50.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	11,755.53	2,938.88	58.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	13,626.87	3,406.72	67.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	15,703.37	3,925.84	77.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	17,576.01	4,394.00	87.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	17,852.68	4,463.17	88.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:30 PM	19,134.65	4,400.97	94.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:42 PM	19,391.37	2,133.05	95.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Independence High School

PREVISION DESIGN

SEPTEMBER 6

Mirror date: April 5
Analysis hours: 7:44 AM-6:31 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:44 AM	16,292.50	2,118.02	80.6%	3,876.26	503.91	19.2%	3,876.26	503.91	19.2%	3,876.26	503.91	19.2%
8:00 AM	9,841.18	2,460.29	48.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	6,709.88	1,677.47	33.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	4,592.68	1,148.17	22.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	2,794.89	698.72	13.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	1,659.99	415.00	8.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	1,218.70	304.68	6.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	1,162.09	290.52	5.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	1,150.97	287.74	5.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	1,130.24	282.56	5.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	1,120.33	280.08	5.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	1,099.58	274.89	5.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	1,090.40	272.60	5.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	1,069.22	267.31	5.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	1,060.02	265.00	5.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	1,038.53	259.63	5.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	1,029.33	257.33	5.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	1,006.87	251.72	5.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	997.24	249.31	4.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	973.91	243.48	4.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	962.95	240.74	4.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	938.57	234.64	4.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	1,070.90	267.73	5.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	1,329.10	332.28	6.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	1,651.26	412.81	8.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	2,091.00	522.75	10.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	2,545.33	636.33	12.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	3,015.81	753.95	14.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	3,521.36	880.34	17.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	4,053.40	1,013.35	20.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	4,630.79	1,157.70	22.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	5,251.09	1,312.77	26.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	5,939.59	1,484.90	29.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	6,697.41	1,674.35	33.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	7,557.73	1,889.43	37.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	8,535.82	2,133.96	42.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	9,683.46	2,420.87	47.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	11,079.34	2,769.84	54.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	12,812.29	3,203.07	63.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	15,056.77	3,764.19	74.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	17,973.68	4,493.42	88.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	18,268.63	4,567.16	90.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	17,565.69	4,742.74	86.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:31 PM	18,652.45	2,611.34	92.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Independence High School

PREVISION DESIGN

SEPTEMBER 13

Mirror date: March 29
Analysis hours: 7:50 AM-6:21 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:50 AM	19,644.49	1,571.56	97.2%	0.00	0.00	0.0%	7.80	0.62	0.0%	7.80	0.62	0.0%
8:00 AM	12,272.61	2,577.25	60.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	8,526.57	2,131.64	42.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	5,967.24	1,491.81	29.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	3,930.77	982.69	19.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	2,354.75	588.69	11.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	1,559.22	389.80	7.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	1,406.77	351.69	7.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	1,366.07	341.52	6.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	1,320.75	330.19	6.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	1,293.62	323.41	6.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	1,256.67	314.17	6.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	1,235.87	308.97	6.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	1,206.30	301.57	6.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	1,190.27	297.57	5.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	1,162.78	290.69	5.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	1,148.43	287.11	5.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	1,121.82	280.46	5.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	1,108.52	277.13	5.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	1,082.10	270.52	5.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	1,068.46	267.12	5.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	1,045.10	261.28	5.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	1,238.79	309.70	6.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	1,511.76	377.94	7.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	1,897.76	474.44	9.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	2,338.76	584.69	11.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	2,808.34	702.08	13.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	3,294.63	823.66	16.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	3,820.63	955.16	18.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	4,374.42	1,093.61	21.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	4,980.89	1,245.22	24.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	5,635.07	1,408.77	27.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	6,364.74	1,591.19	31.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	7,173.34	1,793.33	35.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	8,099.71	2,024.93	40.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	9,161.33	2,290.33	45.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	10,448.61	2,612.15	51.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	12,056.11	3,014.03	59.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	14,092.77	3,523.19	69.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	16,940.51	4,235.13	83.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	18,637.35	4,659.34	92.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	18,960.88	4,740.22	93.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:15 PM	18,496.12	3,329.30	91.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:21 PM	18,154.25	907.71	89.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Independence High School

PREVISION DESIGN

SEPTEMBER 20

Fall equinox (Spring equinox on March 22 similar)
Analysis hours: 7:57 AM-6:09 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:57 AM	16,631.14	332.62	82.3%	0.00	0.00	0.0%	1,123.47	22.47	5.6%	1,123.36	22.47	5.6%
8:00 AM	15,398.47	2,309.77	76.2%	0.00	0.00	0.0%	860.72	129.11	4.3%	860.72	129.11	4.3%
8:15 AM	10,632.46	2,658.11	52.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	7,518.93	1,879.73	37.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	5,274.49	1,318.62	26.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	3,254.65	813.66	16.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	2,097.62	524.40	10.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	1,725.01	431.25	8.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	1,633.07	408.27	8.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	1,549.75	387.44	7.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	1,492.93	373.23	7.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	1,431.51	357.88	7.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	1,393.87	348.47	6.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	1,353.46	338.36	6.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	1,330.26	332.57	6.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	1,295.85	323.96	6.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	1,276.26	319.07	6.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	1,244.98	311.24	6.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	1,228.00	307.00	6.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	1,198.12	299.53	5.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	1,182.23	295.56	5.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	1,168.09	292.02	5.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	1,426.79	356.70	7.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	1,714.75	428.69	8.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	2,158.16	539.54	10.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	2,603.48	650.87	12.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	3,088.42	772.11	15.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	3,592.82	898.20	17.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	4,140.30	1,035.07	20.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	4,719.44	1,179.86	23.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	5,357.48	1,339.37	26.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	6,047.37	1,511.84	29.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	6,826.04	1,706.51	33.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	7,689.73	1,922.43	38.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	8,690.57	2,172.64	43.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	9,847.63	2,461.91	48.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	11,312.87	2,828.22	56.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	13,171.90	3,292.97	65.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	15,631.89	3,907.97	77.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	18,126.88	4,531.72	89.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	18,887.41	4,721.85	93.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:00 PM	19,634.72	4,123.29	97.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
6:09 PM	19,842.43	1,587.39	98.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Independence High School

PREVISION DESIGN

SEPTEMBER 27

Mirror date: March 15
Analysis hours: 8:03 AM-5:58 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
8:03 AM	20,168.76	2,016.88	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	13,250.23	2,915.05	65.6%	0.00	0.00	0.0%	2,718.90	598.16	13.5%	2,718.90	598.16	13.5%
8:30 AM	9,245.60	2,311.40	45.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	6,687.75	1,671.94	33.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	4,430.20	1,107.55	21.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	2,796.27	699.07	13.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	2,101.15	525.29	10.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	1,934.10	483.52	9.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	1,804.06	451.02	8.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	1,712.23	428.06	8.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	1,623.58	405.90	8.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	1,567.14	391.78	7.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	1,511.71	377.93	7.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	1,480.48	370.12	7.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	1,438.79	359.70	7.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	1,413.70	353.42	7.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	1,377.41	344.35	6.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	1,356.56	339.14	6.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	1,323.27	330.82	6.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	1,308.30	327.08	6.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	1,349.73	337.43	6.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	1,644.81	411.20	8.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	1,956.55	489.14	9.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	2,423.43	605.86	12.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	2,883.73	720.93	14.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	3,384.54	846.14	16.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	3,908.17	977.04	19.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	4,477.68	1,119.42	22.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	5,081.92	1,270.48	25.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	5,753.58	1,438.40	28.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	6,482.97	1,620.74	32.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	7,310.99	1,827.75	36.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	8,237.83	2,059.46	40.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	9,317.46	2,329.36	46.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	10,589.98	2,647.50	52.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	12,251.08	3,062.77	60.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	14,417.37	3,604.34	71.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	17,415.78	4,353.95	86.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	18,221.30	4,555.32	90.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:45 PM	19,283.44	4,435.19	95.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:58 PM	20,168.76	2,218.56	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Independence High School

PREVISION DESIGN

OCTOBER 4

Mirror date: March 8

Analysis hours: 8:09 AM-5:47 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
8:09 AM	20,117.11	804.68	99.5%	0.00	0.00	0.0%	51.65	2.07	0.3%	51.65	2.07	0.3%
8:15 AM	18,318.89	3,114.21	90.6%	0.00	0.00	0.0%	1,849.87	314.48	9.2%	1,849.87	314.48	9.2%
8:30 AM	11,231.53	2,807.88	55.6%	0.00	0.00	0.0%	2,695.44	673.86	13.3%	2,695.54	673.88	13.3%
8:45 AM	8,212.50	2,053.13	40.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	5,845.95	1,461.49	28.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	3,716.09	929.02	18.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	2,573.91	643.48	12.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	2,279.45	569.86	11.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	2,092.11	523.03	10.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	1,958.19	489.55	9.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	1,835.29	458.82	9.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	1,756.51	439.13	8.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	1,682.92	420.73	8.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	1,641.72	410.43	8.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	1,592.28	398.07	7.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	1,561.18	390.30	7.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	1,519.18	379.80	7.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	1,494.12	373.53	7.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	1,457.50	364.37	7.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	1,445.45	361.36	7.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	1,507.80	376.95	7.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	1,850.40	462.60	9.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	2,235.55	558.89	11.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	2,700.64	675.16	13.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	3,174.77	793.69	15.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	3,694.65	923.66	18.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	4,236.56	1,059.14	21.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	4,832.36	1,208.09	23.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	5,466.64	1,366.66	27.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	6,176.29	1,544.07	30.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	6,951.40	1,737.85	34.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	7,837.91	1,959.48	38.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	8,833.48	2,208.37	43.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	10,024.83	2,506.21	49.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	11,463.02	2,865.75	56.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	13,397.75	3,349.44	66.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	16,332.60	4,083.15	80.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	17,587.56	4,396.89	87.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	18,580.07	5,016.62	91.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:47 PM	19,974.67	2,796.45	98.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Independence High School

PREVISION DESIGN

OCTOBER 11

Mirror date: March 1
Analysis hours: 8:16 AM-5:37 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
8:16 AM	19,826.18	2,379.14	98.1%	0.00	0.00	0.0%	342.58	41.11	1.7%	342.58	41.11	1.7%
8:30 AM	13,493.99	3,238.56	66.8%	0.00	0.00	0.0%	5,477.42	1,314.58	27.1%	5,695.47	1,366.91	28.2%
8:45 AM	10,020.16	2,505.04	49.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	7,363.07	1,840.77	36.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	4,952.57	1,238.14	24.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	3,251.00	812.75	16.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	2,677.69	669.42	13.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	2,419.47	604.87	12.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	2,234.65	558.66	11.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	2,069.37	517.34	10.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	1,963.81	490.95	9.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	1,869.85	467.46	9.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	1,815.47	453.87	9.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	1,755.89	438.97	8.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	1,718.26	429.56	8.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	1,670.16	417.54	8.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	1,641.01	410.25	8.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	1,600.20	400.05	7.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	1,595.29	398.82	7.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	1,750.25	437.56	8.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	2,104.38	526.09	10.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	2,516.20	629.05	12.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	2,987.58	746.90	14.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	3,476.99	869.25	17.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	4,017.36	1,004.34	19.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	4,582.11	1,145.53	22.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	5,209.94	1,302.48	25.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	5,877.52	1,469.38	29.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	6,629.03	1,657.26	32.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	7,449.58	1,862.40	36.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	8,391.39	2,097.85	41.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	9,478.18	2,369.54	46.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	10,840.21	2,710.05	53.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	12,514.99	3,128.75	61.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	14,895.81	3,723.95	73.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	16,936.24	4,234.06	83.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	18,075.47	4,518.87	89.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:30 PM	19,480.57	3,701.31	96.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:37 PM	19,991.34	1,199.48	98.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Independence High School

PREVISION DESIGN

OCTOBER 18

Mirror date: February 22
Analysis hours: 8:22 AM-5:27 PM (PDT)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
8:22 AM	20,168.76	1,210.13	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	17,249.39	3,104.89	85.3%	0.00	0.00	0.0%	1,131.16	203.61	5.6%	2,919.37	525.49	14.4%
8:45 AM	12,053.83	3,013.46	59.6%	0.00	0.00	0.0%	955.59	238.90	4.7%	955.78	238.94	4.7%
9:00 AM	9,016.83	2,254.21	44.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	6,568.87	1,642.22	32.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	4,254.49	1,063.62	21.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	3,194.55	798.64	15.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	2,791.52	697.88	13.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	2,545.09	636.27	12.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	2,328.92	582.23	11.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	2,190.13	547.53	10.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	2,073.62	518.40	10.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	2,004.01	501.00	9.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	1,929.64	482.41	9.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	1,884.27	471.07	9.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	1,829.93	457.48	9.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	1,796.31	449.08	8.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	1,751.36	437.84	8.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	1,754.19	438.55	8.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	1,977.64	494.41	9.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	2,349.53	587.38	11.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	2,790.55	697.64	13.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	3,279.12	819.78	16.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	3,786.31	946.58	18.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	4,351.51	1,087.88	21.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	4,940.62	1,235.15	24.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	5,594.52	1,398.63	27.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	6,290.13	1,572.53	31.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	7,076.36	1,769.09	35.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	7,937.63	1,984.41	39.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	8,933.49	2,233.37	44.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	10,153.40	2,538.35	50.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	11,700.58	2,925.15	57.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:30 PM	13,656.87	3,414.22	67.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:45 PM	16,146.24	4,036.56	79.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:00 PM	17,270.00	4,317.50	85.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:15 PM	18,677.28	4,109.00	92.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
5:27 PM	20,058.34	2,005.83	99.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Independence High School

PREVISION DESIGN

OCTOBER 25

Mirror date: February 15
Analysis hours: 7:30 AM-4:18 PM (PST)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:30 AM	20,168.76	2,621.94	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	14,343.37	3,585.84	71.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	2,828.80	707.20	14.0%
8:00 AM	10,886.29	2,721.57	53.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	8,274.88	2,068.72	40.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	5,678.61	1,419.65	28.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	3,955.05	988.76	19.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	3,307.87	826.97	16.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	2,952.34	738.09	14.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	2,643.77	660.94	13.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	2,443.51	610.88	12.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	2,291.95	572.99	11.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	2,207.42	551.86	10.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	2,119.41	529.85	10.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	2,064.25	516.06	10.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	2,001.38	500.34	9.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	1,962.63	490.66	9.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	1,911.64	477.91	9.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	1,925.46	481.37	9.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	2,209.63	552.41	10.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	2,606.37	651.59	12.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	3,061.10	765.28	15.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	3,566.92	891.73	17.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	4,092.39	1,023.10	20.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	4,676.97	1,169.24	23.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	5,282.94	1,320.73	26.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	5,958.53	1,489.63	29.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	6,678.41	1,669.60	33.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	7,495.00	1,873.75	37.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	8,390.66	2,097.66	41.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	9,431.24	2,357.81	46.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	10,774.31	2,693.58	53.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	12,494.74	3,123.68	61.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	15,071.24	3,767.81	74.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	16,581.12	4,145.28	82.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	18,079.62	4,519.90	89.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:15 PM	19,944.76	2,991.71	98.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:18 PM	20,117.03	603.51	99.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Independence High School

PREVISION DESIGN

NOVEMBER 1

Mirror date: February 8
Analysis hours: 7:36 AM-4:10 PM (PST)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:36 AM	20,168.76	1,411.81	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	20,168.76	3,832.06	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	12,992.27	3,248.07	64.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	10,083.81	2,520.95	49.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	7,365.89	1,841.47	36.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	5,005.93	1,251.48	24.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	3,908.33	977.08	19.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	3,436.41	859.10	17.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	3,030.77	757.69	15.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	2,764.20	691.05	13.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	2,551.85	637.96	12.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	2,425.54	606.38	12.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	2,317.20	579.30	11.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	2,252.72	563.18	11.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	2,181.12	545.28	10.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	2,137.10	534.28	10.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	2,085.90	521.48	10.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	2,106.82	526.70	10.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	2,442.50	610.62	12.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	2,865.42	716.36	14.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	3,323.14	830.79	16.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	3,844.77	961.19	19.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	4,382.18	1,095.54	21.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	4,977.97	1,244.49	24.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	5,596.75	1,399.19	27.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	6,289.51	1,572.38	31.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	7,028.46	1,757.11	34.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	7,868.34	1,967.08	38.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	8,789.37	2,197.34	43.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	9,897.81	2,474.45	49.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	11,398.72	2,849.68	56.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	13,482.79	3,370.70	66.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	15,675.62	3,918.90	77.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	17,180.99	4,295.25	85.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	19,180.82	4,027.97	94.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:10 PM	20,165.87	1,814.93	99.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Independence High School

PREVISION DESIGN

NOVEMBER 8

Mirror date: February 1
Analysis hours: 7:43 AM-4:03 PM (PST)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:43 AM	20,168.76	201.69	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
7:45 AM	20,168.76	2,621.94	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	20,168.76	5,042.19	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	11,993.40	2,998.35	59.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	9,181.11	2,295.28	45.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	6,610.89	1,652.72	32.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	4,670.16	1,167.54	23.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	3,991.24	997.81	19.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	3,484.43	871.11	17.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	3,127.60	781.90	15.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	2,845.55	711.39	14.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	2,668.96	667.24	13.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	2,528.23	632.06	12.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	2,445.08	611.27	12.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	2,364.33	591.08	11.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	2,314.38	578.60	11.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	2,260.40	565.10	11.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	2,285.78	571.44	11.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	2,659.16	664.79	13.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	3,101.14	775.28	15.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	3,561.96	890.49	17.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	4,094.36	1,023.59	20.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	4,636.94	1,159.23	22.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	5,240.32	1,310.08	25.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	5,866.66	1,466.66	29.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	6,571.28	1,642.82	32.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	7,322.30	1,830.57	36.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	8,175.36	2,043.84	40.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	9,143.43	2,285.86	45.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	10,374.15	2,593.54	51.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	11,986.00	2,996.50	59.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	14,424.48	3,606.12	71.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	15,931.56	3,982.89	78.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	17,812.93	4,453.23	88.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:00 PM	20,149.88	3,022.48	99.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
4:03 PM	20,168.76	605.06	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Independence High School

PREVISION DESIGN

NOVEMBER 15

Mirror date: January 25
Analysis hours: 7:51 AM-3:57 PM (PST)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:51 AM	20,168.76	1,613.50	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	20,168.76	4,033.75	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	18,452.03	4,613.01	91.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	10,956.14	2,739.03	54.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	8,358.43	2,089.61	41.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	5,765.63	1,441.41	28.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	4,637.10	1,159.28	22.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	3,998.79	999.70	19.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	3,541.68	885.42	17.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	3,177.41	794.35	15.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	2,948.67	737.17	14.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	2,758.72	689.68	13.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	2,645.34	661.33	13.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	2,546.89	636.72	12.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	2,488.46	622.11	12.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	2,429.38	607.35	12.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	2,455.66	613.91	12.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	2,849.37	712.34	14.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	3,306.71	826.68	16.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	3,770.14	942.54	18.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	4,306.38	1,076.60	21.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	4,849.86	1,212.46	24.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	5,457.77	1,364.44	27.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	6,088.45	1,522.11	30.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	6,799.31	1,699.83	33.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	7,552.61	1,888.15	37.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	8,406.83	2,101.71	41.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	9,432.19	2,358.05	46.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	10,746.79	2,686.70	53.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	12,422.26	3,105.56	61.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	14,550.51	3,637.63	72.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	16,161.80	4,040.45	80.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	18,533.94	4,262.81	91.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:57 PM	20,132.02	2,214.52	99.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Independence High School

PREVISION DESIGN

NOVEMBER 22

Mirror date: January 18
Analysis hours: 7:57 AM-3:54 PM (PST)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
7:57 AM	20,168.76	403.38	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:00 AM	20,168.76	3,025.31	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	20,168.76	5,042.19	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	12,722.62	3,180.66	62.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	10,030.00	2,507.50	49.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	7,237.06	1,809.27	35.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	5,333.19	1,333.30	26.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	4,546.86	1,136.72	22.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	4,007.02	1,001.75	19.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	3,548.92	887.23	17.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	3,245.99	811.50	16.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	2,996.74	749.18	14.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	2,855.60	713.90	14.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	2,742.98	685.74	13.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	2,674.70	668.67	13.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	2,599.54	649.89	12.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	2,621.17	655.29	13.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	3,005.82	751.46	14.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	3,480.69	870.17	17.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	3,943.17	985.79	19.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	4,480.51	1,120.13	22.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	5,022.11	1,255.53	24.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	5,630.02	1,407.51	27.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	6,253.61	1,563.40	30.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	6,958.99	1,739.75	34.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	7,705.24	1,926.31	38.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	8,548.01	2,137.00	42.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	9,595.83	2,398.96	47.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	10,952.46	2,738.11	54.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	12,743.09	3,185.77	63.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	14,547.90	3,636.98	72.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	16,380.55	4,095.14	81.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	19,183.31	3,836.66	94.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:54 PM	20,103.80	1,608.30	99.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Independence High School

PREVISION DESIGN

NOVEMBER 29

Mirror date: January 11
Analysis hours: 8:04 AM-3:51 PM (PST)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
8:04 AM	20,168.76	1,815.19	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	20,168.76	4,235.44	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	20,168.76	5,042.19	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	11,651.18	2,912.80	57.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	8,842.95	2,210.74	43.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	6,346.96	1,586.74	31.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	5,085.03	1,271.26	25.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	4,456.20	1,114.05	22.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	3,918.32	979.58	19.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	3,559.76	889.94	17.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	3,245.19	811.30	16.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	3,053.56	763.39	15.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	2,921.49	730.37	14.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	2,843.25	710.81	14.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	2,755.21	688.80	13.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	2,772.19	693.05	13.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	3,043.89	760.97	15.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	3,584.80	896.20	17.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	4,071.43	1,017.86	20.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	4,604.28	1,151.07	22.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	5,137.46	1,284.37	25.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	5,738.45	1,434.61	28.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	6,352.69	1,588.17	31.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	7,046.55	1,761.64	34.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	7,779.69	1,944.92	38.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	8,603.08	2,150.77	42.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	9,633.09	2,408.27	47.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	11,026.64	2,756.66	54.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	12,783.34	3,195.83	63.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	14,483.61	3,620.90	71.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	16,488.32	4,122.08	81.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	19,485.43	3,507.38	96.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:51 PM	20,086.80	1,004.34	99.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Independence High School

PREVISION DESIGN

DECEMBER 6

Mirror date: January 4
Analysis hours: 8:10 AM-3:51 PM (PST)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
8:10 AM	20,168.76	806.75	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:15 AM	20,168.76	3,428.69	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	20,168.76	5,042.19	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	15,070.17	3,767.54	74.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	10,208.73	2,552.18	50.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	7,553.67	1,888.42	37.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	5,660.45	1,415.11	28.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	4,865.58	1,216.40	24.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	4,258.05	1,064.51	21.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	3,841.83	960.46	19.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	3,474.99	868.75	17.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	3,232.71	808.18	16.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	3,071.25	767.81	15.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	2,983.20	745.80	14.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	2,887.26	721.82	14.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	2,895.14	723.78	14.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	3,185.99	796.50	15.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	3,696.29	924.07	18.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	4,137.17	1,034.29	20.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	4,663.45	1,165.86	23.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	5,187.62	1,296.91	25.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	5,779.50	1,444.88	28.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	6,381.77	1,595.44	31.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	7,061.73	1,765.43	34.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	7,778.78	1,944.70	38.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	8,582.90	2,145.72	42.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	9,577.03	2,394.26	47.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	10,916.53	2,729.13	54.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	12,641.61	3,160.40	62.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	14,328.48	3,582.12	70.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	16,475.28	4,118.82	81.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	19,487.26	3,312.83	96.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:51 PM	20,089.93	1,004.50	99.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Independence High School

PREVISION DESIGN

DECEMBER 13

Mirror date: December 28

Analysis hours: 8:15 AM-3:52 PM (PST)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
8:15 AM	20,168.76	2,420.25	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	20,168.76	5,042.19	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	20,168.76	5,042.19	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	11,416.91	2,854.23	56.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	8,752.47	2,188.12	43.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	6,223.32	1,555.83	30.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	5,258.30	1,314.57	26.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	4,547.65	1,136.91	22.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	4,075.46	1,018.87	20.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	3,667.19	916.80	18.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	3,380.82	845.20	16.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	3,185.99	796.50	15.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	3,085.13	771.28	15.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	2,981.51	745.38	14.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	2,971.77	742.94	14.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	3,138.18	784.55	15.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	3,695.20	923.80	18.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	4,134.70	1,033.68	20.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	4,653.66	1,163.41	23.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	5,167.77	1,291.94	25.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	5,750.40	1,437.60	28.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	6,340.91	1,585.23	31.4%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	7,005.26	1,751.32	34.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	7,706.26	1,926.57	38.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	8,497.19	2,124.30	42.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	9,422.47	2,355.62	46.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	10,695.90	2,673.98	52.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	12,352.11	3,088.03	61.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	14,070.24	3,517.56	69.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	16,232.42	4,058.11	80.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	19,271.25	3,468.83	95.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:52 PM	20,106.69	1,206.40	99.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

PROJECT: UCSF Hospital Project
OPEN SPACE: Independence High School

PREVISION DESIGN

DECEMBER 20

Winter solstice (December 21 similar)
Analysis hours: 8:19 AM-3:54 PM (PST)

Analysis Time	EXISTING SHADOW			UCSF HOSPITAL PROJECT NET NEW SHADOW			NEAR TERM CUMULATIVE (2030) NET NEW SHADOW			LONG TERM CUMULATIVE (2050) NET NEW SHADOW		
	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage	Shadow Area (sf)	Area/Time (sfh)	Coverage
8:19 AM	20,168.76	1,613.50	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:30 AM	20,168.76	4,235.44	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
8:45 AM	20,168.76	5,042.19	100.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:00 AM	12,276.10	3,069.02	60.7%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:15 AM	9,612.17	2,403.04	47.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:30 AM	6,823.36	1,705.84	33.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
9:45 AM	5,552.02	1,388.00	27.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:00 AM	4,748.00	1,187.00	23.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:15 AM	4,236.54	1,059.13	21.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:30 AM	3,796.35	949.09	18.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
10:45 AM	3,486.00	871.50	17.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:00 AM	3,254.58	813.64	16.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:15 AM	3,141.22	785.30	15.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:30 AM	3,030.79	757.70	15.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
11:45 AM	3,001.22	750.31	14.8%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:00 PM	3,062.03	765.51	15.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:15 PM	3,631.57	907.89	18.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:30 PM	4,065.17	1,016.29	20.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
12:45 PM	4,576.13	1,144.03	22.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:00 PM	5,082.75	1,270.69	25.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:15 PM	5,657.15	1,414.29	28.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:30 PM	6,237.60	1,559.40	30.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
1:45 PM	6,888.39	1,722.10	34.1%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:00 PM	7,574.42	1,893.61	37.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:15 PM	8,350.84	2,087.71	41.3%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:30 PM	9,212.23	2,303.06	45.6%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
2:45 PM	10,410.05	2,602.51	51.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:00 PM	11,969.28	2,992.32	59.2%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:15 PM	13,730.01	3,432.50	67.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:30 PM	15,757.77	3,939.44	78.0%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:45 PM	18,774.97	3,942.74	92.9%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%
3:54 PM	20,115.18	1,609.21	99.5%	0.00	0.00	0.0%	0.00	0.00	0.0%	0.00	0.00	0.0%

Appendix TRANS
Transportation Appendix

Passenger and Commercial Loading Operations

This appendix presents a discussion of passenger loading loop operations and commercial loading dock operations at the Parnassus Heights campus site and changes to these operations as a result of the new and improved loading facilities that would be constructed under the NHPH as well as the increased passenger and commercial traffic that would access the NHPH upon completion of the project.

Passenger Loading Loop Operations

This section described the data collected and analysis methodology used to forecast future demand for the NHPH passenger loading loop and confirm the proposed number of passenger loading spaces will meet anticipated demand.

Existing Facilities

Passenger loading currently takes place in the Moffitt Loop, Emergency Department (ED) parking area, or in on-street passenger loading zones. The Moffitt Loop provides six designated short-term parking spaces (15 minutes or less) and a travel lane in which passenger loading generally occurs. The ED parking area is a smaller lot at the entrance to the Emergency Department which is used by ambulances and limited passenger loading activity.

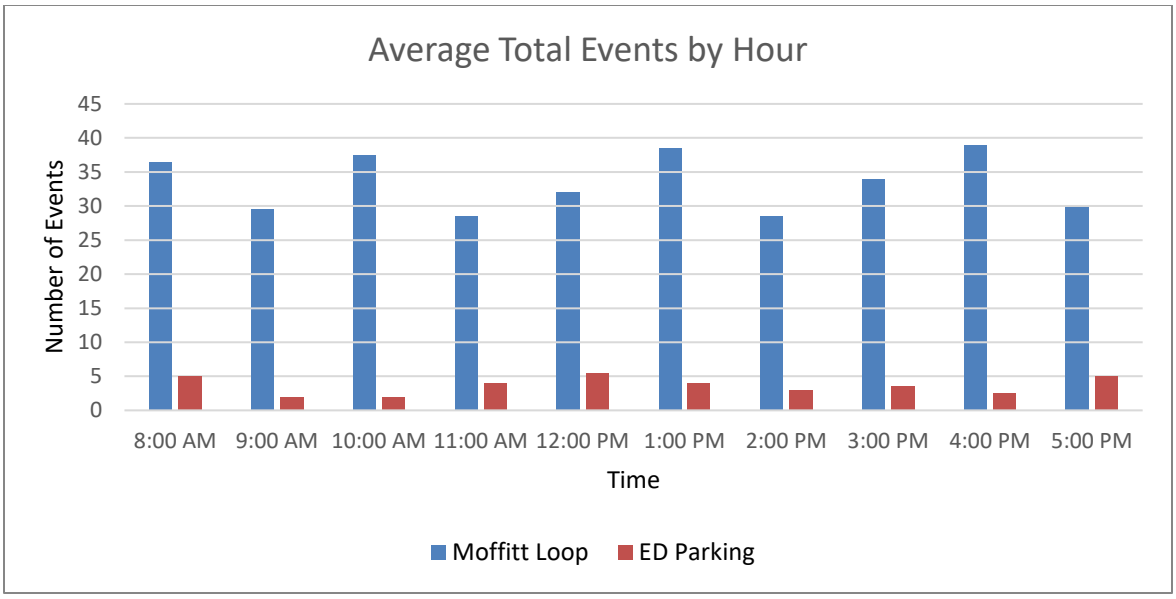
Data Collection

Passenger loading activity observations were conducted at the Moffitt Loop and ED parking area on Wednesday, April 21, 2021 and Thursday, April 22, 2021 between 8:00 AM and 6:00 PM. These observations included the following data:

- Number of vehicles
- Duration of loading event
- Type of loading event (pick-up or drop-off)
- Number of passengers
- Activity of driver and/or passengers (e.g., entered hospital assisted, entered hospital unassisted)

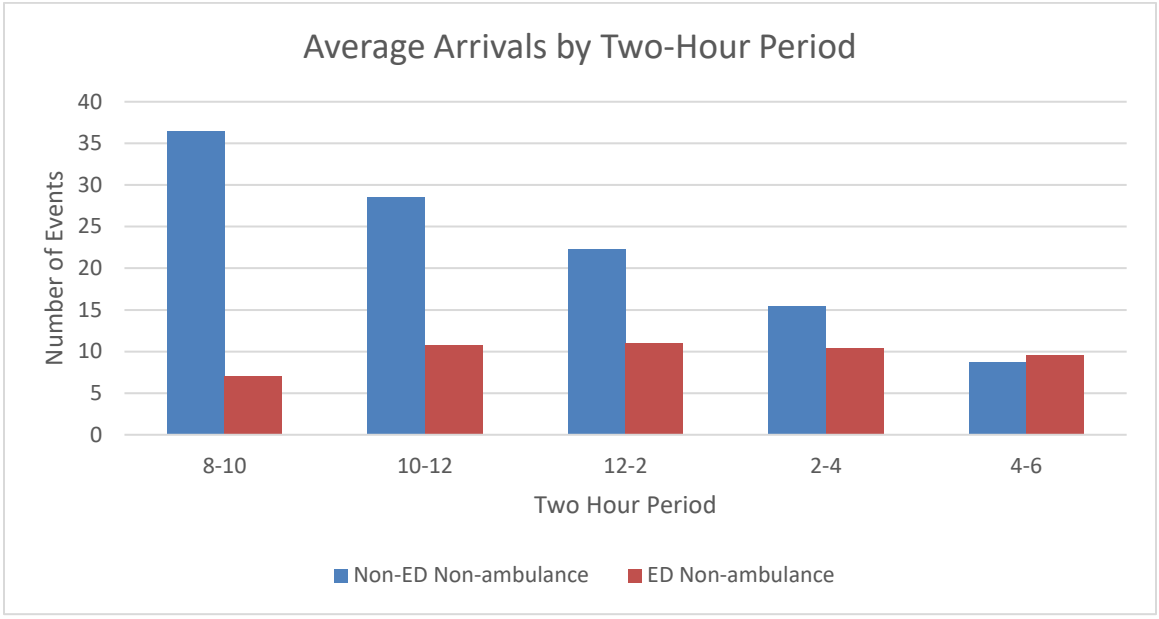
These data provided an overview of the current usage of the Moffitt Loop and ED parking area, including the existing loading demand, the distribution of pick-up and drop-off activity throughout the day, and the distribution of dwell times at the curb.

Data was also received from UCSF regarding the distribution of patient arrivals at Moffitt-Long Hospitals throughout the day and the proportion who arrived in an ambulance, from March 2019 through February 2020. This data indicated that the existing ED parking area was underused for pick-up and drop-off activity relative to the Moffitt Loop.



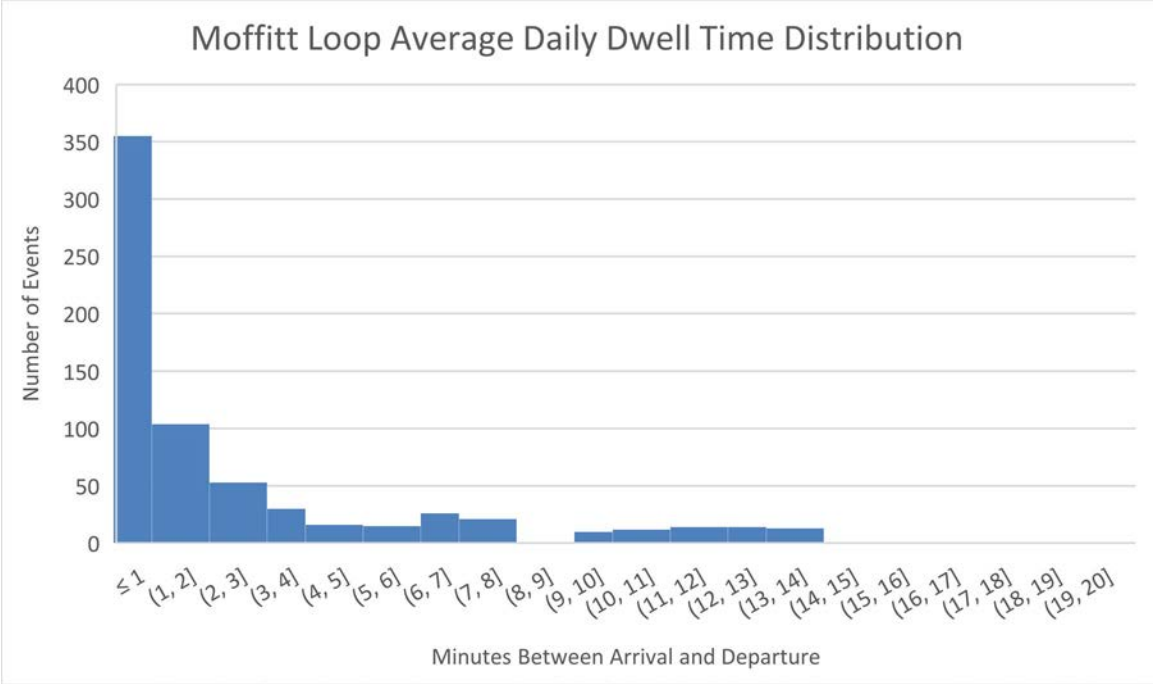
SOURCE: Fehr & Peers, 2021

Figure 1
Average Total Events by Hour by Passenger Loading Facility



SOURCE: Fehr & Peers, 2021

Figure 2
Average Total Events by Two Hour Period by Passenger Loading Facility



SOURCE: Fehr & Peers, 2021

Figure 3
Average Total Events by Hour by Passenger Loading Facility

Demand Forecasting

Loading observations and Moffitt-Long patient arrival data was used to forecast loading demand for the NHPH's separate "main" and "emergency department (ED)" passenger loading areas. The patient arrival data indicates that a higher proportion of patients are destined for the ED than the split of vehicles using the ED parking area compared to Moffitt Loop. This suggests that ED patients and visitors may currently use the Moffitt Loop, which may reflect the limited size and visibility of the ED parking area. In the future, with separate loading facilities for both emergency and non-emergency patients, a higher proportion of vehicles are anticipated to use the ED passenger loading area, reflective of the overall split in patient arrivals.

Non-emergency loading events by hour were divided into pick-ups and drop-offs based on observed splits at the Moffitt Loop to reflect the continued use of the Moffitt Loop for patient discharge (i.e., pick-ups) in the future.

Peak hour demand estimates were scaled to reflect a low forecast and a high forecast for the 2050 Cumulative scenario, which includes the NHPH plus other development at the campus site under the CPHP. The low forecast is based purely on the increase in hospital beds associated with the NHPH –a 20 percent increase in ED beds and 40 percent increase in non-emergency services. The high forecast reflects the NHPH travel demand estimates as described in *Section 4.14, Transportation*. These estimates take into account the decrease in campus parking, which is

anticipated to result in an increase in passenger loading activity. Under the high forecast, ED Loop demand for passenger loading would increase by approximately 50 percent and non-emergency ("Main" Loop) demand would increase by approximately 170 percent. A summary of peak hour passenger loading demand forecasts are presented in **Table 1.**

TABLE 1. PEAK HOUR PASSENGER LOADING DEMAND ESTIMATES IN 2050 CUMULATIVE SCENARIO

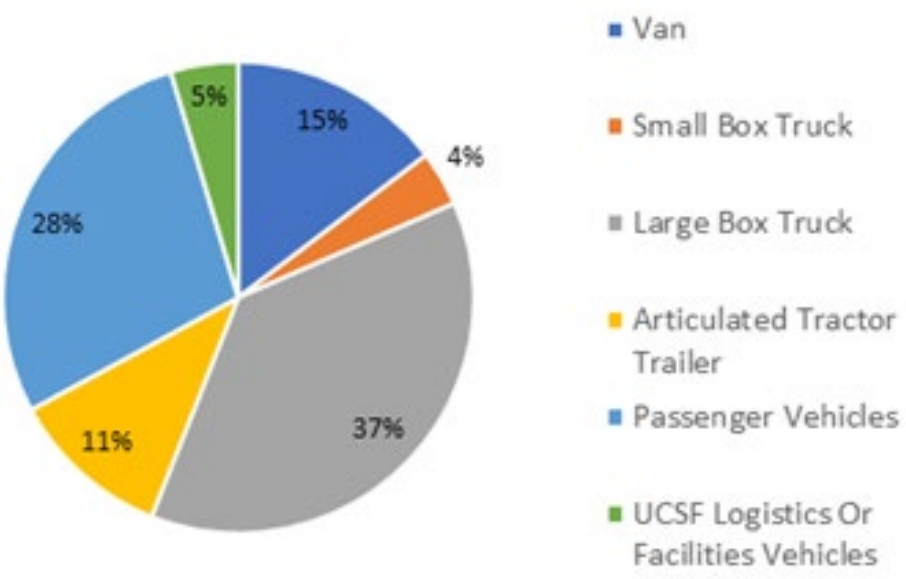
Forecast	Emergency Department Pick-ups/ Drop-offs	Non-Emergency Drop-offs	Non-Emergency Pick-Ups
Low	25	40	25
High	30	80	45

The Valet Loop ("Option 2: Proposed New Passenger Loading Loop with Valet Area") was estimated to serve roughly 15 vehicles per hour based on information from UCSF Health and UCSF Transportation Services, specifically patient and visitor demand at other UCSF campus site valet areas, typical and projected levels of valet staffing, and the location of the parking garages in relation to the valet loop.

Commercial Loading Dock Operations

This section provides an overview of data collected to understand existing commercial loading dock operations and future projections with implementation of the NHPH. Observations of commercial loading dock activities were conducted at the Central Receiving Area (CRA) and Long Dock in April 2021. The information described in this section refers to the existing Moffitt and Long Hospital, and the NHPH, and does not reflect other UCSF deliveries (e.g., non-clinical uses such as education, research, and administration).

At the present time, four truck loading bays and two smaller van parking spaces are provided and accommodate 133 average daily deliveries at Moffitt and Long Hospitals. During the peak hour, 15 deliveries were observed, which represents 11% of daily activity. The average dwell time observed was approximately 30 minutes. **Figure 4** shows the observed distribution of types of delivery vehicles used; about half of the vehicles that currently use the loading docks are small box trucks, large box trucks, or articulated tractor trailers. The other half represent passenger vehicles, vans, and UCSF Logistics or Facilities vehicles. In the future, with the NHPH, a similar distribution of vehicle types is anticipated.



SOURCE: Arup, 2021

Figure 4
Observed Distribution, Type of Delivery Vehicle

Based on these observations and considering the growth associated with the NHPH, **Table 2** summarizes the existing and forecast average daily and peak hour deliveries compared to the loading supply.

TABLE 2. COMMERCIAL LOADING DOCK SUPPLY AND DELIVERIES SUMMARY

Metrics	Existing Central Receiving Area and Long Dock Supply and Deliveries	Future Central Receiving Area, Long Dock, and NHPH Supply and Deliveries
Supply	4 loading bays + 2 smaller van spaces	12-13 loading bays + 2 smaller van spaces
Average Daily Deliveries	133 deliveries	310 deliveries (forecast)
Peak Hour Deliveries	15 deliveries	34 deliveries (forecast)

To manage loading dock operations in the future, a dockmaster is recommended to manage deliveries and dwell times within the suggested 25-30 minute limit. It is anticipated that the largest vehicle that can be accommodated in the future is 55 feet long.

Potential Cumulative Effects of Traffic Operations on Multimodal Operations

The Comprehensive Parnassus Heights Plan (CPHP), which includes the NHPH, would result in more vehicles at the campus site throughout the day, traveling more slowly. To the degree to which the CPHP and NHPH are unable to accommodate vehicle trips in off-street parking and/or passenger loading facilities, vehicle queues – or people circling for parking (on-street or in garages) – may periodically:

- Result in transit delay on Parnassus Avenue (6 Haight/Parnassus, 43 Masonic) and Irving Street (N Judah)
- Reduce accessibility by blocking multimodal transportation facilities, such as crosswalks, bicycle lanes, and/or transit stops

With implementation of the NHPH, the campus site would have both more locations and capacity for passenger loading to occur, than it presently does. Specifically, the NHPH passenger loading facilities and new traffic signal at the Parnassus/Hillway/NHPH Loop intersection are described in *Section 4.14, Transportation* (see description of roadway network changes in "Impact TRANS-3"). These facilities present opportunities for vehicles to exit the travel lane in a designated location in order for passengers to enter and exit near their destinations. However, UCSF cannot guarantee that drivers will follow the California Vehicle Code in a consistent manner, exiting the travel lane, and not blocking crosswalks, bicycle lanes, and delaying access to transit stops by transit vehicles when picking up and dropping off passengers. Further, although passenger loading supply for the campus site is expected to be greater than demand for most of the day, there may be peak passenger travel periods where demand, either for the campus site overall, or for specific locations is greater than supply. During these periods there would be a higher chance of delay to transit or a reduction in access to transportation facilities. See the "Loading Demand" section in *Section 4.14, Transportation* for descriptions of anticipated passenger loading demand and passenger loading supply with implementation of the CPHP, including the NHPH.

Travel Demand Analysis

TABLE 1
EXISTING CONDITIONS PERSON AND VEHICLE TRIPS

Population Group	Population[1]	Absentees[2]	Daily Person Trip Rate[3]	Daily Person Trips	Proportion of Internal UCSF Campus Trips[4]	Net External Daily Person Trips	Percent of Trips during PM Peak Hour[5]	Daily External Vehicle Trips	PM Peak Period External Vehicle Trips
Faculty/Staff/Students	11,100	10%	2.23	22,300	10%	20,100	17%	6,400	1,100
Patients/Visitors	6,400	0%	2	12,700	0%	12,700	8%	8,400	700
Total	**17,500**			**35,000**		**32,800**		**14,800**	**1,800**

Sources:
1 Faculty/Staff/Students and Patient/Visitor population estimates based on Table 4.12-2; Faculty/Staff/Students also includes a separate estimate for Childcare Staff.
3 UCSF LRDP FEIR (1997) and UCSF LRDP Amendment #1 FSEIR (2002)
4 UCSF LRDP TIS (2014)
5 UCSF LRDP TIS (2014)

TABLE 2
EXISTING MODE SPLIT (2018)

Population Group	Drive Alone	Drop-Off	Taxi/ Uber/ Lyft	Car-pool	Van-pool	Public Transit	UCSF Shuttle	Bicycle	Motor-cycle/ Scooter	Walk/ Run	Tele-com-mute	Other
Faculty/Staff/Students	21%	2%	4%	3%	1%	31%	10%	6%	1%	18%	2%	0%
Patients/Visitors	23%	7%	7%	37%	1%	16%	3%	1%	0%	4%	0%	0%

Source: UCSF 2018 Employee Commute Survey & UCSF 2017/2018 Patient-Visitor Survey

TABLE 3
NHPH ONLY PERSON AND VEHICLE TRIPS

Population Group	Population[1]	Absentees[2]	Daily Person Trip Rate[3]	Daily Person Trips	Proportion of Internal UCSF Campus Trips[4]	Net External Daily Person Trips	Percent of Trips during PM Peak Hour[5]	Daily External Vehicle Trips	PM Peak Period External Vehicle Trips
Faculty/Staff/Students	1,400	10%	2.23	2,900	10%	2,600	19%	1,100	200
Patients/Visitors	800	0%	2	1,700	0%	1,700	7%	1,400	100
Total	**2,300**			**4,600**		**4,300**		**2,500**	**300**

Sources:
1 Faculty/Staff/Students and Patient/Visitor population estimates based on Table 4.12-2; Faculty/Staff/Students also includes a separate estimate for Childcare Staff.
2 UCSF 2018 Employee Commute Survey
3 UCSF LRDP FEIR (1997) and UCSF LRDP Amendment #1 FSEIR (2002)
4 UCSF LRDP TIS (2014)
5 UCSF LRDP TIS (2014)

TABLE 4
2030 MODE SPLIT (FOR NHPH ONLY AND 2030 PLUS NHPH)

Population Group	Drive Alone	Drop-Off	Taxi/ Uber/ Lyft	Car-pool	Van-pool	Public Transit	UCSF Shuttle	Bicycle	Motor-cycle/ Scooter	Walk/ Run	Tele-com-mute	Other
Faculty/Staff/Students	17%	4%	7%	2%	1%	33%	11%	6%	1%	17%	2%	0%
Patients/Visitors	16%	14%	14%	29%	1%	16%	3%	1%	0%	5%	0%	0%

Source: Fehr & Peers, 2020.

TABLE 5
EXISTING PLUS NHPH PERSON AND VEHICLE TRIPS

Population Group	Population[1]	Absentees[2]	Daily Person Trip Rate[3]	Daily Person Trips	Proportion of Internal UCSF Campus Trips[4]	Net External Daily Person Trips	Percent of Trips during PM Peak Hour[5]	Daily External Vehicle Trips	PM Peak Period External Vehicle Trips
Faculty/Staff/Students	12,600	10%	2.23	25,200	10%	22,700	17%	7,600	1,300
Patients/Visitors	7,200	0%	2	14,400	0%	14,400	8%	9,800	800
Total	**19,700**			**39,600**		**37,000**		**17,300**	**2,100**

Sources:
1 Existing Faculty/Staff/Students and Patient/Visitor population estimates based on Table 4.12-2.
2 UCSF 2018 Employee Commute Survey
3 UCSF LRDP FEIR (1997) and UCSF LRDP Amendment #1 FSEIR (2002)
4 UCSF LRDP TIS (2014)
5 UCSF LRDP TIS (2014)

TABLE 6
2030 PLUS NHPH PERSON AND VEHICLE TRIPS

Population Group	Population[1]	Absentees[2]	Daily Person Trip Rate[3]	Daily Person Trips	Proportion of Internal UCSF Campus Trips[4]	Net External Daily Person Trips	Percent of Trips during PM Peak Hour[5]	Daily External Vehicle Trips	PM Peak Period External Vehicle Trips
Faculty/Staff/Students	15,200	10%	2.23	30,600	10%	27,500	17%	9,800	1,700
Patients/Visitors	8,100	0%	2	16,100	0%	16,100	7%	12,600	900
Total	**23,300**			**46,700**		**43,600**		**22,400**	**2,600**

Sources:
1 Faculty/Staff/Students and Patient/Visitor population estimates based on Table 4.12-2; Faculty/Staff/Students also includes a separate estimate for Childcare Staff.
2 UCSF 2018 Employee Commute Survey
3 UCSF LRDP FEIR (1997) and UCSF LRDP Amendment #1 FSEIR (2002)
4 UCSF LRDP TIS (2014)
5 UCSF LRDP TIS (2014)

TABLE 7
FUTURE PHASE PERSON AND VEHICLE TRIPS

Population Group	Population[1]	Absentees[2]	Daily Person Trip Rate[3]	Daily Person Trips	Proportion of Internal UCSF Campus Trips[4]	Net External Daily Person Trips	Percent of Trips during PM Peak Hour[5]	Daily External Vehicle Trips	PM Peak Period External Vehicle Trips
Faculty/Staff/Students	16,300	10%	2.23	32,800	10%	29,500	17%	10,500	1,900
Patients/Visitors	9,000	0%	2	18,100	0%	18,100	7%	16,500	1,200
Total	**25,400**			**50,800**		**47,500**		**27,000**	**3,000**

Sources:
1 Faculty/Staff/Students and Patient/Visitor population estimates based on Table 4.12-2; Faculty/Staff/Students also includes a separate estimate for Childcare Staff.
2 UCSF 2018 Employee Commute Survey
3 UCSF LRDP FEIR (1997) and UCSF LRDP Amendment #1 FSEIR (2002)
4 UCSF LRDP TIS (2014)
5 UCSF LRDP TIS (2014)

TABLE 8
FUTURE PHASE MODE SPLIT (2050)

Population Group	Drive Alone	Drop-Off	Taxi/ Uber/ Lyft	Car-pool	Van-pool	Public Transit	UCSF Shuttle	Bicycle	Motor-cycle/ Scooter	Walk/ Run	Tele-com-mute	Other
Faculty/Staff/Students	13%	5%	8%	2%	1%	33%	12%	6%	1%	16%	2%	0%
Patients/Visitors	12%	20%	20%	23%	1%	15%	2%	1%	0%	5%	0%	0%

Source: Fehr & Peers, 2020.

VEHICLE MILES OF TRAVEL ANALYSIS

VMT Summary

UCSF Parnassus Heights Site
Daily VMT Summary

Scenario	Daily Employees, Vendors & Services	Daily Vehicle Trips for Employees, Vendors & Services	Daily VMT for Employees, Vendors & Services	Daily VMT per capita for Employees, Vendors & Services
Parnassus Heights Campus				
Existing Conditions (NHPH)	11,668	6,763	115,873	9.9
Existing +NHPH	13,218	7,954	137,574	10.4
Year 2030 + NHPH	16,488	10,797	186,245	11.3
Existing + CPHP Future Phase (NHPH)	17,769	11,867	204,478	11.5
Parnassus Heights Area [a]				
- Existing [b]				8.9
- Year 2040 [b]				8.7
- Year 2050 [c]				15.8
SF Bay Area Region minus 15%				
- Existing [b]				16.2
- Year 2040 [b]				14.5
- Year 2050 [c]				20.2

[a] Aggregated data for TAZs 226, 227, 545, 546, and 547; includes adjacent residential, retail, medical and other office uses unrelated to UCSF
[b] SF Guidelines 2019
[c] vmt_raw_update.csv for 2050 Baseline

Sources: Adavant Consulting, Fehr & Peers, SFCTA, UCSF

SFCTA Forecasting Model Data

Residential and Work-related Vehicle Miles of Travel

	RESIDENTIAL				OFFICE			
	Population		Resid. VMT per person		Jobs		Work VMT per employment	
TAZ	Existing	2040	Existing	2040	Existing	2040	Existing	2040
226	1,163	1,245	8.8	8.4	501	501	8.8	8.5
227	1,427	1,521	8.3	8.0	618	618	8.8	8.5
545	1,455	1,560	12.7	12.6	135	135	12.3	14.9
546	750	804	8.5	8.3	1,181	1,181	8.7	8.4
547	174	193	9.1	8.7	1,826	1,826	8.9	8.5
Total	**4,969**	**5,323**	**9.8**	**9.5**	**4,261**	**4,261**	**8.9**	**8.7**
SF Bay Area			17.2	16.1			19.1	17.0
Regional minus 15%			**14.6**	**13.7**			**16.2**	**14.5**

Source: SFCTA

UCSF Parnassus Heights Site

Average daily VMT per capita

Location	Year 2050 Baseline [a]					
	Resid. VMT	Population	per capita	Work VMT	Workers	per capita
SF Bay Area	145,034,174	8,481,168	17.1	84,195,311	3,538,892	23.8
SF Bay Area minus 15%			**14.5**			**20.2**
All San Francisco	8,419,057	989,429	8.5	8,237,503	656,058	12.6
Parnassus Heights Area [b]	32,946	3,657	9.0	162,720	10,295	15.8

[a] Source: vmt_raw_update.csv for 2050 Baseline, SFCTA, April 2021

[b] Aggregated data for TAZs 226, 227, 545, 546, and 547; includes adjacent residential, retail, medical and other office uses unrelated to UCSF

226	8,415	1,081	7.8	6,464	419	15.4
227	8,909	1,330	6.7	7,608	498	15.3
545	16,681	1,426	11.7	226	17	13.3
546	5,543	685	8.1	58,583	3,832	15.3
547	1,812	216	8.4	96,303	5,948	16.2
Total	**32,946**	**3657**	**9.0**	**162,720**	**10,295**	**15.8**

Existing Conditions

Vehicle Trip Distribution
UCSF Parnassus Heights Site
Existing Conditions [NHPH Pop.]

Population Group	User Population [a]	Daily External Vehicle Trips [a]	Origins/Destinations [c]								
			San Francisco SD1	San Francisco SD2	San Francisco SD3	San Francisco SD4	East Bay	North Bay	South Bay	Outside Bay Area	All Origins
STAFF											
Faculty/Physicians	1,057	960	2%	14%	21%	8%	14%	22%	19%	1%	100%
Staff/Nurses	6,338	4,363	3%	9%	15%	10%	19%	13%	30%	1%	100%
Students/Trainees	3,683	1,095	5%	19%	18%	26%	8%	1%	23%	2%	100%
Total staff	*11,078*	*6,418*	*3%*	*11%*	*16%*	*13%*	*17%*	*12%*	*27%*	*1%*	*100%*
PATIENTS & VISITORS											
Inpatients	475	638	5%	5%	13%	7%	17%	14%	17%	22%	100%
Visitors to Inpatients	1,187	1,906	4%	10%	14%	13%	13%	7%	13%	24%	100%
Outpatients and companions	4,142	5,491	5%	5%	13%	7%	17%	14%	17%	22%	100%
Total patients and visitors	*5,804*	*8,035*	*5%*	*6%*	*13%*	*9%*	*16%*	*13%*	*16%*	*23%*	*100%*
OTHER VISITORS											
Vendors/Services	554	318	14%	14%	14%	14%	14%	7%	19%	2%	100%
Total other visitors	*554*	*318*	*14%*	*14%*	*14%*	*14%*	*14%*	*7%*	*19%*	*2%*	*100%*
Subtotal Staff+Patients+Visitors	*17,436*	*14,771*	*4%*	*8%*	*15%*	*10%*	*16%*	*12%*	*21%*	*13%*	*100%*
CHILDCARE											
Childcare staff	36	27	3%	9%	15%	10%	19%	13%	30%	1%	100%
Total childcare	*36*	*27*	*4%*	*7%*	*19%*	*11%*	*19%*	*11%*	*30%*	*0%*	*100%*
RESIDENTIAL											
Aldea	172	276	25%	10%	50%	10%	2%	1%	2%	0%	100%
Other existing campus housing	222	151	25%	10%	50%	10%	2%	1%	2%	0%	100%
Building B (Student Housing)	-	-	25%	10%	50%	10%	2%	1%	2%	0%	100%
Building C (156 units; market rate)	-	-	4%	21%	11%	44%	2%	4%	14%	0%	100%
Visitors/ Vendors/Services	40	55	14%	14%	14%	14%	14%	7%	19%	2%	100%
Total residential	*434*	*482*	*24%*	*11%*	*45%*	*11%*	*4%*	*2%*	*4%*	*0%*	*100%*
HOTEL (120 rooms)											
Hotel - Workers			5%	19%	13%	37%	1%	4%	22%	0%	100%
Hotel - Guests			2%	9%	22%	46%	2%	1%	17%	0%	100%
Total hotel	-	-	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*
Total employees, vendors and services	11,668	6,763	3%	11%	16%	13%	17%	12%	27%	1%	100%
Total patients and visitors	5,804	8,035	5%	6%	13%	9%	16%	13%	16%	23%	100%
Total residents and hotel guests	434	482	24%	11%	45%	11%	4%	2%	4%	0%	100%
GRAND TOTAL	17,906	15,280	5%	8%	15%	10%	16%	12%	20%	13%	100%

[a] Fehr & Peers, June 2021

[c] Origin/Destination % for staff based on UCSF Transportation Services Annual Commute Survey 2018 for the Parnassus site; data for patients, visitors, vendors and services obtained from 2018 UCSF Patient and Visitor survey at Parnassus; data for UCSF residents based on UCSF 2014 LRDP EIR data (2013); data for market rate residential and hotel uses taken from 2019 SF Guidelines.

Vehicle Trip Distribution
UCSF Parnassus Heights Site
Existing Conditions [NHPH Pop.]

Population Group	Project Daily Vehicle Distribution [d]								
	S. Francisco SD1	S. Francisco SD2	S. Francisco SD3	S. Francisco SD4	East Bay	Norh Bay	South Bay	Outside Bay Area	All Origins
	5.5 miles	2 miles	4 miles	3 miles	32 miles	25 miles	25 miles	53 miles	21.2 miles
STAFF									
Faculty/Physicians	16	132	202	72	135	209	183	11	960
Staff/Nurses	109	375	648	453	849	559	1,312	58	4,363
Students/Trainees	53	203	194	280	83	15	250	17	1,095
Total staff	*178*	*710*	*1,044*	*805*	*1,067*	*783*	*1,745*	*86*	*6,418*
PATIENTS & VISITORS									
Inpatients	30	30	81	47	109	92	106	143	638
Visitors to Inpatients	85	199	271	242	256	142	256	455	1,906
Outpatients and companions	259	259	701	406	936	788	911	1,231	5,491
Total patients and visitors	*374*	*488*	*1,053*	*695*	*1,301*	*1,022*	*1,273*	*1,829*	*8,035*
OTHER VISITORS									
Vendors/Services	46	46	46	46	46	22	60	6	318
Total other visitors	*46*	*46*	*46*	*46*	*46*	*22*	*60*	*6*	*318*
Subtotal Staff+Patients+Visitors	*598*	*1,244*	*2,143*	*1,546*	*2,414*	*1,827*	*3,078*	*1,921*	*14,771*
CHILDCARE									
Childcare staff	1	2	5	3	5	3	8	-	27
Total childcare	*1*	*2*	*5*	*3*	*5*	*3*	*8*	-	*27*
RESIDENTIAL									
Aldea	69	28	136	28	6	3	6	-	276
Other existing campus housing	38	15	75	15	3	2	3	-	151
Building B (Student Housing)	-	-	-	-	-	-	-	-	-
Building C (156 units; market rate)	-	-	-	-	-	-	-	-	-
Visitors/ Vendors/Services	8	8	8	8	8	4	10	1	55
Total residential	*115*	*51*	*219*	*51*	*17*	*9*	*19*	*1*	*482*
HOTEL (120 rooms)									
Hotel - Workers	-	-	-	-	-	-	-	-	-
Hotel - Guests	-	-	-	-	-	-	-	-	-
Total hotel	-	-	-	-	-	-	-	-	-
Total employees, vendors and services	225	758	1,095	854	1,118	808	1,813	92	6,763
Total patients and visitors	374	488	1,053	695	1,301	1,022	1,273	1,829	8,035
Total residents and hotel guests	115	51	219	51	17	9	19	1	482
GRAND TOTAL	714	1,297	2,367	1,600	2,436	1,839	3,105	1,922	15,280

[d] Approximate number of one-way miles between the Parnassus site and the population center of gravity of each geographical area.

Vehicle Trip Distribution
UCSF Parnassus Heights Site
Existing Conditions [NHPH Pop.]

Population Group	Project Daily Vehicle Miles of Travel								
	San Francisco SD1	San Francisco SD2	San Francisco SD3	San Francisco SD4	East Bay	Norh Bay	South Bay	Outside Bay Area	All Origins
STAFF									
Faculty/Physicians	88	264	808	216	4,320	5,225	4,575	583	16,079
Staff/Nurses	600	750	2,592	1,359	27,168	13,975	32,800	3,074	82,318
Students/Trainees	292	406	776	840	2,656	375	6,250	901	12,496
Total staff	*979*	*1,420*	*4,176*	*2,415*	*34,144*	*19,575*	*43,625*	*4,558*	*110,892*
PATIENTS & VISITORS									
Inpatients	165	60	324	141	3,488	2,300	2,650	7,579	16,707
Visitors to Inpatients	468	398	1,084	726	8,192	3,550	6,400	24,115	44,933
Outpatients and companions	1,425	518	2,804	1,218	29,952	19,700	22,775	65,243	143,635
Total patients and visitors	*2,057*	*976*	*4,212*	*2,085*	*41,632*	*25,550*	*31,825*	*96,937*	*205,274*
OTHER VISITORS									
Vendors/Services	253	92	184	138	1,472	550	1,500	318	4,507
Total other visitors	*253*	*92*	*184*	*138*	*1,472*	*550*	*1,500*	*318*	*4,507*
Subtotal Staff+Patients+Visitors	***3,289***	***2,488***	***8,572***	***4,638***	***77,248***	***45,675***	***76,950***	***101,813***	***320,673***
CHILDCARE									
Childcare staff	6	4	20	9	160	75	200	-	474
Total childcare	*6*	*4*	*20*	*9*	*160*	*75*	*200*	-	*474*
RESIDENTIAL									
Aldea	380	56	544	84	192	75	150	-	1,481
Other existing campus housing	209	30	300	45	96	50	75	-	805
Building B (Student Housing)	-	-	-	-	-	-	-	-	-
Building C (156 units; market rate)	-	-	-	-	-	-	-	-	-
Visitors/ Vendors/Services	44	16	32	24	256	100	250	53	775
Total residential	*633*	*102*	*876*	*153*	*544*	*225*	*475*	*53*	*3,061*
HOTEL (120 rooms)									
Hotel - Workers	-	-	-	-	-	-	-	-	-
Hotel - Guests	-	-	-	-	-	-	-	-	-
Total hotel	-	-	-	-	-	-	-	-	-
Total employees, vendors and services	1,238	1,516	4,380	2,562	35,776	20,200	45,325	4,876	115,873
Total patients and visitors	2,057	976	4,212	2,085	41,632	25,550	31,825	96,937	205,274
Total residents and hotel guests	633	102	876	153	544	225	475	53	3,061
GRAND TOTAL	3,927	2,594	9,468	4,800	77,952	45,975	77,625	101,866	324,207

Existing Conditions plus NHPH Project

Vehicle Trip Distribution
UCSF Parnassus Heights Site
Existing [NHPH] + NHPH Project

Population Group	User Population [a]	Daily External Vehicle Trips [a]	Origins/Destinations [c]								
			San Francisco SD1	San Francisco SD2	San Francisco SD3	San Francisco SD4	East Bay	North Bay	South Bay	Outside Bay Area	All Origins
STAFF											
Faculty/Physicians	1,264	1,156	2%	14%	21%	8%	14%	22%	19%	1%	100%
Staff/Nurses	7,580	5,272	3%	9%	15%	10%	19%	13%	30%	1%	100%
Students/Trainees	3,683	1,095	5%	19%	18%	26%	8%	1%	23%	2%	100%
Total staff	*12,527*	*7,523*	*3%*	*11%*	*16%*	*12%*	*17%*	*13%*	*27%*	*1%*	*100%*
PATIENTS & VISITORS											
Inpatients	682	974	5%	5%	13%	7%	17%	14%	17%	22%	100%
Visitors to Inpatients	1,705	2,892	4%	10%	14%	13%	13%	7%	13%	24%	100%
Outpatients and companions	4,142	5,491	5%	5%	13%	7%	17%	14%	17%	22%	100%
Total patients and visitors	*6,529*	*9,357*	*5%*	*6%*	*13%*	*9%*	*16%*	*12%*	*16%*	*23%*	*100%*
OTHER VISITORS											
Vendors/Services	655	404	14%	14%	14%	14%	14%	7%	19%	2%	100%
Total other visitors	*655*	*404*	*14%*	*14%*	*15%*	*14%*	*14%*	*7%*	*19%*	*2%*	*100%*
Subtotal Staff+Patients+Visitors	***19,711***	***17,284***	***4%***	***9%***	***15%***	***11%***	***16%***	***12%***	***21%***	***13%***	***100%***
CHILDCARE											
Childcare staff	36	27	3%	9%	15%	10%	19%	13%	30%	1%	100%
Total childcare	*36*	*27*	*4%*	*7%*	*19%*	*11%*	*19%*	*11%*	*30%*	*0%*	*100%*
RESIDENTIAL											
Aldea	172	276	25%	10%	50%	10%	2%	1%	2%	0%	100%
Other existing campus housing	222	151	25%	10%	50%	10%	2%	1%	2%	0%	100%
Building B (Student Housing)	-	-	25%	10%	50%	10%	2%	1%	2%	0%	100%
Building C (156 units; market rate)	-	-	4%	21%	11%	44%	2%	4%	14%	0%	100%
Visitors/ Vendors/Services	40	55	14%	14%	14%	14%	14%	7%	19%	2%	100%
Total residential	*434*	*482*	*24%*	*11%*	*45%*	*11%*	*4%*	*2%*	*4%*	*0%*	*100%*
HOTEL (120 rooms)											
Hotel - Workers			5%	19%	13%	37%	1%	4%	22%	0%	100%
Hotel - Guests			2%	9%	22%	46%	2%	1%	17%	0%	100%
Total hotel	-	-	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*
Total employees, vendors and services	13,218	7,954	3%	11%	16%	12%	17%	12%	27%	1%	100%
Total patients and visitors	6,529	9,357	5%	6%	13%	9%	16%	12%	16%	23%	100%
Total residents and hotel guests	434	482	24%	11%	45%	11%	4%	2%	4%	0%	100%
GRAND TOTAL	20,181	17,793	5%	9%	15%	11%	16%	12%	20%	13%	100%

[a] Fehr & Peers, June 2021

[c] Origin/Destination % for staff based on UCSF Transportation Services Annual Commute Survey 2018 for the Parnassus site; data for patients, visitors, vendors and services obtained from 2018 UCSF Patient and Visitor survey at Parnassus; data for UCSF residents based on UCSF 2014 LRDP EIR data (2013); data for market rate residential and hotel uses taken from 2019 SF Guidelines.

Vehicle Trip Distribution
UCSF Parnassus Heights Site
Existing [NHPH] + NHPH Project

Population Group	Project Daily Vehicle Distribution [d]								
	S. Francisco SD1	S. Francisco SD2	S. Francisco SD3	S. Francisco SD4	East Bay	Norh Bay	South Bay	Outside Bay Area	All Origins
	5.5 miles	2 miles	4 miles	3 miles	32 miles	25 miles	25 miles	53 miles	21.2 miles
STAFF									
Faculty/Physicians	20	159	241	87	163	252	221	13	1,156
Staff/Nurses	132	453	783	547	1,026	675	1,586	70	5,272
Students/Trainees	53	203	194	280	83	15	250	17	1,095
Total staff	*205*	*815*	*1,218*	*914*	*1,272*	*942*	*2,057*	*100*	*7,523*
PATIENTS & VISITORS									
Inpatients	46	46	124	72	166	140	162	218	974
Visitors to Inpatients	129	302	411	367	388	216	388	691	2,892
Outpatients and companions	259	259	701	406	936	788	911	1,231	5,491
Total patients and visitors	*434*	*607*	*1,236*	*845*	*1,490*	*1,144*	*1,461*	*2,140*	*9,357*
OTHER VISITORS									
Vendors/Services	58	58	59	58	58	28	77	8	404
Total other visitors	*58*	*58*	*59*	*58*	*58*	*28*	*77*	*8*	*404*
Subtotal Staff+Patients+Visitors	*697*	*1,480*	*2,513*	*1,817*	*2,820*	*2,114*	*3,595*	*2,248*	*17,284*
CHILDCARE									
Childcare staff	1	2	5	3	5	3	8	-	27
Total childcare	*1*	*2*	*5*	*3*	*5*	*3*	*8*	-	*27*
RESIDENTIAL									
Aldea	69	28	136	28	6	3	6	-	276
Other existing campus housing	38	15	75	15	3	2	3	-	151
Building B (Student Housing)	-	-	-	-	-	-	-	-	-
Building C (156 units; market rate)	-	-	-	-	-	-	-	-	-
Visitors/ Vendors/Services	8	8	8	8	8	4	10	1	55
Total residential	*115*	*51*	*219*	*51*	*17*	*9*	*19*	*1*	*482*
HOTEL (120 rooms)									
Hotel - Workers	-	-	-	-	-	-	-	-	-
Hotel - Guests	-	-	-	-	-	-	-	-	-
Total hotel	-	-	-	-	-	-	-	-	-
Total employees, vendors and services	264	875	1,282	975	1,335	973	2,142	108	7,954
Total patients and visitors	434	607	1,236	845	1,490	1,144	1,461	2,140	9,357
Total residents and hotel guests	115	51	219	51	17	9	19	1	482
GRAND TOTAL	813	1,533	2,737	1,871	2,842	2,126	3,622	2,249	17,793

[d] Approximate number of one-way miles between the Parnassus site and the population center of gravity of each geographical area.

Vehicle Trip Distribution
UCSF Parnassus Heights Site
Existing [NHPH] + NHPH Project

Population Group	Project Daily Vehicle Miles of Travel									Total Vehicle Miles of Travel per capita
	San Francisco SD1	San Francisco SD2	San Francisco SD3	San Francisco SD4	East Bay	Norh Bay	South Bay	Outside Bay Area	All Origins	
STAFF										
Faculty/Physicians	110	318	964	261	5,216	6,300	5,525	689	19,383	15.3
Staff/Nurses	726	906	3,132	1,641	32,832	16,875	39,650	3,710	99,472	13.1
Students/Trainees	292	406	776	840	2,656	375	6,250	901	12,496	3.4
Total staff	*1,128*	*1,630*	*4,872*	*2,742*	*40,704*	*23,550*	*51,425*	*5,300*	*131,351*	*10.5*
PATIENTS & VISITORS										
Inpatients	253	92	496	216	5,312	3,500	4,050	11,554	25,473	37.4
Visitors to Inpatients	710	604	1,644	1,101	12,416	5,400	9,700	36,623	68,198	40.0
Outpatients and companions	1,425	518	2,804	1,218	29,952	19,700	22,775	65,243	143,635	34.7
Total patients and visitors	*2,387*	*1,214*	*4,944*	*2,535*	*47,680*	*28,600*	*36,525*	*113,420*	*237,305*	*36.3*
OTHER VISITORS										
Vendors/Services	319	116	236	174	1,856	700	1,925	424	5,750	8.8
Total other visitors	*319*	*116*	*236*	*174*	*1,856*	*700*	*1,925*	*424*	*5,750*	*8.8*
Subtotal Staff+Patients+Visitors	*3,834*	*2,960*	*10,052*	*5,451*	*90,240*	*52,850*	*89,875*	*119,144*	*374,406*	*19.0*
CHILDCARE										
Childcare staff	6	4	20	9	160	75	200	-	474	13.2
Total childcare	*6*	*4*	*20*	*9*	*160*	*75*	*200*	-	*474*	*13.2*
RESIDENTIAL										
Aldea	380	56	544	84	192	75	150	-	1,481	8.6
Other existing campus housing	209	30	300	45	96	50	75	-	805	3.6
Building B (Student Housing)	-	-	-	-	-	-	-	-	-	0.0
Building C (156 units; market rate)	-	-	-	-	-	-	-	-	-	0.0
Visitors/ Vendors/Services	44	16	32	24	256	100	250	53	775	19.4
Total residential	*633*	*102*	*876*	*153*	*544*	*225*	*475*	*53*	*3,061*	*7.1*
HOTEL (120 rooms)										
Hotel - Workers	-	-	-	-	-	-	-	-	-	0.0
Hotel - Guests	-	-	-	-	-	-	-	-	-	0.0
Total hotel	-	-	-	-	-	-	-	-	-	*0.0*
Total employees, vendors and services	1,452	1,750	5,128	2,925	42,720	24,325	53,550	5,724	137,574	10.4
Total patients and visitors	2,387	1,214	4,944	2,535	47,680	28,600	36,525	113,420	237,305	36.3
Total residents and hotel guests	633	102	876	153	544	225	475	53	3,061	7.1
GRAND TOTAL	4,472	3,066	10,948	5,613	90,944	53,150	90,550	119,197	377,940	18.7

YEAR 2030 BASELINE PLUS NHPH PROJECT

Vehicle Trip Distribution
UCSF Parnassus Heights Site
Year 2030 + NHPH Project

Population Group	User Population [a]	Daily External Vehicle Trips [a]	Origins/Destinations [c]								
			San Francisco SD1	San Francisco SD2	San Francisco SD3	San Francisco SD4	East Bay	North Bay	South Bay	Outside Bay Area	All Origins
STAFF											
Faculty/Physicians	1,572	1,503	2%	14%	21%	8%	14%	22%	19%	1%	100%
Staff/Nurses	9,429	6,962	3%	9%	15%	10%	19%	13%	30%	1%	100%
Students/Trainees	4,187	1,288	5%	19%	18%	26%	8%	1%	23%	2%	100%
Total staff	*15,188*	*9,753*	*3%*	*11%*	*16%*	*12%*	*17%*	*13%*	*27%*	*1%*	*100%*
PATIENTS & VISITORS											
Inpatients	682	1,097	5%	5%	13%	7%	17%	14%	17%	22%	100%
Visitors to Inpatients	1,705	3,228	4%	10%	14%	13%	13%	7%	13%	24%	100%
Outpatients and companions	4,420	7,257	5%	5%	13%	7%	17%	14%	17%	22%	100%
Total patients and visitors	*6,807*	*11,582*	*5%*	*6%*	*13%*	*9%*	*16%*	*12%*	*16%*	*23%*	*100%*
OTHER VISITORS											
Vendors/Services	1,264	1,015	14%	14%	14%	14%	14%	7%	19%	2%	100%
Total other visitors	*1,264*	*1,015*	*14%*	*14%*	*14%*	*14%*	*14%*	*7%*	*19%*	*2%*	*100%*
Subtotal Staff+Patients+Visitors	***23,259***	***22,350***	***4%***	***9%***	***15%***	***10%***	***16%***	***12%***	***21%***	***12%***	***100%***
CHILDCARE											
Childcare staff	36	29	3%	9%	15%	10%	19%	13%	30%	1%	100%
Total childcare	*36*	*29*	*3%*	*10%*	*10%*	*10%*	*21%*	*14%*	*31%*	*0%*	*100%*
RESIDENTIAL											
Aldea	314	409	25%	10%	50%	10%	2%	1%	2%	0%	100%
Other existing campus housing	222	151	25%	10%	50%	10%	2%	1%	2%	0%	100%
Building B (Student Housing)	-	-	25%	10%	50%	10%	2%	1%	2%	0%	100%
Building C (156 units; market rate)	-	-	4%	21%	11%	44%	2%	4%	14%	0%	100%
Visitors/ Vendors/Services	60	83	14%	14%	14%	14%	14%	7%	19%	2%	100%
Total residential	*596*	*643*	*24%*	*11%*	*45%*	*11%*	*4%*	*2%*	*4%*	*0%*	*100%*
HOTEL (120 rooms)											
Hotel - Workers	-	-	5%	19%	13%	37%	1%	4%	22%	0%	100%
Hotel - Guests	-	-	2%	9%	22%	46%	2%	1%	17%	0%	100%
Total hotel	-	-	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*
Total employees, vendors and services	16,488	10,797	4%	11%	16%	12%	17%	12%	27%	1%	100%
Total patients and visitors	6,807	11,582	5%	6%	13%	9%	16%	12%	16%	23%	100%
Total residents and hotel guests	596	643	24%	11%	45%	11%	4%	2%	4%	0%	100%
GRAND TOTAL	23,891	23,022	5%	9%	15%	10%	16%	12%	21%	12%	100%

[a] Fehr & Peers, June 2021

[c] Origin/Destination % for staff based on UCSF Transportation Services Annual Commute Survey 2018 for the Parnassus site; data for patients, visitors, vendors and services obtained from 2018 UCSF Patient and Visitor survey at Parnassus; data for UCSF residents based on UCSF 2014 LRDP EIR data (2013); data for market rate residential and hotel uses taken from 2019 SF Guidelines.

Vehicle Trip Distribution
UCSF Parnassus Heights Site
Year 2030 + NHPH Project

Population Group	Project Daily Vehicle Distribution [d]								
	S. Francisco SD1	S. Francisco SD2	S. Francisco SD3	S. Francisco SD4	East Bay	Norh Bay	South Bay	Outside Bay Area	All Origins
	5.5 miles	2 miles	4 miles	3 miles	32 miles	25 miles	25 miles	53 miles	21.1 miles
STAFF									
Faculty/Physicians	26	207	313	113	212	328	287	17	1,503
Staff/Nurses	174	598	1,036	722	1,354	892	2,094	92	6,962
Students/Trainees	63	238	228	329	98	18	294	20	1,288
Total staff	*263*	*1,043*	*1,577*	*1,164*	*1,664*	*1,238*	*2,675*	*129*	*9,753*
PATIENTS & VISITORS									
Inpatients	52	52	140	81	187	157	182	246	1,097
Visitors to Inpatients	145	337	456	410	434	241	434	771	3,228
Outpatients and companions	342	342	927	537	1,237	1,041	1,204	1,627	7,257
Total patients and visitors	*539*	*731*	*1,523*	*1,028*	*1,858*	*1,439*	*1,820*	*2,644*	*11,582*
OTHER VISITORS									
Vendors/Services	146	146	147	146	146	71	193	20	1,015
Total other visitors	*146*	*146*	*147*	*146*	*146*	*71*	*193*	*20*	*1,015*
Subtotal Staff+Patients+Visitors	***948***	***1,920***	***3,247***	***2,338***	***3,668***	***2,748***	***4,688***	***2,793***	***22,350***
CHILDCARE									
Childcare staff	1	3	3	3	6	4	9	-	29
Total childcare	*1*	*3*	*3*	*3*	*6*	*4*	*9*	-	*29*
RESIDENTIAL									
Aldea	102	41	205	41	8	4	8	-	409
Other existing campus housing	38	15	75	15	3	2	3	-	151
Building B (Student Housing)	-	-	-	-	-	-	-	-	-
Building C (156 units; market rate)	-	-	-	-	-	-	-	-	-
Visitors/ Vendors/Services	12	12	11	12	12	6	16	2	83
Total residential	*152*	*68*	*291*	*68*	*23*	*12*	*27*	*2*	*643*
HOTEL (120 rooms)									
Hotel - Workers	-	-	-	-	-	-	-	-	-
Hotel - Guests	-	-	-	-	-	-	-	-	-
Total hotel	-	-	-	-	-	-	-	-	-
Total employees, vendors and services	410	1,192	1,727	1,313	1,816	1,313	2,877	149	10,797
Total patients and visitors	539	731	1,523	1,028	1,858	1,439	1,820	2,644	11,582
Total residents and hotel guests	152	68	291	68	23	12	27	2	643
GRAND TOTAL	1,101	1,991	3,541	2,409	3,697	2,764	4,724	2,795	23,022

[d] Approximate number of one-way miles between the Parnassus site and the population center of gravity of each geographical area.

Vehicle Trip Distribution
UCSF Parnassus Heights Site
Year 2030 + NHPH Project

Population Group	Project Daily Vehicle Miles of Travel									Total Vehicle Miles of Travel per capita
	San Francisco SD1	San Francisco SD2	San Francisco SD3	San Francisco SD4	East Bay	Norh Bay	South Bay	Outside Bay Area	All Origins	
STAFF										
Faculty/Physicians	143	414	1,252	339	6,784	8,200	7,175	901	25,208	16.0
Staff/Nurses	957	1,196	4,144	2,166	43,328	22,300	52,350	4,876	131,317	13.9
Students/Trainees	347	476	912	987	3,136	450	7,350	1,060	14,718	3.5
Total staff	*1,447*	*2,086*	*6,308*	*3,492*	*53,248*	*30,950*	*66,875*	*6,837*	*171,243*	*11.3*
PATIENTS & VISITORS										
Inpatients	286	104	560	243	5,984	3,925	4,550	13,038	28,690	42.1
Visitors to Inpatients	798	674	1,824	1,230	13,888	6,025	10,850	40,863	76,152	44.7
Outpatients and companions	1,881	684	3,708	1,611	39,584	26,025	30,100	86,231	189,824	42.9
Total patients and visitors	*2,965*	*1,462*	*6,092*	*3,084*	*59,456*	*35,975*	*45,500*	*140,132*	*294,666*	*43.3*
OTHER VISITORS										
Vendors/Services	803	292	588	438	4,672	1,775	4,825	1,060	14,453	11.4
Total other visitors	*803*	*292*	*588*	*438*	*4,672*	*1,775*	*4,825*	*1,060*	*14,453*	*11.4*
Subtotal Staff+Patients+Visitors	*5,214*	*3,840*	*12,988*	*7,014*	*117,376*	*68,700*	*117,200*	*148,029*	*480,361*	*20.7*
CHILDCARE										
Childcare staff	6	6	12	9	192	100	225	-	550	15.3
Total childcare	*6*	*6*	*12*	*9*	*192*	*100*	*225*	*-*	*550*	*15.3*
RESIDENTIAL										
Aldea	561	82	820	123	256	100	200	-	2,142	6.8
Other existing campus housing	209	30	300	45	96	50	75	-	805	3.6
Building B (Student Housing)	-	-	-	-	-	-	-	-	-	0.0
Building C (156 units; market rate)	-	-	-	-	-	-	-	-	-	0.0
Visitors/ Vendors/Services	66	24	44	36	384	150	400	106	1,210	20.3
Total residential	*836*	*136*	*1,164*	*204*	*736*	*300*	*675*	*106*	*4,157*	*7.0*
HOTEL (120 rooms)										
Hotel - Workers	-	-	-	-	-	-	-	-	-	0.0
Hotel - Guests	-	-	-	-	-	-	-	-	-	0.0
Total hotel	*-*	*-*	*-*	*-*	*-*	*-*	*-*	*-*	*-*	*0.0*
Total employees, vendors and services	2,255	2,384	6,908	3,939	58,112	32,825	71,925	7,897	186,245	11.3
Total patients and visitors	2,965	1,462	6,092	3,084	59,456	35,975	45,500	140,132	294,666	43.3
Total residents and hotel guests	836	136	1,164	204	736	300	675	106	4,157	7.0
GRAND TOTAL	6,056	3,982	14,164	7,227	118,304	69,100	118,100	148,135	485,068	20.3

EXISTING PLUS CPHP – FUTURE PHASE

Vehicle Trip Distribution
UCSF Parnassus Heights Site
Future Cumulative [NHPH]

Population Group	User Population [a]	Daily External Vehicle Trips [a]	Origins/Destinations [c]								
			San Francisco SD1	San Francisco SD2	San Francisco SD3	San Francisco SD4	East Bay	North Bay	South Bay	Outside Bay Area	All Origins
STAFF											
Faculty/Physicians	1,725	1,632	2%	14%	21%	8%	14%	22%	19%	1%	100%
Staff/Nurses	10,349	7,533	3%	9%	15%	10%	19%	13%	30%	1%	100%
Students/Trainees	4,187	1,267	5%	19%	18%	26%	8%	1%	23%	2%	100%
Total staff	*16,262*	*10,432*	*3%*	*11%*	*16%*	*12%*	*17%*	*13%*	*27%*	*1%*	*100%*
PATIENTS & VISITORS											
Inpatients	675	1,240	5%	5%	13%	7%	17%	14%	17%	22%	100%
Visitors to Inpatients	1,688	3,609	4%	10%	14%	13%	13%	7%	13%	24%	100%
Outpatients and companions	5,330	10,279	5%	5%	13%	7%	17%	14%	17%	22%	100%
Total patients and visitors	*7,692*	*15,128*	*5%*	*6%*	*13%*	*9%*	*16%*	*13%*	*16%*	*23%*	*100%*
OTHER VISITORS											
Vendors/Services	1,339	1,360	14%	14%	14%	14%	14%	7%	19%	2%	100%
Total other visitors	*1,339*	*1,360*	*14%*	*14%*	*14%*	*14%*	*14%*	*7%*	*19%*	*2%*	*100%*
Subtotal Staff+Patients+Visitors	***25,293***	***26,920***	***4%***	***8%***	***14%***	***10%***	***16%***	***12%***	***21%***	***13%***	***100%***
CHILDCARE											
Childcare staff	60	48	3%	9%	15%	10%	19%	13%	30%	1%	100%
Total childcare	*60*	*48*	*2%*	*8%*	*17%*	*10%*	*19%*	*13%*	*29%*	*2%*	*100%*
RESIDENTIAL											
Aldea	504	810	25%	10%	50%	10%	2%	1%	2%	0%	100%
Other existing campus housing	222	151	25%	10%	50%	10%	2%	1%	2%	0%	100%
Building B (Student Housing)	125	201	25%	10%	50%	10%	2%	1%	2%	0%	100%
Building C (156 units; market rate)	312	291	4%	21%	11%	44%	2%	4%	14%	0%	100%
Visitors/ Vendors/Services	128	179	14%	14%	14%	14%	14%	7%	19%	2%	100%
Total residential	*1,291*	*1,631*	*20%*	*13%*	*39%*	*17%*	*3%*	*2%*	*6%*	*0%*	*100%*
HOTEL (120 rooms)											
Hotel - Workers	108	27	5%	19%	13%	37%	1%	4%	22%	0%	100%
Hotel - Guests	184	263	2%	9%	22%	46%	2%	1%	17%	0%	100%
Total hotel	*292*	*289*	*2%*	*10%*	*22%*	*46%*	*2%*	*1%*	*17%*	*0%*	*100%*
Total employees, vendors and services	17,769	11,867	4%	11%	16%	12%	17%	12%	27%	1%	100%
Total patients and visitors	7,692	15,128	5%	6%	13%	9%	16%	13%	16%	23%	100%
Total residents and hotel guests	1,475	1,893	18%	12%	37%	21%	3%	2%	7%	0%	100%
GRAND TOTAL	26,936	28,888	5%	9%	16%	11%	16%	12%	20%	13%	100%

[a] Fehr & Peers, October 2020
[b] Fehr & Peers, October 2020
[c] Origin/Destination % for staff based on UCSF Transportation Services Annual Commute Survey 2018 for the Parnassus site; data for patients, visitors, vendors and services obtained from 2018 UCSF Patient and Visitor survey at Parnassus; data for UCSF residents based on UCSF 2014 LRDP EIR data (2013); data for market rate residential and hotel uses taken from 2019 SF Guidelines.

Vehicle Trip Distribution
UCSF Parnassus Heights Site
Future Cumulative [NHPH]

Population Group	Project Daily Vehicle Distribution [d]								
	S. Francisco SD1	S. Francisco SD2	S. Francisco SD3	S. Francisco SD4	East Bay	Norh Bay	South Bay	Outside Bay Area	All Origins
	5.5 miles	2 miles	4 miles	3 miles	32 miles	25 miles	25 miles	53 miles	20.9 miles
STAFF									
Faculty/Physicians	28	224	341	122	230	356	312	19	1,632
Staff/Nurses	188	647	1,121	781	1,465	965	2,266	100	7,533
Students/Trainees	62	235	224	324	96	17	289	20	1,267
Total staff	*278*	*1,106*	*1,686*	*1,227*	*1,791*	*1,338*	*2,867*	*139*	*10,432*
PATIENTS & VISITORS									
Inpatients	58	58	159	92	211	178	206	278	1,240
Visitors to Inpatients	162	377	511	458	485	269	485	862	3,609
Outpatients and companions	484	484	1,313	761	1,752	1,475	1,705	2,305	10,279
Total patients and visitors	*704*	*919*	*1,983*	*1,311*	*2,448*	*1,922*	*2,396*	*3,445*	*15,128*
OTHER VISITORS									
Vendors/Services	196	196	196	196	196	95	258	27	1,360
Total other visitors	*196*	*196*	*196*	*196*	*196*	*95*	*258*	*27*	*1,360*
Subtotal Staff+Patients+Visitors	***1,178***	***2,221***	***3,865***	***2,734***	***4,435***	***3,355***	***5,521***	***3,611***	***26,920***
CHILDCARE									
Childcare staff	1	4	8	5	9	6	14	1	48
Total childcare	*1*	*4*	*8*	*5*	*9*	*6*	*14*	*1*	*48*
RESIDENTIAL									
Aldea	202	81	406	81	16	8	16	-	810
Other existing campus housing	38	15	75	15	3	2	3	-	151
Building B (Student Housing)	50	20	101	20	4	2	4	-	201
Building C (156 units; market rate)	12	62	31	129	4	12	41	-	291
Visitors/ Vendors/Services	26	26	24	26	26	13	34	4	179
Total residential	*328*	*204*	*637*	*271*	*53*	*37*	*98*	*4*	*1,632*
HOTEL (120 rooms)									
Hotel - Workers	1	5	4	10	-	1	6	-	27
Hotel - Guests	5	24	59	122	6	3	44	-	263
Total hotel	*6*	*29*	*63*	*132*	*6*	*4*	*50*	-	*290*
Total employees, vendors and services	476	1,311	1,894	1,438	1,996	1,440	3,145	167	11,867
Total patients and visitors	704	919	1,983	1,311	2,448	1,922	2,396	3,445	15,128
Total residents and hotel guests	333	228	696	393	59	40	142	4	1,895
GRAND TOTAL	1,513	2,458	4,573	3,142	4,503	3,402	5,683	3,616	28,890

[d] Approximate number of one-way miles between the Parnassus site and the population center of gravity of each geographical area.

Vehicle Trip Distribution
UCSF Parnassus Heights Site
Future Cumulative [NHPH]

Population Group	Project Daily Vehicle Miles of Travel								
	San Francisco SD1	San Francisco SD2	San Francisco SD3	San Francisco SD4	East Bay	Norh Bay	South Bay	Outside Bay Area	All Origins
STAFF									
Faculty/Physicians	154	448	1,364	366	7,360	8,900	7,800	1,007	27,399
Staff/Nurses	1,034	1,294	4,484	2,343	46,880	24,125	56,650	5,300	142,110
Students/Trainees	341	470	896	972	3,072	425	7,225	1,060	14,461
Total staff	*1,529*	*2,212*	*6,744*	*3,681*	*57,312*	*33,450*	*71,675*	*7,367*	*183,970*
PATIENTS & VISITORS									
Inpatients	319	116	636	276	6,752	4,450	5,150	14,734	32,433
Visitors to Inpatients	891	754	2,044	1,374	15,520	6,725	12,125	45,686	85,119
Outpatients and companions	2,662	968	5,252	2,283	56,064	36,875	42,625	122,165	268,894
Total patients and visitors	*3,872*	*1,838*	*7,932*	*3,933*	*78,336*	*48,050*	*59,900*	*182,585*	*386,446*
OTHER VISITORS									
Vendors/Services	1,078	392	784	588	6,272	2,375	6,450	1,431	19,370
Total other visitors	*1,078*	*392*	*784*	*588*	*6,272*	*2,375*	*6,450*	*1,431*	*19,370*
Subtotal Staff+Patients+Visitors	***6,479***	***4,442***	***15,460***	***8,202***	***141,920***	***83,875***	***138,025***	***191,383***	***589,786***
CHILDCARE									
Childcare staff	6	8	32	15	288	150	350	53	902
Total childcare	*6*	*8*	*32*	*15*	*288*	*150*	*350*	*53*	*902*
RESIDENTIAL									
Aldea	1,111	162	1,624	243	512	200	400	-	4,252
Other existing campus housing	209	30	300	45	96	50	75	-	805
Building B (Student Housing)	275	40	404	60	128	50	100	-	1,057
Building C (156 units; market rate)	66	124	124	387	128	300	1,025	-	2,154
Visitors/ Vendors/Services	143	52	96	78	832	325	850	212	2,588
Total residential	*1,804*	*408*	*2,548*	*813*	*1,696*	*925*	*2,450*	*212*	*10,856*
HOTEL (120 rooms)									
Hotel - Workers	6	10	16	30	-	25	150	-	237
Hotel - Guests	28	48	236	366	192	75	1,100	-	2,045
Total hotel	*33*	*58*	*252*	*396*	*192*	*100*	*1,250*	-	*2,281*
Total employees, vendors and services	2,618	2,622	7,576	4,314	63,872	36,000	78,625	8,851	204,478
Total patients and visitors	3,872	1,838	7,932	3,933	78,336	48,050	59,900	182,585	386,446
Total residents and hotel guests	1,832	456	2,784	1,179	1,888	1,000	3,550	212	12,901
GRAND TOTAL	8,322	4,916	18,292	9,426	144,096	85,050	142,075	191,648	603,825

Appendix WIND
Wind Appendix

PEDESTRIAN WIND ASSESSMENT

CPP PROJECT 13335
2 DECEMBER 2021

UCSF NEW HOSPITAL AT PARNASSUS HEIGHTS (NHPH)
San Francisco, California

SUBMITTED TO:
University of California San Francisco Real Estate Services
645 Minnesota Street
San Francisco, California

Diane Wong
Principal Planner, Physical Planning
Diane.Wong@ucsf.edu

PREPARED BY:
Kevin Bauman, Project Engineer
kbauman@cppwind.com
Anke Beyer-Lout, Associate Principal
abeyer-lout@cppwind.com
John Carter, Vice President
jcarter@cppwind.com

CPP, Inc.
7365 Greendale Road
Windsor, Colorado 80550 USA
Tel: +1-970-221-3371
www.cppwind.com

EXECUTIVE SUMMARY

A wind tunnel study of the University of California San Francisco (UCSF) Parnassus Campus New Hospital at Parnassus Heights (NHPH), to be located in San Francisco, CA was conducted to assess the pedestrian wind environment. This study was conducted in accordance with San Francisco City Planning Code Section 148 for the purposes of evaluating the proposed project's wind impacts under the California Environmental Quality Act (CEQA). Measurements of winds likely to be experienced by pedestrians were combined with wind statistics and compared to the acceptability criteria put forth by the City of San Francisco.

The NHPH building design was initially tested in July of 2021. Some updated design aspects of the massing and canopy variants of the project building were evaluated for the Project, Cumulative 2030, and Cumulative 2050 configurations in October and November of 2021.

The results of the wind study for the UCSF NHPH development can be summarized as follows:

		WIND COMFORT (11-mph exceeded 10% of time)			**WIND HAZARD (36-mph exceeded 1 hour/year)**		
Configuration		Average Wind Speed Exceeded 10% of time (mph)	% of time Wind Speeds Exceed 11-mph	Total Exceedances	Average Wind Speed Exceeded 1 hour/year (mph)	Total Hours Wind Speeds Exceed 36-mph	Total Exceedances
A	Existing	13.1 mph	20%	38 / 48	26.3 mph	5	2 / 48
Large Canopy Variants							
E	Project	12.5 mph	19%	33 / 48	25.9 mph	12	2 / 48
F	Cumulative 2030	12.8 mph	20%	37 / 48	26.4 mph	13	4 / 48
G	Cumulative 2050	12.3 mph	18%	34 / 48	25.9 mph	21	4 / 48
Canopy Removed Variants							
H	Project	13.0 mph	21%	37 / 48	26.9 mph	15	3 / 48
I	Cumulative 2030	13.2 mph	22%	38 / 48	27.2 mph	29	3 / 48
J	Cumulative 2050	12.8 mph	20%	37 / 48	26.6 mph	28	4 / 48
Small Canopy Variants							
K	Project	13.0 mph	21%	34 / 48	26.5 mph	17	3 / 48
L	Cumulative 2030	12.9 mph	21%	35 / 48	26.5 mph	25	3 / 48
M	Cumulative 2050	12.8 mph	20%	36 / 48	26.9 mph	32	4 / 48

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1. INTRODUCTION

Pedestrian wind studies are conducted to predict, access and where necessary mitigate adverse wind conditions that a building or development may have on pedestrian level wind conditions. This assessment of the acceptability of the wind environment around developments can inform designers about the suitability of outdoor areas for their intended uses. Where necessary, design modifications can be made, or intervention measures added to mitigate areas with the potential for excessive wind speeds.

The proposed University of California San Francisco (UCSF) New Hospital at Parnassus Heights (NHPH) development is located at the corner of Parnassus Avenue and Medical Center Way. The proposed development involves the demolition of the existing on-site structures and the construction of a new Hospital facility for UCSF.

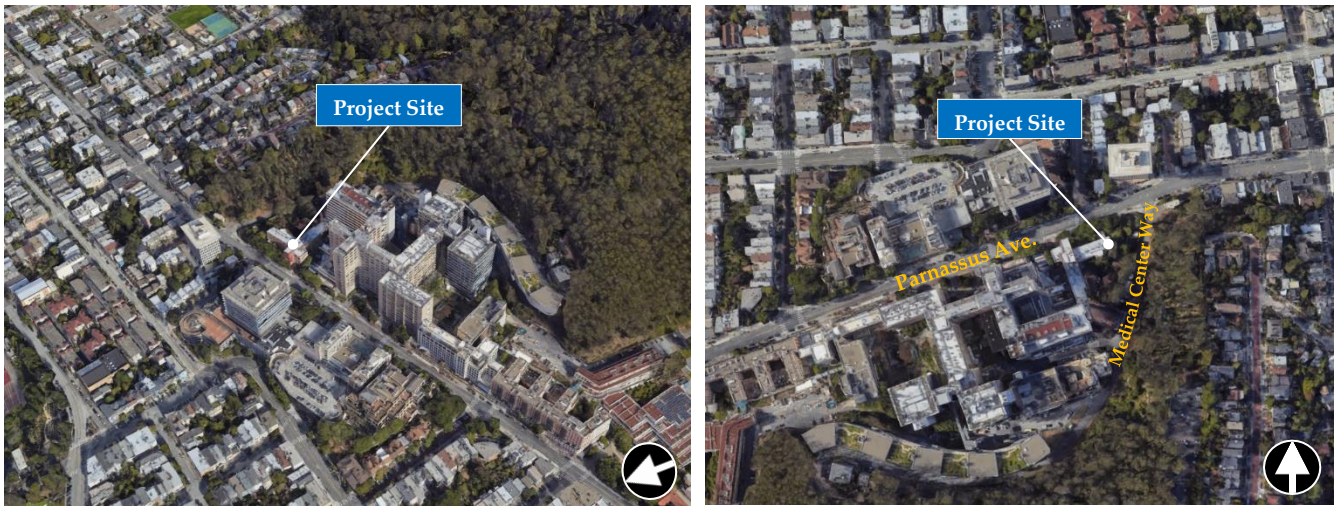

Image 1: Aerial Views of UCSF NHPH Project Site (Google Earth™)

This report includes a summary of the wind tunnel test procedures, test results, a discussion of the test results and recommendations to improve wind conditions in areas where any adverse wind conditions may be identified.

This study was conducted in accordance with the San Francisco City Planning Code Section 148. All data collection was performed in accordance with the American Society of Civil Engineers (ASCE) Standard 7-10 (2010), the ASCE Manual of Practice Number 67 on Wind Tunnel Studies of Buildings and Structures (1999), and the ASCE Standard 49-12 on Wind Tunnel Testing of Buildings and Other Structures (2012).

2. METHODOLOGY

2.1 WIND TUNNEL MODEL

The anticipated wind conditions around the proposed UCSF NHPH development were quantitatively evaluated through wind tunnel testing of a 1:350 scale model of the development and surrounding area. This scale allowed for an adequate portion of surrounding developments and terrain to be included within an approximately 2000' radius of the site and all the relevant building details to be modeled accurately. The boundary-layer wind conditions beyond the modelled area were also appropriately simulated in CPP's wind tunnel.

MEASUREMENT POINTS

Wind speed (mean and turbulence) and directional measurements were made using Calibratable Pedestrian-level Pressure (CPP) probes at 48 locations around the project site. The placement of measurement points was focused towards areas of frequent pedestrian usage (i.e. near entrances, sidewalks, crosswalks, parks, plazas, outdoor dining areas etc.) as well as areas known to have unique wind flow conditions or are more susceptible to accelerated wind flows (i.e. building corners, setback /recessed areas, between adjacent structures etc.). Measurements were made at the model-scale equivalent of 5' above the surface for 16 wind directions in 22.5° increments for each of the CPP probe locations.

All test point locations were approved by UCSF Real Estate prior to testing.

TEST CONFIGURATIONS

As a pedestrians' perception of wind can often be subjective and vary depending on regional difference in wind climate and thermal conditions, a comparison of wind speeds for the existing site versus the site with the addition of the proposed development is often the most objective way in assessing the local pedestrian wind conditions.

A summary and description of the configurations tested to evaluate the impact of the development on the pedestrian wind conditions in the vicinity of the site is provided in the table below. Photographs of the test model within the wind tunnel are also provided for each of the test configurations in Figures 1A and Figures 1E through 1M. In addition to a detailed assessment of the project site, CPP also evaluated several configurations to determine the impact of potential cumulative (future) structures for the UCSF campus as well structures part of the Comprehensive Parnassus Heights Plan (CPHP) as well as a series of configurations to evaluate several canopy options for the north façade of the NHPH building along Parnassus Ave.

The location and configuration of any projects currently under construction and cumulative (future) structures were based on information from the design team through their communication with UCSF Real Estate (Diane Wong).

Configurations		Description
A	Existing	Site and surroundings as they currently exist and any/all developments within the test radius currently under construction.
Large Canopy Variants		The following configurations include a canopy projecting 11.5′ into the public right-of-way along Parnassus Avenue off the north façade of the NHPH development.
E	Project (Lrg. Canopy)	The existing configuration with the addition of the proposed UCSF NHPH development.
F	Cumulative 2030 (Lrg. Canopy)	Configuration E with the addition of the cumulative / future 2030 structures (Research/Academic Building and Irving Street Arrival).
G	Cumulative 2050 (Lrg. Canopy)	Configuration F with the addition of the cumulative / future 2050 structures for the full CPHP buildout.
No Canopy Variants		The following configurations include no canopy along the north façade of the NHPH development.
H	Project (Canopy Removed)	The existing configuration with the addition of the proposed UCSF NHPH development.
I	Cumulative 2030 (Canopy Removed)	Configuration H with the addition of the cumulative / future 2030 structures (Research/Academic Building and Irving Street Arrival).
J	Cumulative 2050 (Canopy Removed)	Configuration I with the addition of the cumulative / future 2050 structures for the full CPHP buildout.
Small Canopy Variants		The following configurations include a canopy projecting 4′ into the public right-of-way along Parnassus Avenue off the north façade of the NHPH development.
K	Project (Sm. Canopy)	The existing configuration with the addition of the proposed UCSF NHPH development.
L	Cumulative 2030 (Sm. Canopy)	Configuration K with the addition of the cumulative / future 2030 structures (Research/Academic Building and Irving Street Arrival).
M	Cumulative 2050 (Sm. Canopy)	Configuration L with the addition of the cumulative / future 2050 structures for the full CPHP buildout.

2.2 WIND CLIMATE

To enable a quantitative assessment of the wind environment, the wind tunnel data were combined with wind frequency and direction information derived from data measured at the Old Federal Building at 50 United Nations Plaza from 1945-1950, in accordance with guidance provided by the San Francisco Planning Department (Arens et. al. 1989) to form a joint probability density of speed and direction called a wind rose.

The combination of this statistical data with the wind tunnel data results in cumulative probability distributions of wind speed for the full-scale site at each pedestrian measurement location which are then evaluated against the established criteria for pedestrian wind comfort and hazard.

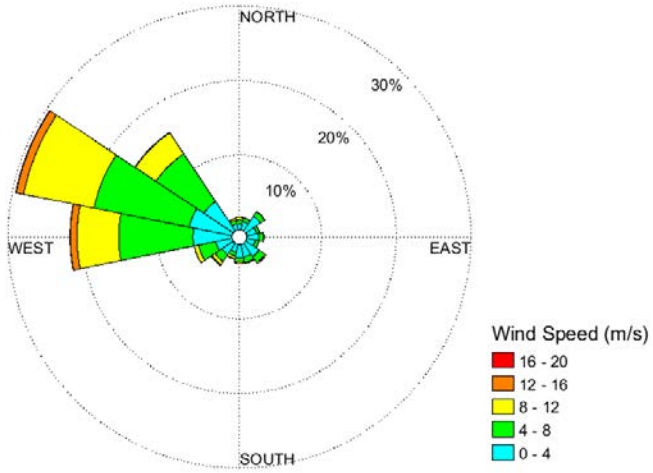

Image 2: Probability of Wind Speed by Direction Downtown San Francisco Station (1945 – 1948)

The wind rose is shown in **Error! Reference source not found.**Image 2 is representative of data at 10 m above the ground corrected to open country. In general, winds for the San Francisco area generally occur from the west-southwesterly through northwest directions.

2.3 WIND ASSESSMENT CRITERIA

UCSF is constitutionally exempt from local governments' regulations. Consequently, local city ordinances or San Francisco guidelines regarding potential wind impacts of new development do not apply to the proposed NHPH project. However, UCSF has chosen to evaluate the proposed project's wind impacts under the requirements of Planning Code Section 148. In addition, the wind hazard criterion established in Planning Code Section 148 is used as the threshold to determine if a project would result in a significant wind impact under the California Environmental Quality Act (CEQA).

Planning Code Section 148 establishes a pedestrian wind comfort criteria using equivalent wind speeds of 7 mph in public seating areas, and 11 mph in areas of substantial pedestrian use, not to be exceeded more than 10% of the time year-round between 7:00 a.m. and 6:00 p.m. (see table below).

Summary of Wind Comfort Assessment Criteria

Comfort Classification	U_{Equiv}**	Description
Public Sitting	< 7 mph	Calm or light breezes suitable for pedestrians in dining, seating, and park spaces for longer durations
Pedestrian Use	7 – 11 mph	Moderate winds appropriate for strolling, walking, running, or cycling along a downtown street, or park.
Exceeds Criteria	> 11 mph	Stronger winds typically considered uncomfortable for most pedestrian use activities. Wind mitigation may be required.

***U_{Equiv} speeds are based on an annual exceedance of 10% between the hours of 7:00 a.m. to 6:00 p.m. (inclusive)*

Equivalent wind speeds (U_{Equiv}) are defined as an hourly mean wind speed (U_{Mean}) adjusted to incorporate the effects of gustiness or turbulence (TI) on pedestrians and are calculated according to the following formula (Arens et al. 1989):

$$U_{Equiv} = \frac{U_{Mean}\ x\ (1 + 3\ TI)}{1.45}$$

$U_{Equiv} = Equivalent\ Wind\ Speed$

$U_{Mean} = Mean\ Wind\ Speed$

$TI = Turbulence\ Intensity$

In addition, wind speeds are not permitted to exceed the hazard level of 26 mph for a single hour of the year or 0.0114% of the time. As the wind climate data from the old San Francisco Federal Building were recorded for a minute on each hour, and the wind hazard threshold speed of 26 mph is based on an hourly average; a one-minute equivalent wind speed of 36 mph is used for the assessment of hazardous winds in San Francisco. This same 36 mph wind hazard threshold is used in all CEQA analysis for other districts in the San Francisco area.

The assessment of hazardous winds will be based on the criteria summarized in Table 3 below. If locations with hazardous conditions are identified, recommendations for remedial wind control measures will be provided. Wind tunnel testing under an additional scope of work would be required to evaluate the efficacy of wind control measures.

Summary of Wind Hazard Assessment Criteria

Category	U_{Equiv}**	Description
Pass	< 36 mph	Meets wind hazard criterion.
Exceeds	≥ 36 mph	Excessive wind speeds that can adversely affect a pedestrian's balance and footing. Wind mitigation is often required.

***U_{Equiv} speeds are based on an annual exceedance of 0.0114% (~1 hour / year) assessed for all hours of the day*

3. DISCUSSION OF RESULTS

The assessment of pedestrian comfort and safety with respect to the San Francisco City Planning Code Section 148 is presented in Figures 2A and Figures 2E through 2M, which contains color-coded markers indicating the measurement point on a site plan. Tables 1.1 through 1.3 and Tables 2.1 through 2.3 show the Comfort and Hazard wind speeds (respectively) associated with each point, and the corresponding % of time / total hours that the criteria is exceeded (if applicable).

With the exception of a forested area on the east side of Medical Center Way, all configurations were evaluated without the inclusion of any existing streetscaping and therefore the results may be considered as representing worst-case conditions, as required by the San Francisco Planning Department. It is CPP's opinion that the addition of landscaping features may reduce wind speeds in some locations.

3.1. Existing Configuration

For the existing configuration, the wind speed exceeded 10% of the time is expected to be 13.1 mph. In addition, 38 of 48 locations are expected to exceed the wind comfort threshold of 11-mph an average of 20% of the time (see Figure 2A and Table 1).

All locations are expected to meet the wind hazard criterion with the exception of 2 locations (points 10 and 40) (see Figure 2A and Table 2) which are expected to exceed the 36-mph criterion a total of 5 hours. The average wind speed exceeded 1 hour/year at all locations is expected to be 26.3 mph.

3.2. Project Configuration

With the addition of the proposed NHPH development for the Project configurations, the wind speed exceeded 10% of the time was generally found to remain similar to the Existing configuration. In addition, the proposed NHPH development was found to provide a reduction to the total number of locations expected to exceed the wind comfort threshold of 11-mph.

The addition of the NHPH building is generally expected to have little influence on the overall wind hazard speeds around the site. However, while eliminating an existing wind hazard exceedance location on the north side of Parnassus Ave, the addition of the NHPH building is expected to create additional wind hazard exceedance locations further east along Parnassus Ave and leads to an overall increase in total hazard hours.

Project (Canopy Removed) - Configuration H

With the addition of the proposed NHPH development, the wind speed exceeded 10% of the time was found to be 13.0 mph with 37 of 48 locations expected to exceed the wind comfort threshold of 11-mph an average of 21% of the time (Figure 2H and Table 1.2). Compared to the existing configuration, this is a 0.1 mph decrease in wind speeds, 1% increase in percent of time and reduction of 1 comfort exceedance location.

All locations are expected to meet the wind hazard criterion with the exception of 3 locations (points 10, 34 and 37) (see Figure 2H and Table 2.2) which are expected to exceed the 36-mph criterion a total of 12 hours. The average wind speed exceeded 1 hour/year at all locations is expected to be 26.9 mph. Compared to the existing configuration, this is a 0.6 mph increase in wind speeds, 10 additional hours of hazard exceedance and the addition 1 hazard exceedance location.

Project (Sm. Canopy) - Configuration K

With the addition of a canopy that projects 4' into the public right-of-way from the north façade of the NHPH development, the wind speed exceeded 10% of the time was found to remain at 13.0 mph and continue to exceed the wind comfort threshold of 11-mph an average of 21% of the time (relative to the NHPH massing without a canopy) (see Figure 2K and Table 1.3). Wind comfort exceedances at 3 locations were however found to be eliminated with the addition of the small canopy variant on the NHPH massing, reducing the total number locations exceeding the wind comfort criterion from 37 to 34.

Although providing benefit to the overall wind comfort conditions, the addition of a small canopy variant to the north façade of the NHPH development was found to marginally decrease the wind speed exceeded 1 hour/year to 26.5 mph (from 26.9 mph for Configuration H without a canopy). The total number of locations expected to exceed the wind hazard criterion is expected to remain at 3 (points 10, 34 and 37), but an additional 2 hours of exceedance are anticipated (relative to the NHPH massing without a canopy) (see Figure 2K and Table 2.3)

Project (Lrg. Canopy) - Configuration E

With the addition of a canopy the projects 11.5' into the public right-of-way from the north façade of the NHPH development, the wind speed exceeded 10% of the time was found to improve to 12.5 mph (compared to 13.0 mph with the small canopy variant) and exceed the wind comfort threshold of 11-mph an average of 19% of the time (see Figure 2E and Table 1.1). Wind comfort exceedances at 1 location was found to be eliminated with the implementation of the larger canopy variant, reducing the total number locations exceeding the wind comfort criterion from 34 to 33 (relative to the NHPH massing with the small canopy variant).

Additionally, relative to Configuration K with the small canopy variant, the inclusion of the larger canopy variant was found to marginally decrease the wind speed exceeded 1 hour/year to 25.9 mph (from 26.5 mph), eliminate an exceedance location (point 40) and decrease the of the total number of hours where wind speeds exceed 36-mph to 12 (from 17) (see Figure 2E and Table 2.1)

3.3. Cumulative 2030 Configuration

In general, the addition of the cumulative / future 2030 structures (Research/Academic Building and Irving Street Arrival) to the west of the NHPH development along Parnassus Avenue are expected to have a marginal influence on the overall wind comfort and hazard wind speeds and total locations predicted to exceed the respective criterions.

Cumulative 2030 (Canopy Removed) - Configuration I

With the addition of the 2030 future structures, the wind speed exceeded 10% of the time was found to be 13.2 mph with 38 of 48 locations expected to exceed the wind comfort threshold of 11-mph an average of 22% of the time (Figure 2I and Table 1.2). Compared to the Project (canopy removed) configuration, this is a 0.2 mph increase in wind speeds, 1% increase in percent of time and results in 1 additional exceedance location.

All locations are expected to meet the wind hazard criterion, with the exception of 3 locations (points 10, 34 and 40) (see Figure 2I and Table 2.2) which are expected to exceed the 36-mph criterion a total of 29 hours. The average wind speed exceeded 1 hour/year across all locations is expected to be 27.2 mph. Compared to the Project (canopy removed) configuration, this is a 0.3 mph increase in wind speeds, 14 additional hours of hazard exceedance and the same number of exceedance locations.

Cumulative 2030 (Sm. Canopy) - Configuration L

With the addition of the 2030 future structures, the wind speed exceeded 10% of the time was found to be 12.9 mph with 35 of 48 locations expected to exceed the wind comfort threshold of 11-mph an average of 21% of the time (Figure 2L and Table 1.3). Compared to the Project (Sm. Canopy) configuration, this is a 0.1 mph decrease in wind speeds, no change in percent of time exceeding the wind comfort criterion, and a reduction of 1 exceedance location.

All locations are expected to meet the wind hazard criterion, with the exception of 3 locations (points 10, 34 and 40) (see Figure 2L and Table 2.3) which are expected to exceed the 36-mph criterion a total of 25 hours. The average wind speed exceeded 1 hour/year across all locations is expected to be 26.5 mph. Compared to the Project (Sm. Canopy) configuration, there is no change in winds speeds, 8 additional hours of hazard exceedance and the same number of exceedance locations.

Cumulative 2030 (Lrg. Canopy) - Configuration F

With the addition of the 2030 future structures, the wind speed exceeded 10% of the time was found to be 12.8 mph with 37 of 48 locations expected to exceed the wind comfort threshold of 11-mph an average of 20% of the time (Figure 2F and Table 1.1). Compared to the Project (Lrg. Canopy) configuration, this is a 0.3 mph increase in wind speeds, a 1% increase to the percent of time exceeding the wind comfort criterion, and an additional 4 exceedance locations.

All locations are expected to meet the wind hazard criterion, with the exception of 4 locations (points 10, 30, 34 and 40) (see Figure 2F and Table 2.1) which are expected to exceed the 36-mph criterion a total of 13 hours. The average wind speed exceeded 1 hour/year across all locations is expected to be 26.4 mph. Compared to the Project (Lrg. Canopy) configuration, this is a 0.5 mph increase in winds speeds, 1 additional hour of hazard exceedance and an additional 2 locations exceeding the hazard criterion.

3.4. Cumulative 2050 Configuration

In general, the addition of the cumulative / future 2050 structures for the full CPHP buildout to the west of the NHPH development are expected to have a marginal influence on the overall wind comfort and hazard wind speeds and total locations predicted to exceed the respective criterions.

Cumulative 2050 (Canopy Removed) - Configuration J

With the addition of the 2050 future structures, the wind speed exceeded 10% of the time was found to be 12.8 mph with 37 of 48 locations expected to exceed the wind comfort threshold of 11-mph an average of 20% of the time (Figure 2J and Table 1.2). Compared to the Cumulative 2030 (canopy removed) configuration, this is a 0.4 mph decrease in wind speeds, 2% decrease in percent of time and the same number of total exceedance locations.

All locations are expected to meet the wind hazard criterion, with the exception of 4 locations (points 1, 10, 34 and 40) (see Figure 2J and Table 2.2) which are expected to exceed the 36-mph criterion a total of 28 hours. The average wind speed exceeded 1 hour/year across all locations is expected to be 26.6 mph. Compared to the Cumulative 2030 (canopy removed) configuration, this is a 0.6 mph decrease in wind speeds, 1 less hour of hazard exceedance and 1 additional exceedance location.

Cumulative 2050 (Sm. Canopy) - Configuration M

With the addition of the 2050 future structures, the wind speed exceeded 10% of the time was found to be 12.8 mph with 36 of 48 locations expected to exceed the wind comfort threshold of 11-mph an average of 20% of the time (Figure 2M and Table 1.3). Compared to the Cumulative 2030 (Sm. Canopy) configuration, this is a 0.1 mph decrease in wind speeds, 1% reduction in the percent of time exceeding the wind comfort criterion, and 1 additional exceedance location.

All locations are expected to meet the wind hazard criterion, with the exception of 4 locations (points 1, 10, 34 and 40) (see Figure 2M and Table 2.3) which are expected to exceed the 36-mph criterion a total of 32 hours. The average wind speed exceeded 1 hour/year across all locations is expected to be 26.9 mph. Compared to the Cumulative 2030 (Sm. Canopy) configuration, this is a 0.4 mph increase in winds speeds, 7 additional hours of hazard exceedance and 1 additional exceedance location.

Cumulative 2050 (Lrg. Canopy) - Configuration G

With the addition of the 2050 future structures, the wind speed exceeded 10% of the time was found to be 12.3 mph with 34 of 48 locations expected to exceed the wind comfort threshold of 11-mph an average of 18% of the time (Figure 2G and Table 1.1). Compared to the Cumulative 2030 (Lrg. Canopy) configuration, this is a 0.5 mph decrease in wind speeds, a 2% decrease to the percent of time exceeding the wind comfort criterion, and the elimination of 3 exceedance locations.

All locations are expected to meet the wind hazard criterion, with the exception of 4 locations (points 1, 10, 30 and 34) (see Figure 2G and Table 2.1) which are expected to exceed the 36-mph criterion a total of 21 hours. The average wind speed exceeded 1 hour/year across all locations is expected to be 25.9 mph. Compared to the Cumulative (Lrg. Canopy) configuration, this is a 0.5 mph decrease in winds speeds, 8 additional hours of hazard exceedance and the same number of total locations exceeding the hazard criterion.

4. REFERENCES

American Society of Civil Engineers (1999), *Wind Tunnel Studies of Buildings and Structures* (ASCE Manual of Practice Number 67).

American Society of Civil Engineers (2010), *Minimum Design Loads for Buildings and Other Structures* (ASCE 7–10).

American Society of Civil Engineers (2012), *Wind Tunnel Testing for Buildings and Other Structures* (ASCE 49-12).

FIGURES

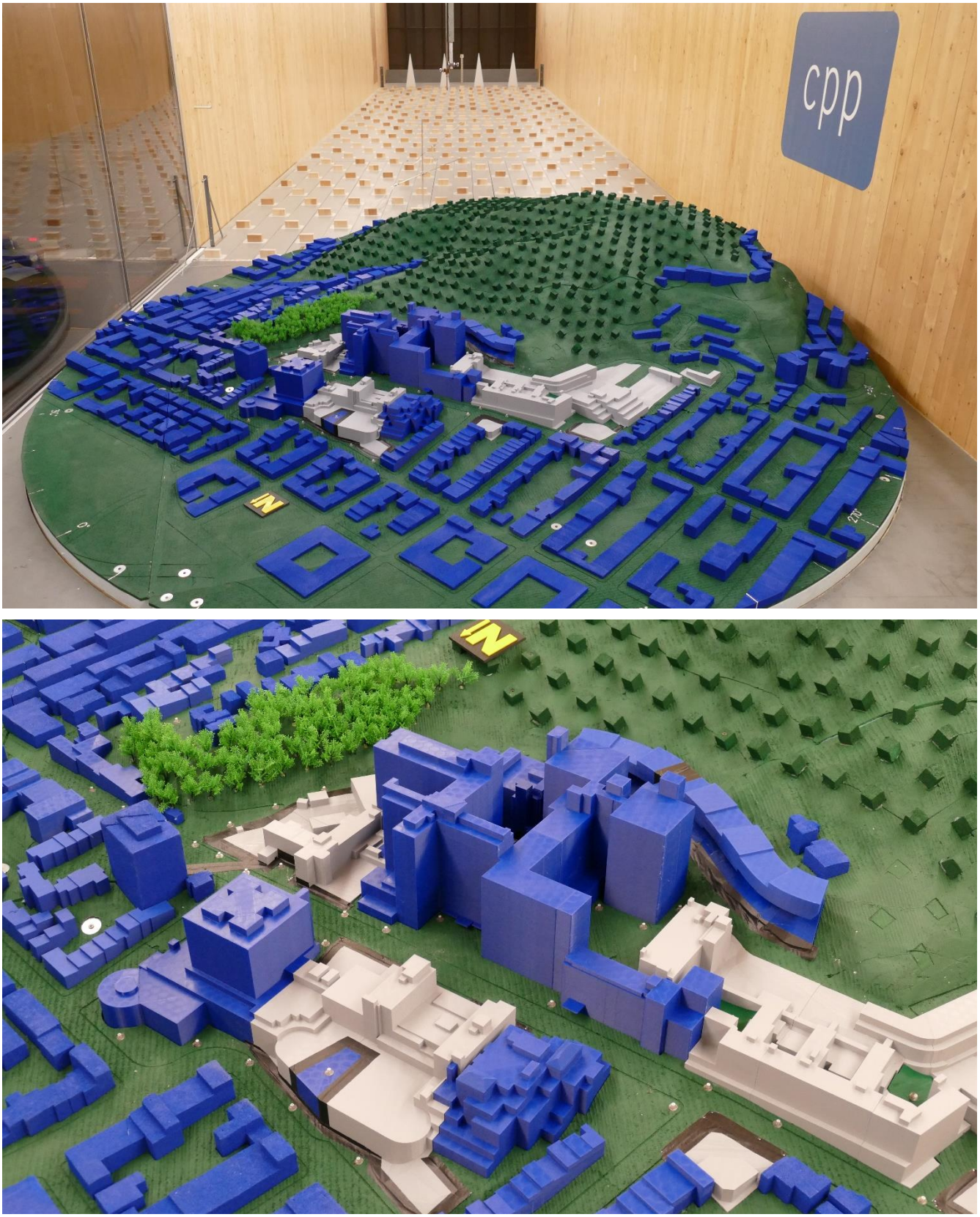

Figure 1A: Photographs of Wind Tunnel Test Model – Existing

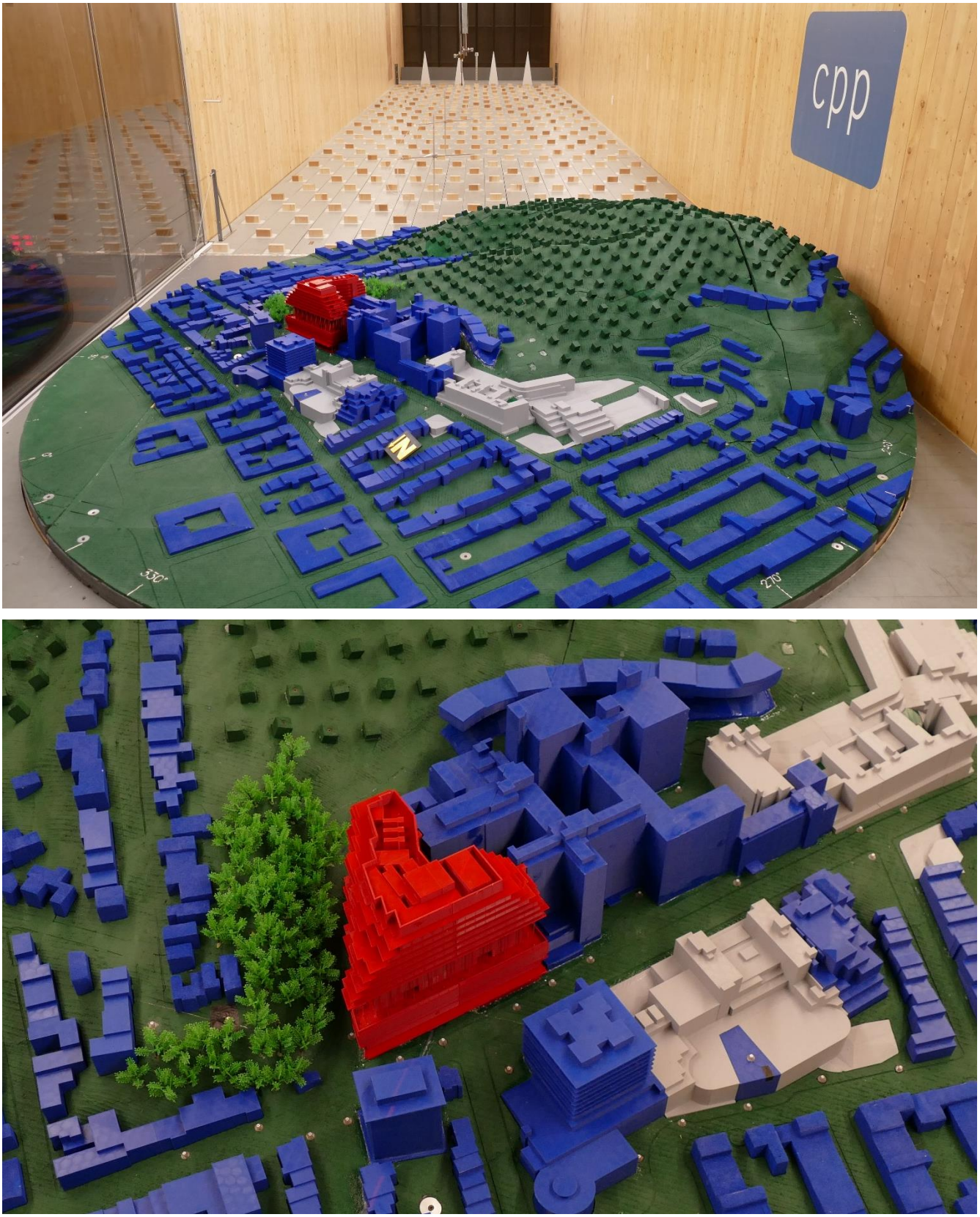

Figure 1E: Photographs of Wind Tunnel Model – Project (Lrg. Canopy)

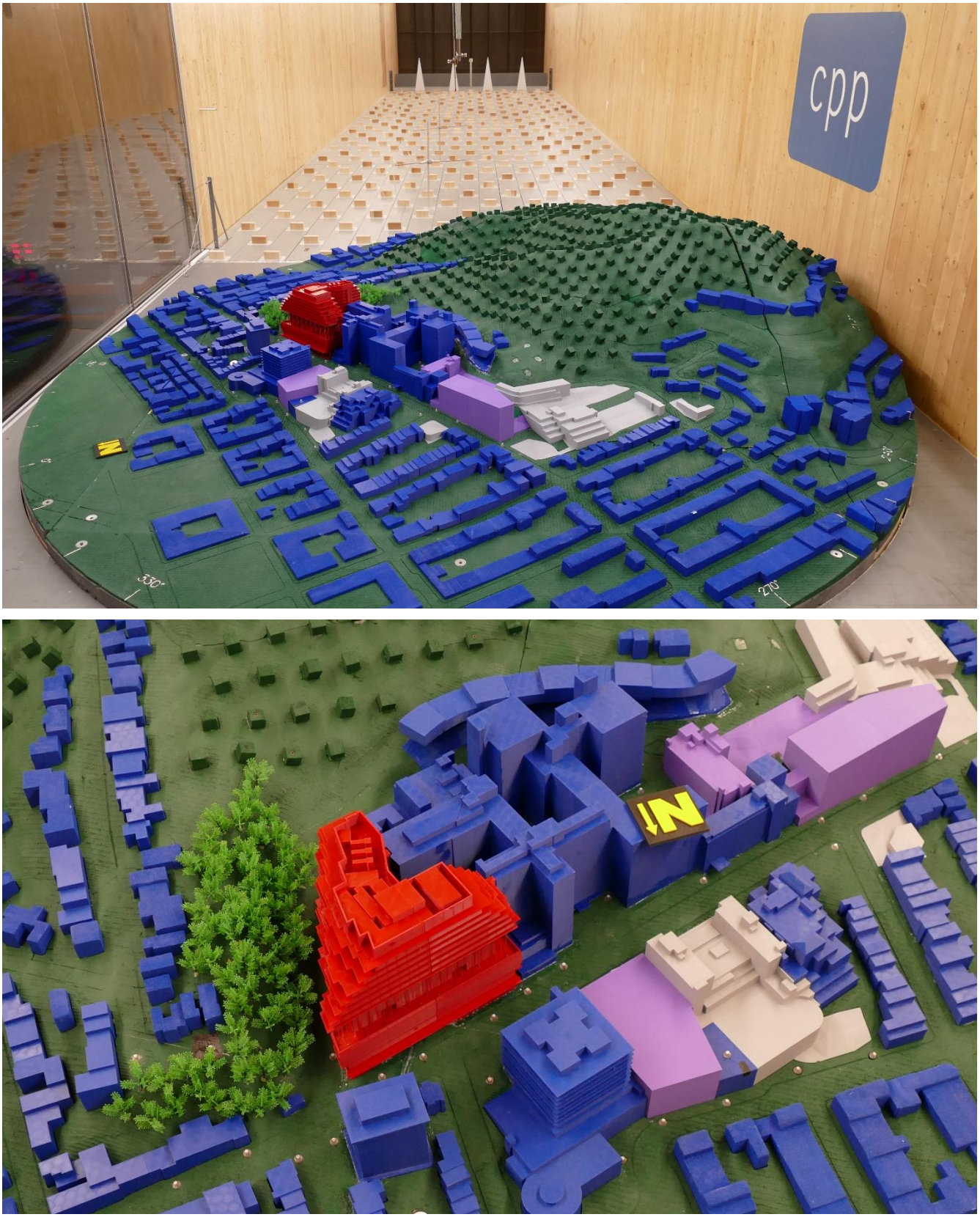

Figure 1F: Photographs of Wind Tunnel Model – Cumulative 2030 (Lrg. Canopy)

Figure 1G: Photographs of Wind Tunnel Model – Cumulative 2050 (Lrg. Canopy)

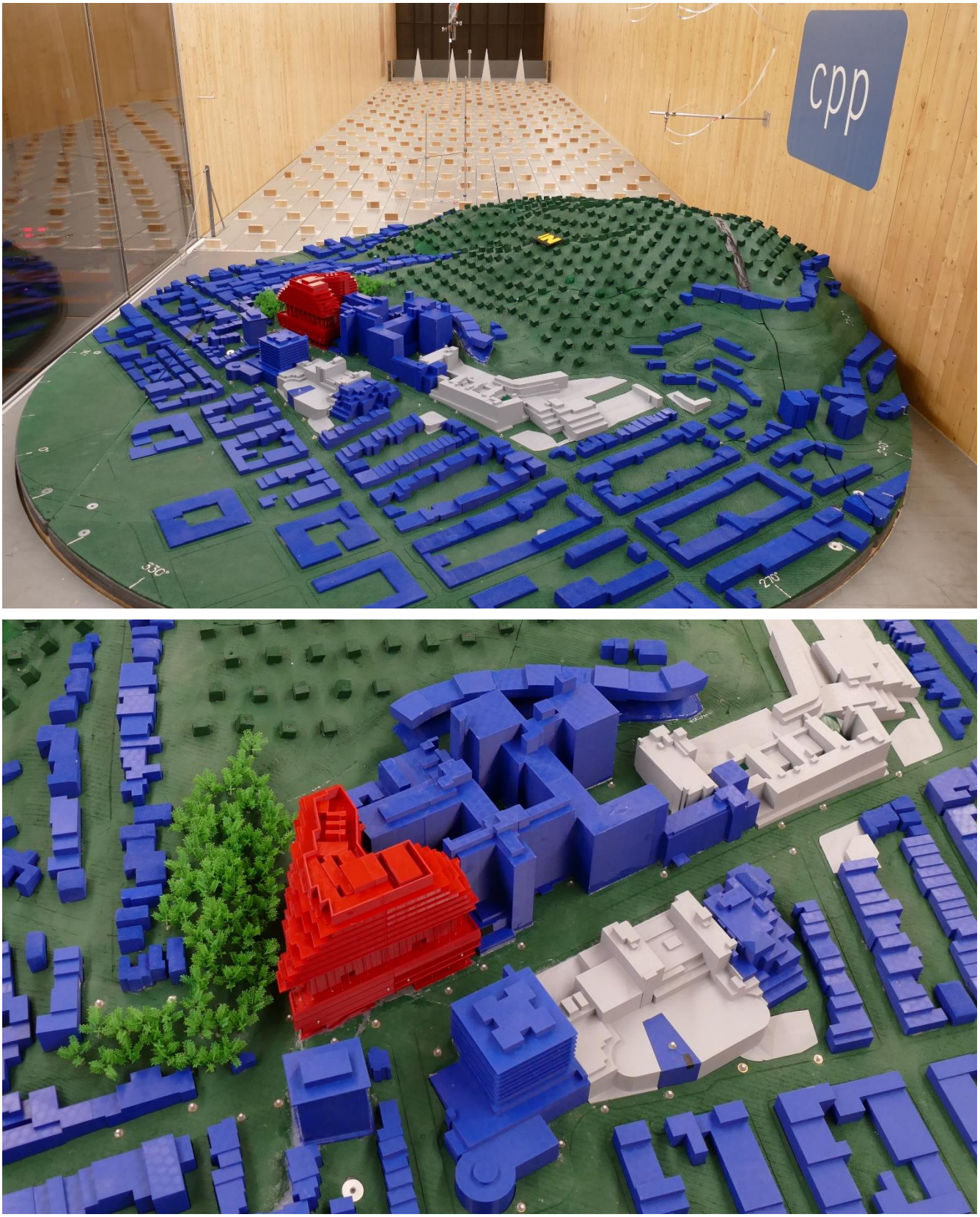

Figure 1H: Photographs of Wind Tunnel Model – Project (Canopy Removed)

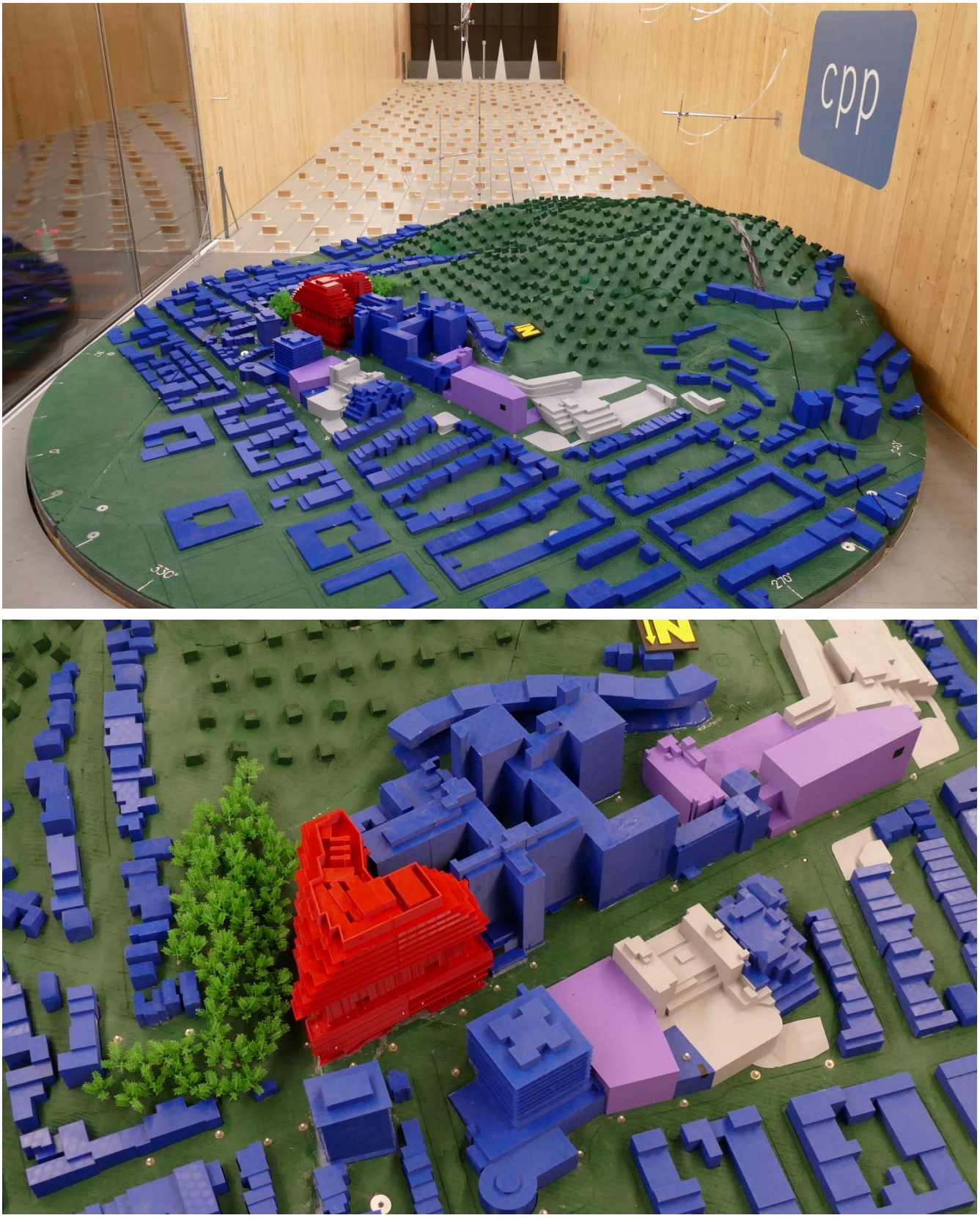

Figure 1I: Photographs of Wind Tunnel Model – Cumulative 2030 (Canopy Removed)

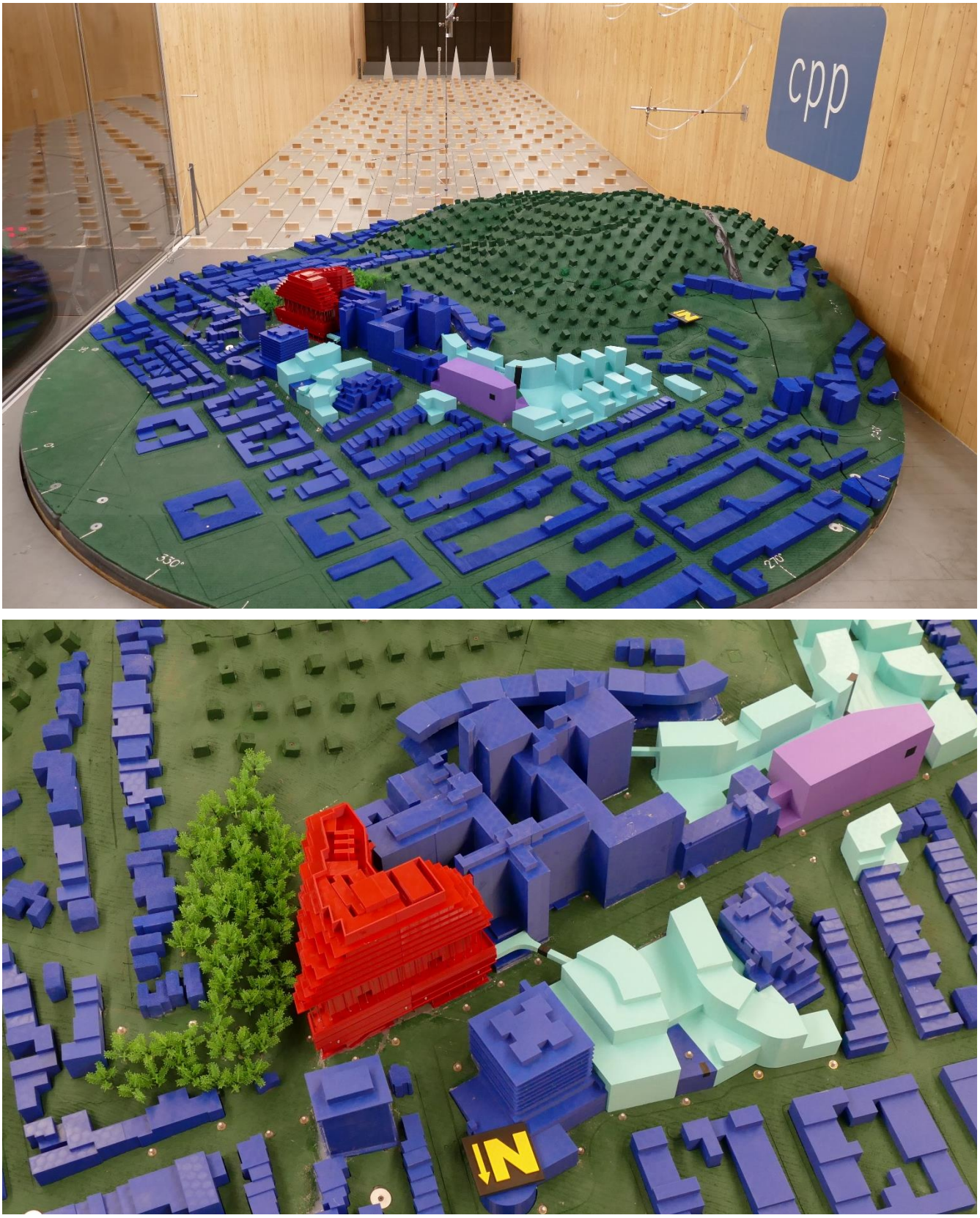

Figure 1J: Photographs of Wind Tunnel Model – Cumulative 2050 (Canopy Removed)

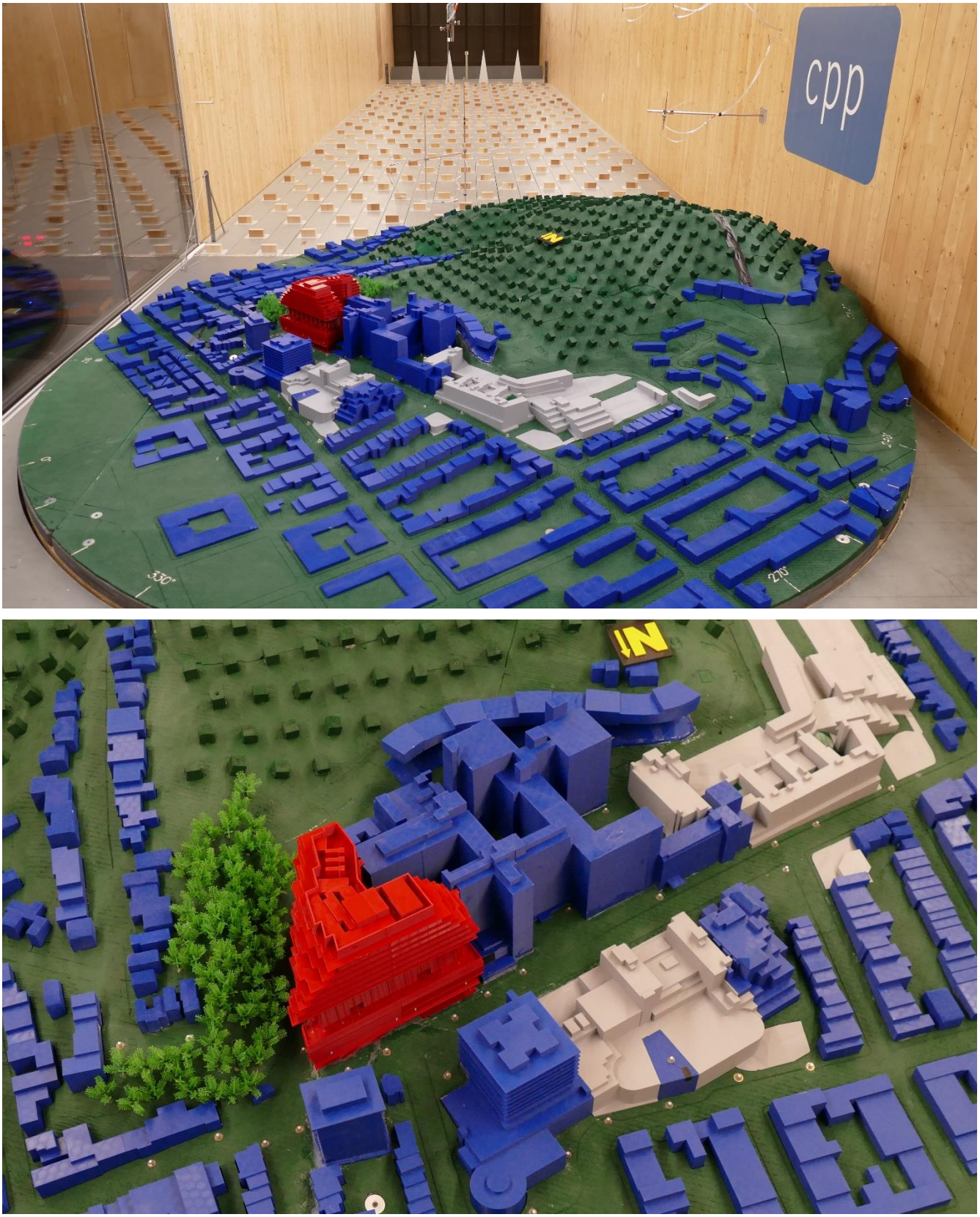

Figure 1K: Photographs of Wind Tunnel Model – Project (Sm. Canopy)

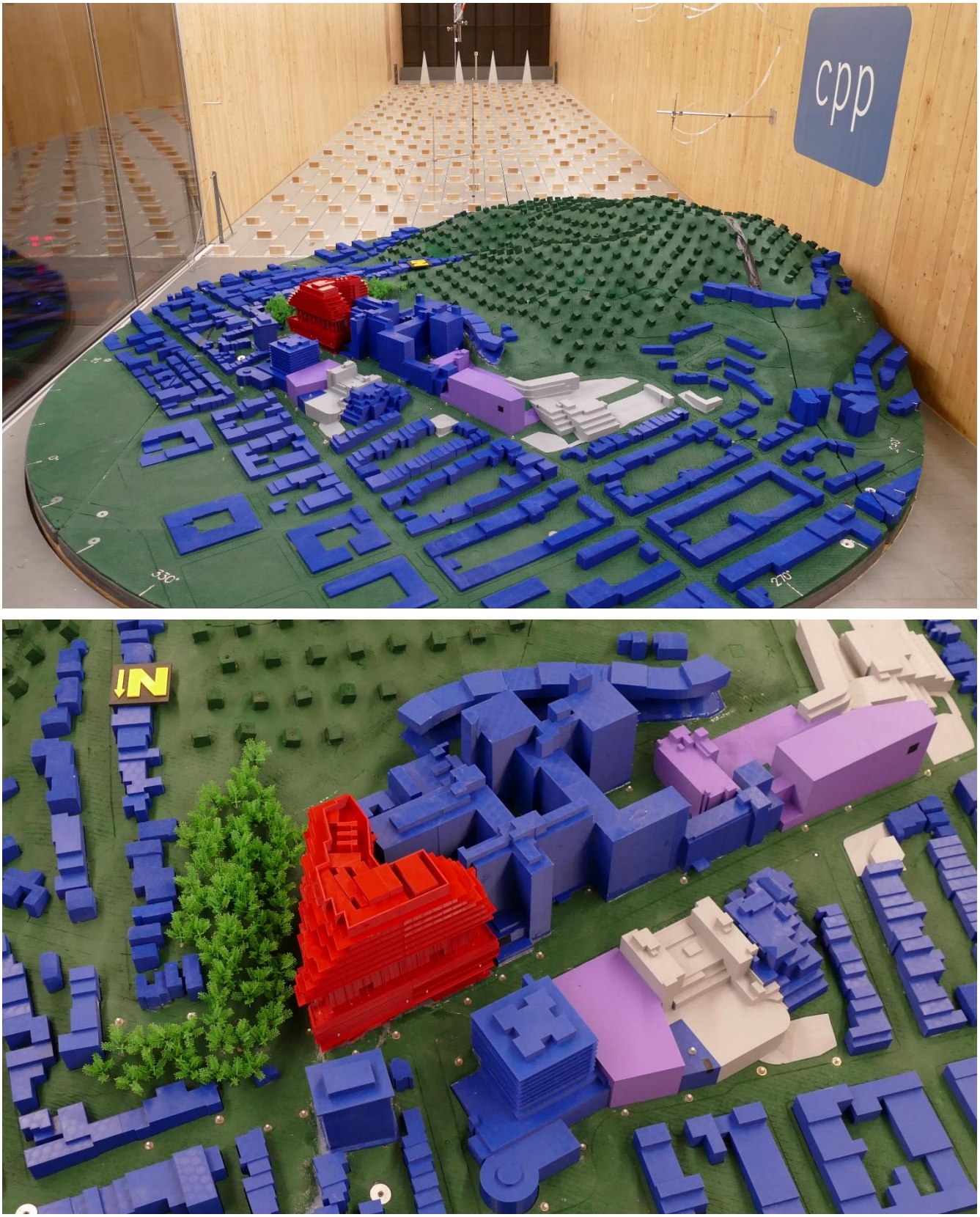

Figure 1L: Photographs of Wind Tunnel Model – Cumulative 2030 (Sm. Canopy)

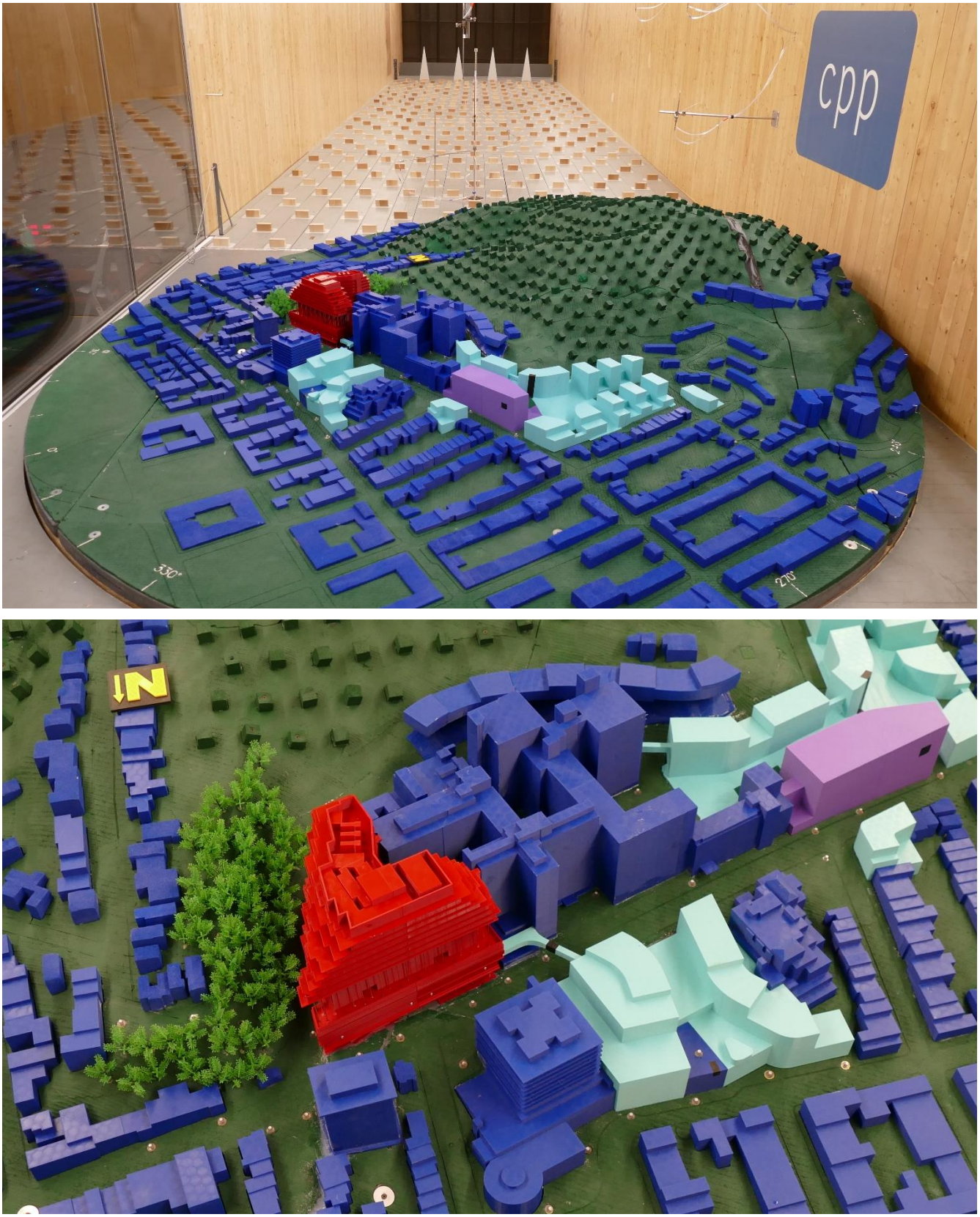

Figure 1M: Photographs of Wind Tunnel Model – Cumulative 2050 (Sm. Canopy)

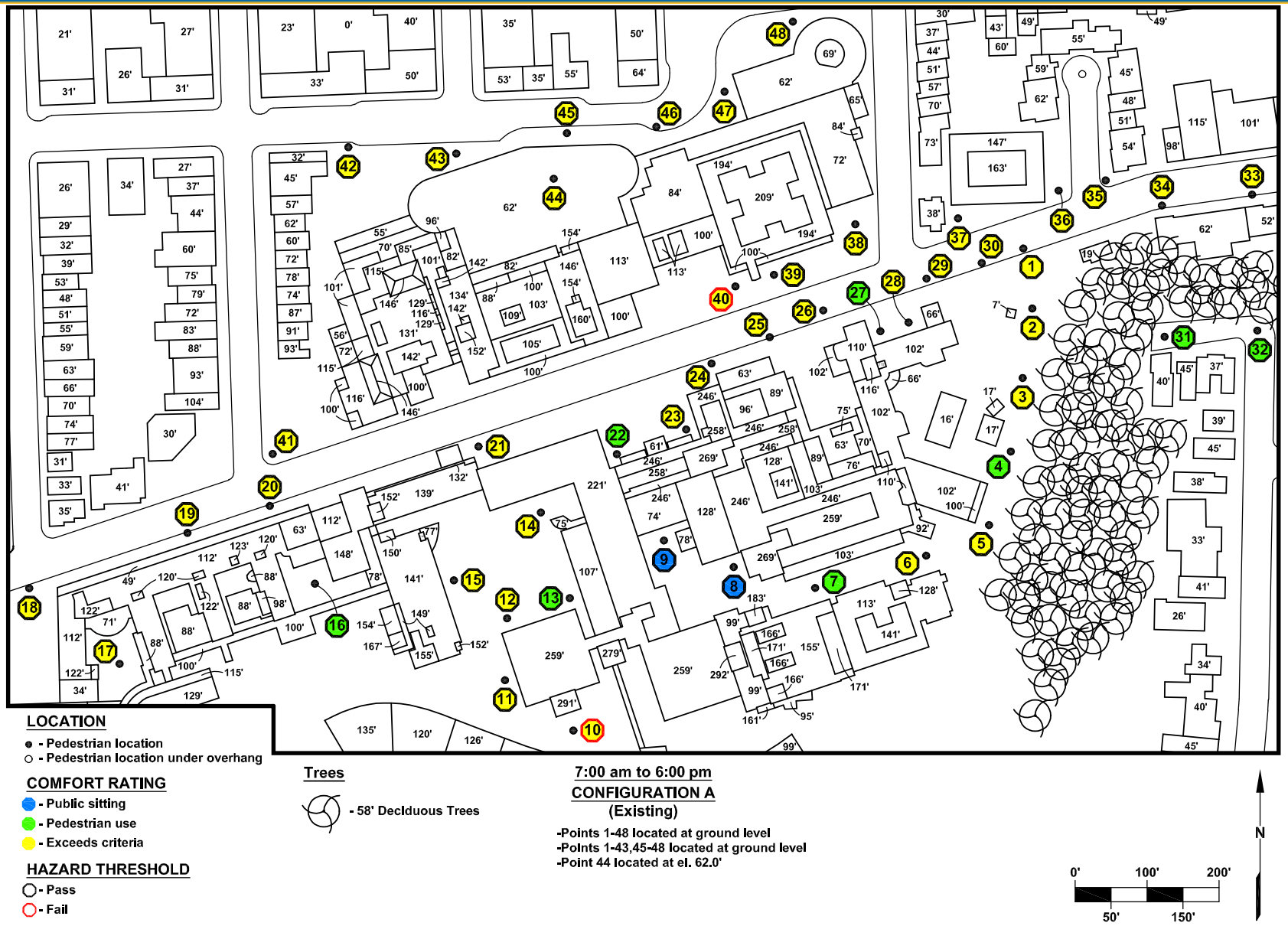

Figure 2A: Pedestrian Wind Comfort and Hazard Conditions – Existing

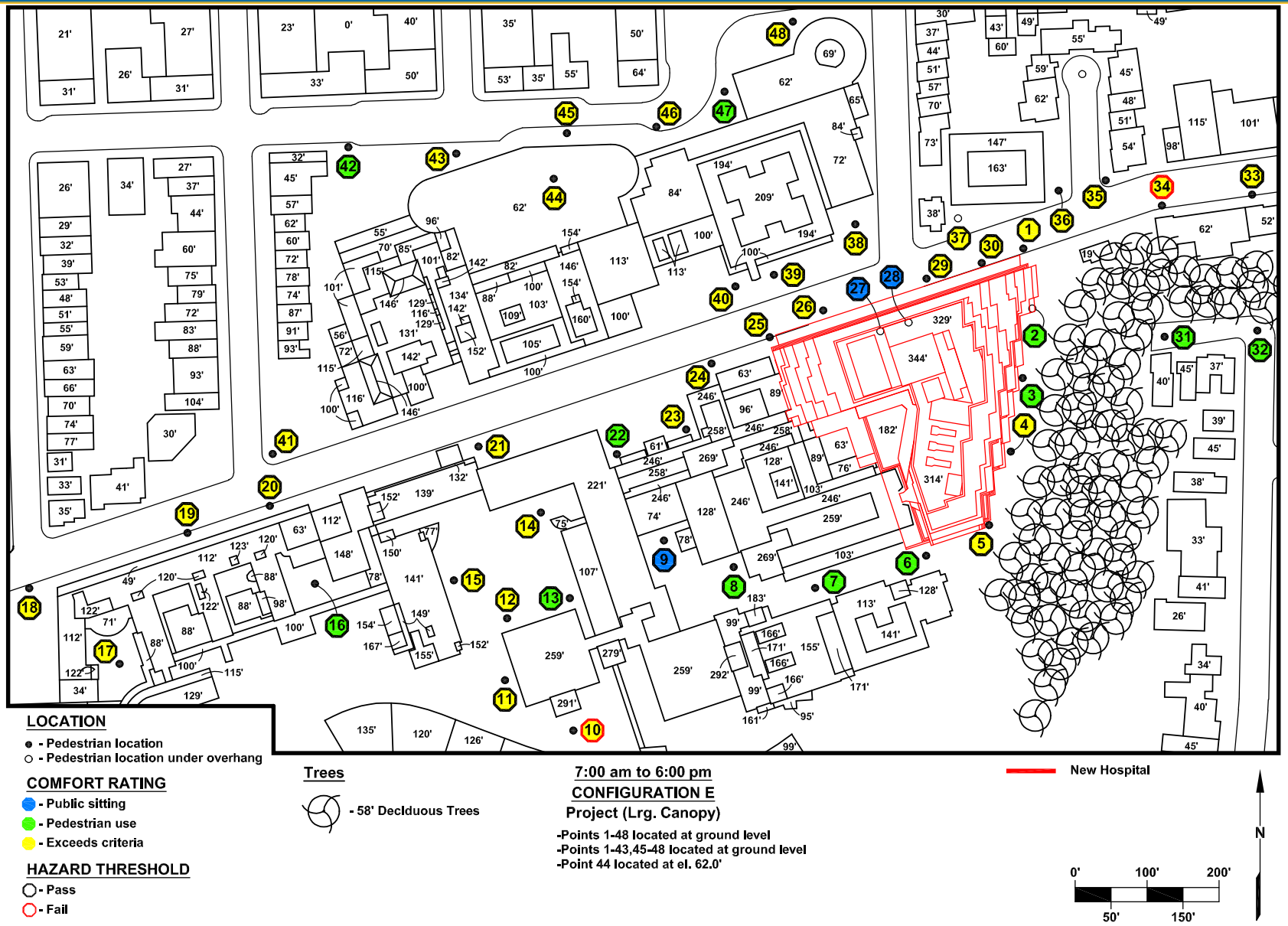

Figure 2E: Pedestrian Wind Comfort and Hazard Conditions – Project (Lrg. Canopy)

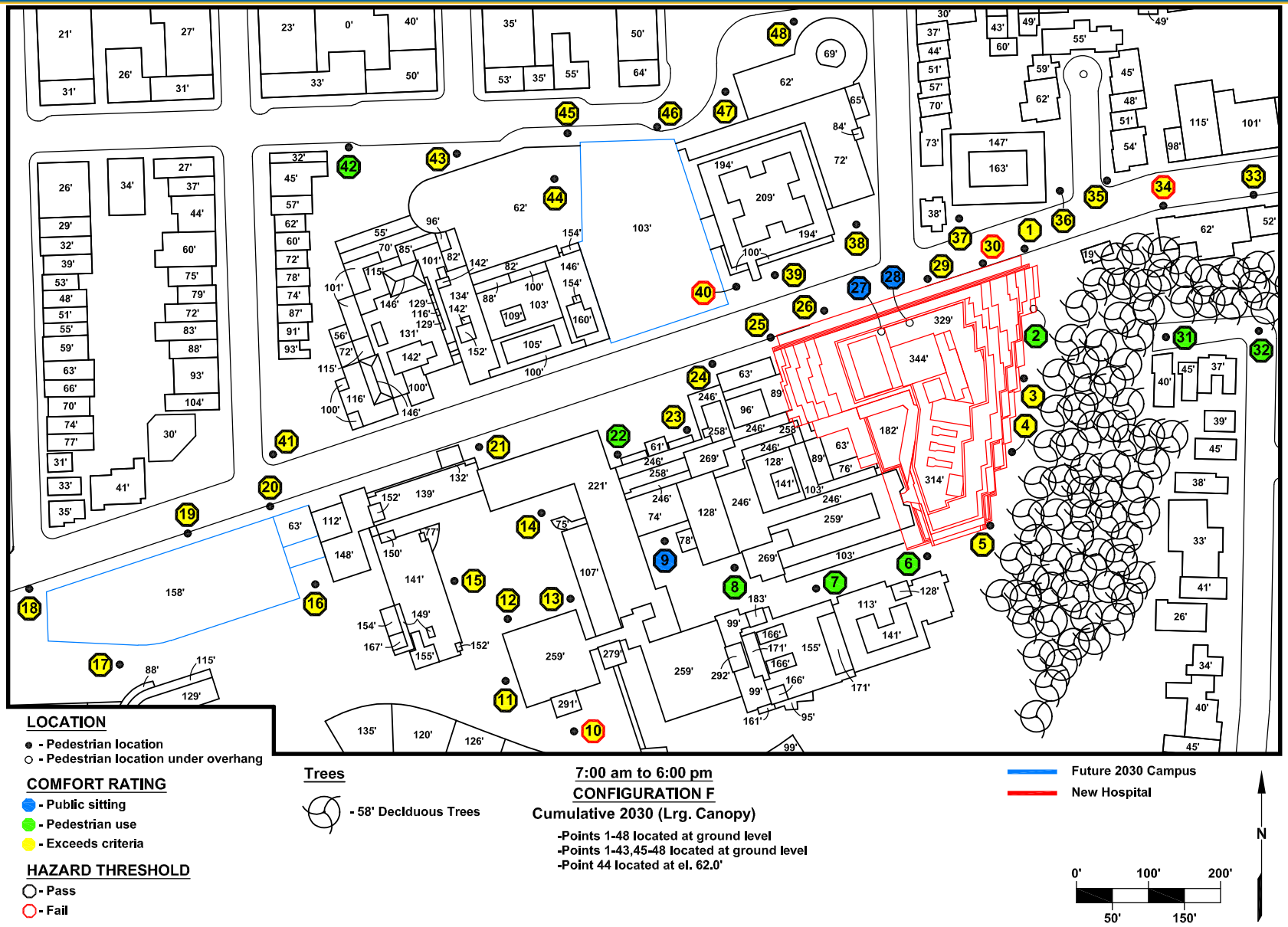

Figure 2F: Pedestrian Wind Comfort and Hazard Conditions – Cumulative 2030 (Lrg. Canopy)

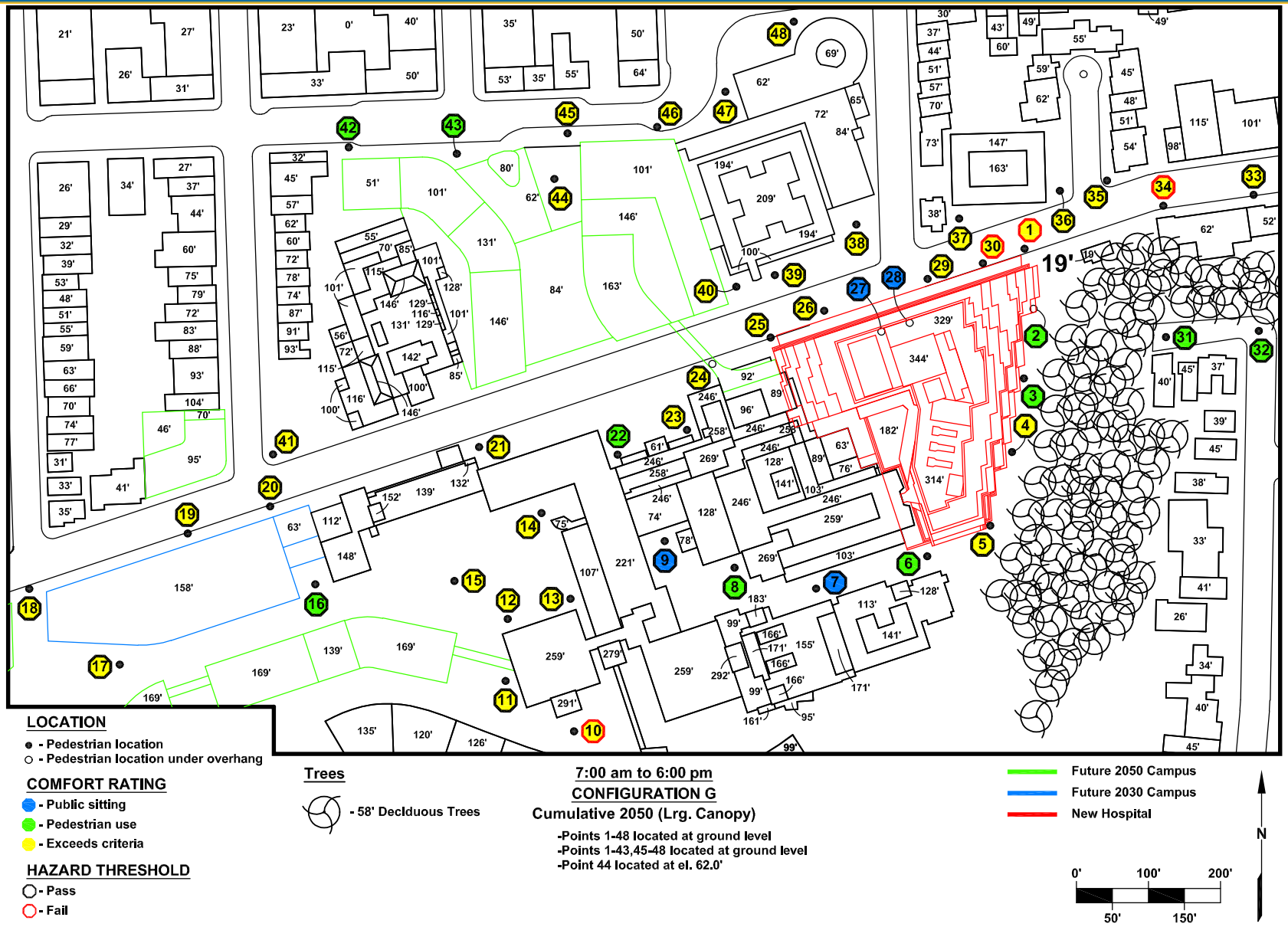

Figure 2G: Pedestrian Wind Comfort and Hazard Conditions – Cumulative 2050 (Lrg. Canopy)

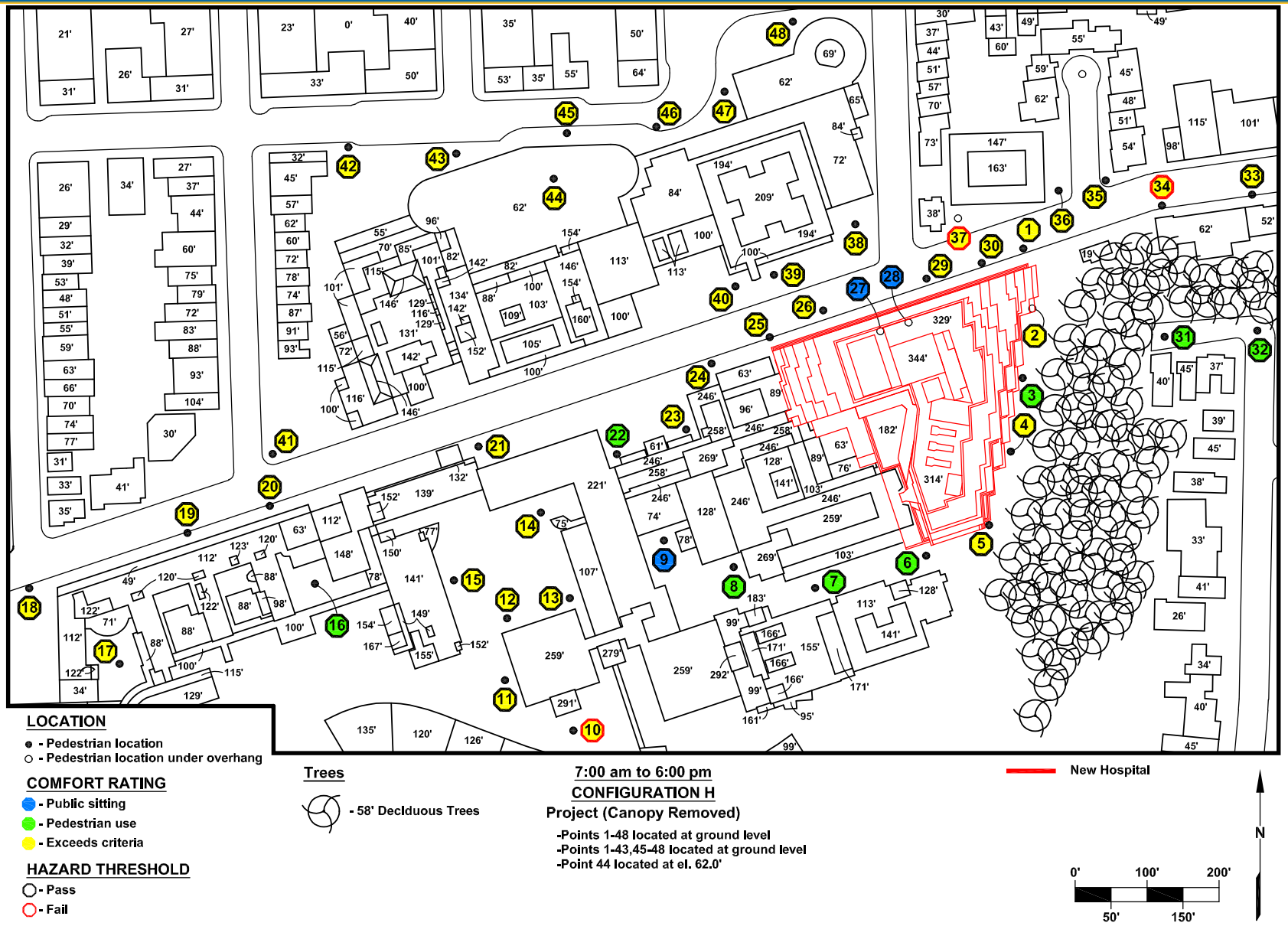

Figure 2H: Pedestrian Wind Comfort and Hazard Conditions – Project (Canopy Removed)

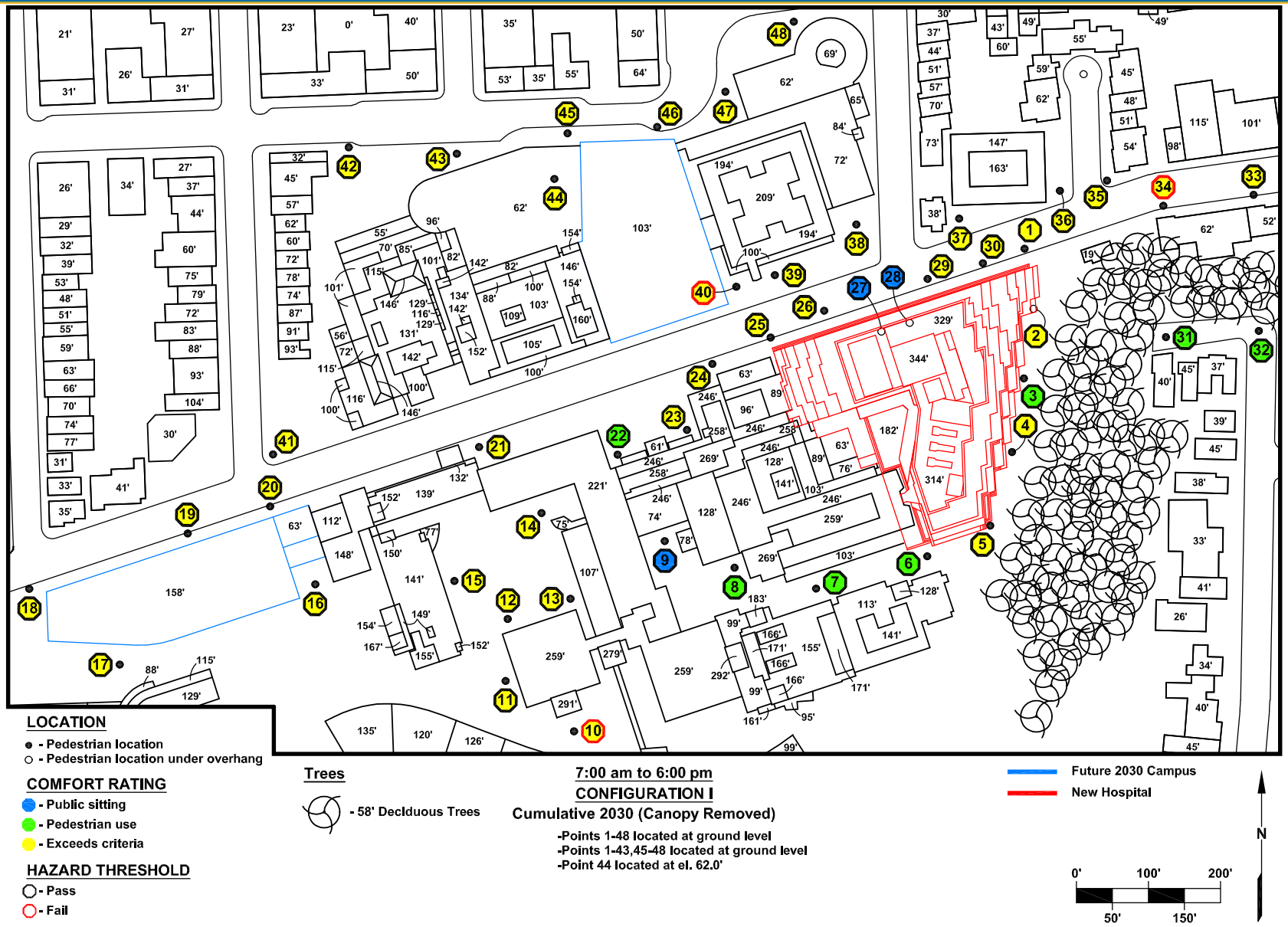

Figure 2I: Pedestrian Wind Comfort and Hazard Conditions – Cumulative 2030 (Canopy Removed)

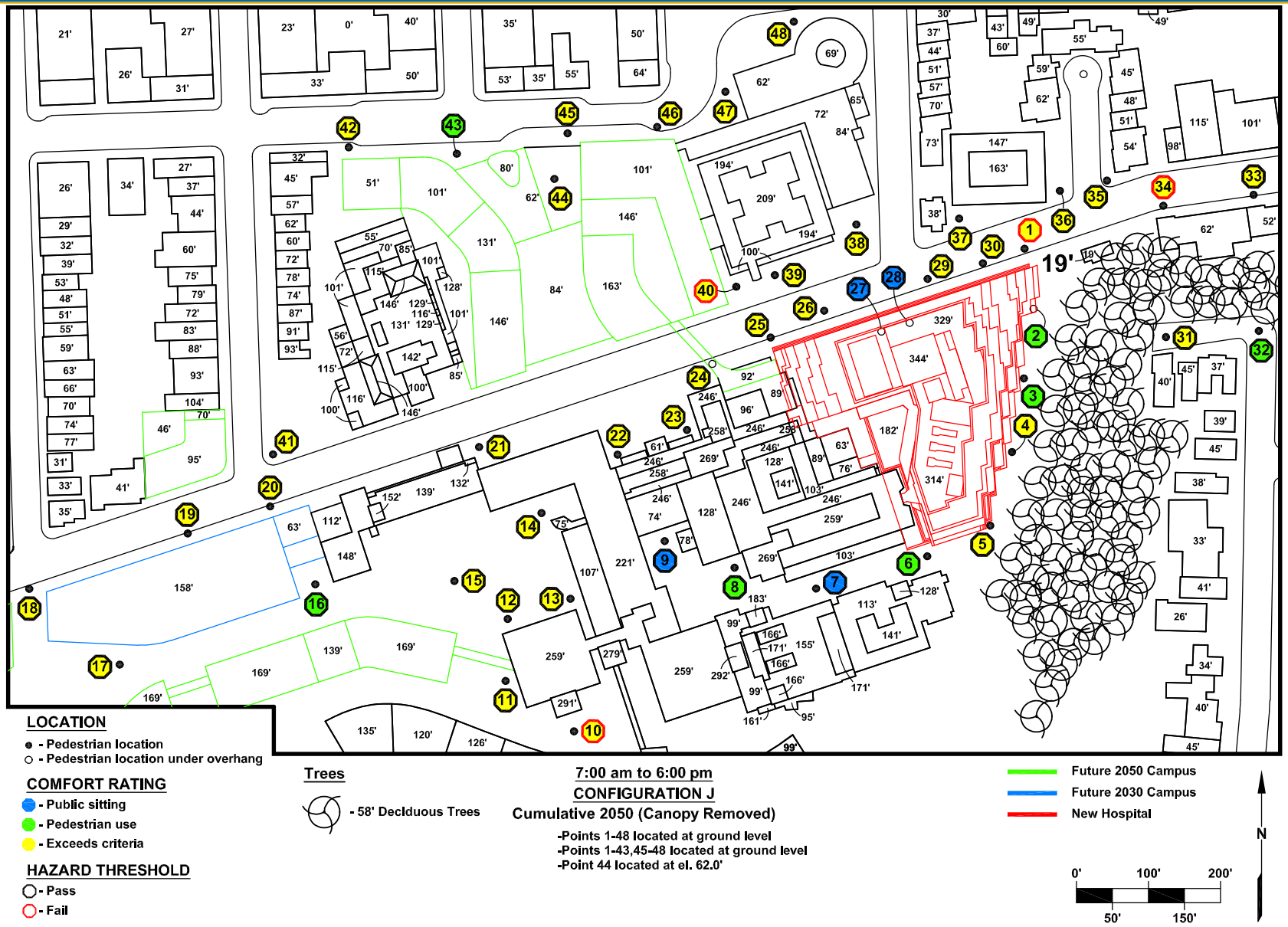

Figure 2J: Pedestrian Wind Comfort and Hazard Conditions – Cumulative 2050 (Canopy Removed)

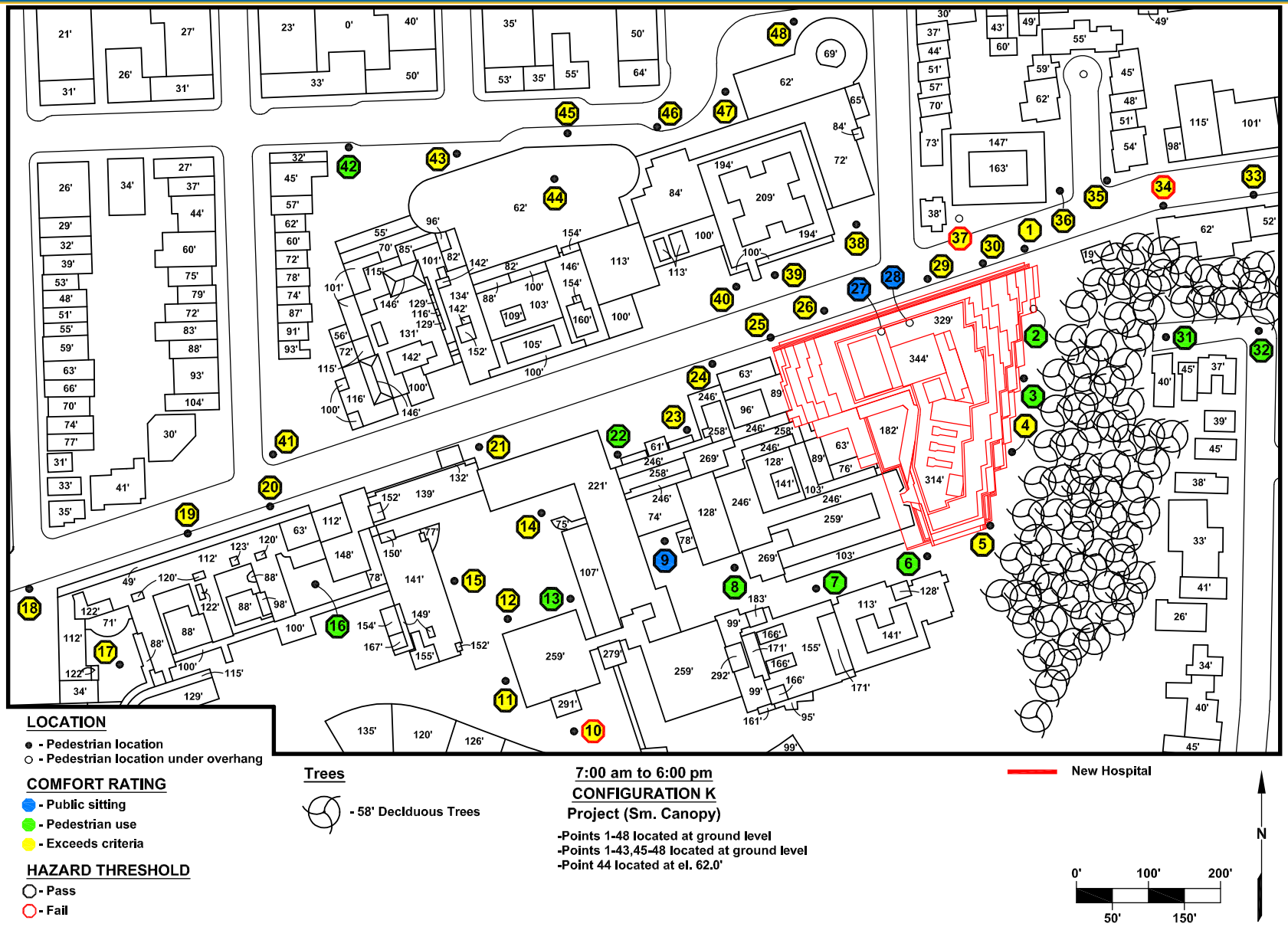

Figure 2K: Pedestrian Wind Comfort and Hazard Conditions – Project (Sm. Canopy)

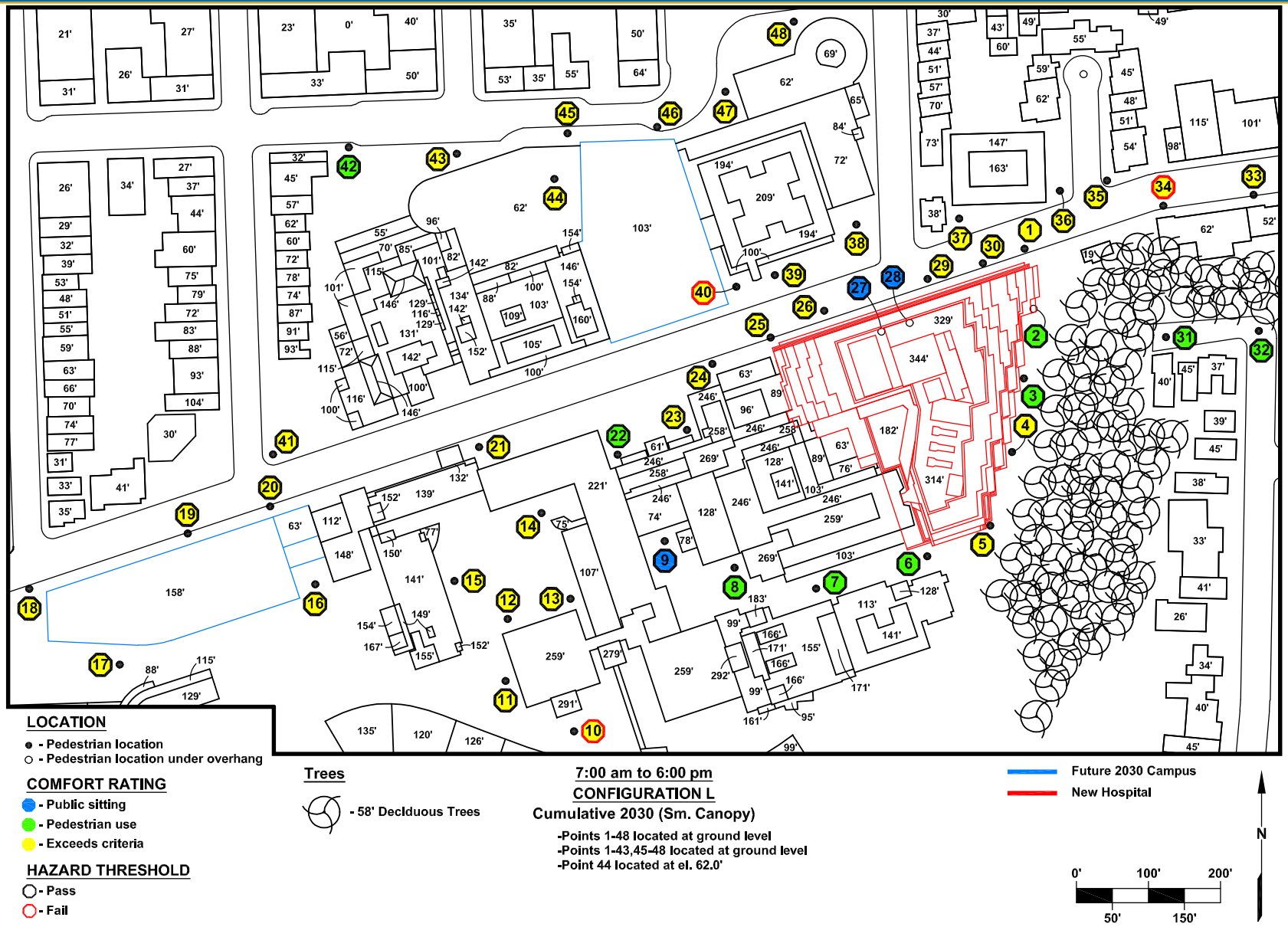

Figure 2L: Pedestrian Wind Comfort and Hazard Conditions – Cumulative 2030 (Sm. Canopy)

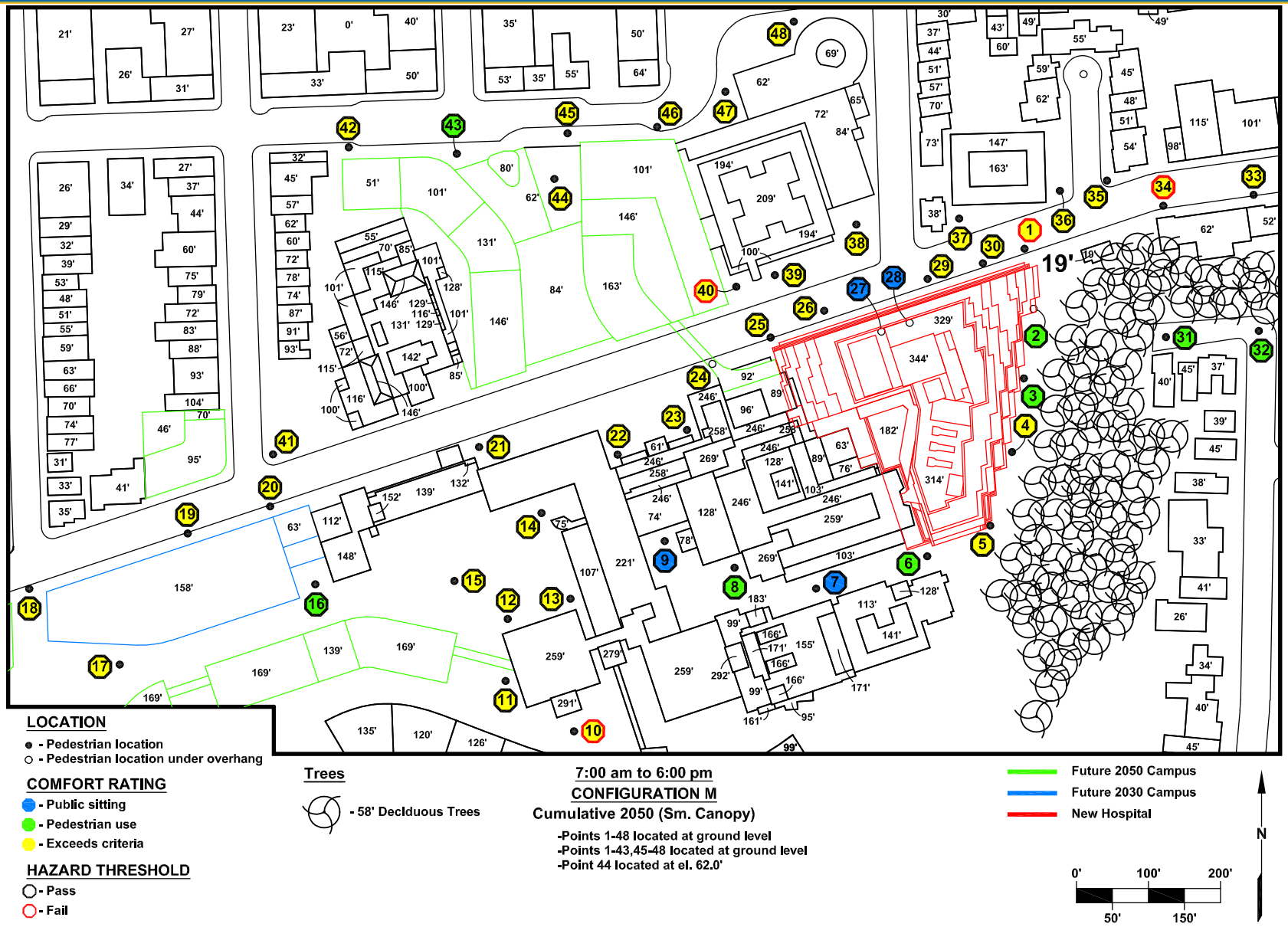

Figure 2M: Pedestrian Wind Comfort and Hazard Conditions – Cumulative 2050 (Sm. Canopy)

TABLES

Table 1.1. Pedestrian Wind Comfort Results (Configurations A, E, F, G)

Criterion wind speed = 11 mph

Test Location	Existing			Project (Lrg. Canopy)				Cumulative 2030 (Lrg. Canopy)				Cumulative 2050 (Lrg. Canopy)			
	Wind Speed Exceeded 10% of time (mph)	% of Time Exceeding Criterion	Exceedance	Wind Speed Exceeded 10% of time (mph)	% of Time Exceeding Criterion	Speed Change (mph)	Exceedance	Wind Speed Exceeded 10% of time (mph)	% of Time Exceeding Criterion	Speed Change (mph)	Exceedance	Wind Speed Exceeded 10% of time (mph)	% of Time Exceeding Criterion	Speed Change (mph)	Exceedance
1	14.0	24%	e	16.7	34%	2.7	e	16.5	34%	2.5	e	16.6	33%	2.6	e
2	12.1	15%	e	8.4	4%	-3.7		7.9	3%	-4.2		8.2	3%	-3.9	
3	12.2	15%	e	10.7	9%	-1.5		11.0	10%	-1.2	e	10.7	9%	-1.5	
4	10.7	9%		11.7	14%	1.0	e	11.9	15%	1.2	e	11.6	13%	0.9	e
5	11.7	14%	e	13.6	23%	1.9	e	13.8	24%	2.1	e	13.3	21%	1.6	e
6	11.4	12%	e	8.1	4%	-3.3		8.0	4%	-3.4		7.9	4%	-3.5	
7	8.7	2%		7.7	1%	-1.0		7.3	1%	-1.4		6.5	1%	-2.2	
8	4.9			8.5	3%	3.6		8.7	3%	3.8		7.8	2%	2.9	
9	5.3			4.4		-0.9		4.4		-0.9		4.5		-0.8	
10	19.6	42%	e	19.8	42%	0.2	e	20.1	42%	0.5	e	18.7	38%	-0.9	e
11	14.9	26%	e	14.8	26%	-0.1	e	15.5	28%	0.6	e	13.4	20%	-1.5	e
12	13.3	21%	e	13.1	20%	-0.2	e	12.9	19%	-0.4	e	13.4	21%	0.1	e
13	10.6	9%		10.7	9%	0.1		11.8	14%	1.2	e	11.3	12%	0.7	e
14	13.0	19%	e	12.6	17%	-0.4	e	13.1	19%	0.1	e	11.4	12%	-1.6	e
15	12.2	16%	e	11.9	14%	-0.3	e	11.9	14%	-0.3	e	13.0	19%	0.8	e
16	10.1	7%		10.0	7%	-0.1		11.6	13%	1.5	e	8.4	3%	-1.7	
17	13.5	19%	e	14.4	24%	0.9	e	18.2	40%	4.7	e	15.4	30%	1.9	e
18	15.7	32%	e	15.8	32%	0.1	e	16.1	34%	0.4	e	15.6	31%	-0.1	e
19	13.6	22%	e	13.7	22%	0.1	e	15.0	27%	1.4	e	15.1	27%	1.5	e
20	12.8	18%	e	12.6	17%	-0.2	e	15.2	27%	2.4	e	15.5	28%	2.7	e
21	13.5	22%	e	12.9	19%	-0.6	e	14.0	24%	0.5	e	13.1	20%	-0.4	e
22	9.6	6%		9.1	5%	-0.5		10.1	8%	0.5		10.7	9%	1.1	
23	13.7	22%	e	12.7	17%	-1.0	e	12.9	18%	-0.8	e	11.5	12%	-2.2	e
24	16.6	33%	e	13.6	21%	-3.0	e	14.2	24%	-2.4	e	13.4	21%	-3.2	e
25	18.0	39%	e	14.1	24%	-3.9	e	14.1	24%	-3.9	e	13.3	21%	-4.7	e
26	18.9	41%	e	15.9	31%	-3.0	e	15.5	30%	-3.4	e	14.3	25%	-4.6	e
27	9.1	5%		4.6		-4.5		4.7		-4.4		5.1		-4.0	
28	12.1	15%	e	4.8		-7.3		4.8		-7.3		5.3		-6.8	
29	16.0	32%	e	13.1	20%	-2.9	e	13.4	21%	-2.6	e	12.3	16%	-3.7	e
30	15.6	29%	e	15.5	29%	-0.1	e	15.6	29%		e	15.6	27%		e
31	10.7	9%		8.8	4%	-1.9		8.6	3%	-2.1		8.6	4%	-2.1	
32	8.8	4%		7.6	2%	-1.2		7.4	2%	-1.4		7.5	2%	-1.3	
33	11.8	14%	e	13.4	21%	1.6	e	13.3	20%	1.5	e	13.3	20%	1.5	e

Table 1.1. Pedestrian Wind Comfort Results (Configurations A, E, F, G)

Criterion wind speed = 11 mph

Test Location	Existing			Project (Lrg. Canopy)				Cumulative 2030 (Lrg. Canopy)				Cumulative 2050 (Lrg. Canopy)			
	Wind Speed Exceeded 10% of time (mph)	% of Time Exceeding Criterion	Exceedance	Wind Speed Exceeded 10% of time (mph)	% of Time Exceeding Criterion	Speed Change (mph)	Exceedance	Wind Speed Exceeded 10% of time (mph)	% of Time Exceeding Criterion	Speed Change (mph)	Exceedance	Wind Speed Exceeded 10% of time (mph)	% of Time Exceeding Criterion	Speed Change (mph)	Exceedance
34	13.8	22%	e	19.7	40%	5.9	e	19.3	39%	5.5	e	19.8	40%	6.0	e
35	13.9	23%	e	16.5	34%	2.6	e	16.5	34%	2.6	e	16.6	33%	2.7	e
36	12.4	15%	e	13.4	21%	1.0	e	13.2	20%	0.8	e	13.7	23%	1.3	e
37	14.7	24%	e	14.3	24%	-0.4	e	14.1	23%	-0.6	e	14.5	25%	-0.2	e
38	13.6	22%	e	12.6	17%	-1.0	e	12.6	17%	-1.0	e	11.0	10%	-2.6	e
39	15.6	30%	e	18.5	38%	2.9	e	18.7	37%	3.1	e	18.4	37%	2.8	e
40	20.5	44%	e	18.1	38%	-2.4	e	19.5	41%	-1.0	e	18.2	37%	-2.3	e
41	12.1	15%	e	12.0	15%	-0.1	e	13.1	19%	1.0	e	12.1	15%		e
42	11.0	10%	e	10.6	8%	-0.4		10.2	7%	-0.8		10.7	9%	-0.3	
43	13.6	22%	e	13.1	19%	-0.5	e	12.8	18%	-0.8	e	10.3	7%	-3.3	
44	16.3	32%	e	15.5	30%	-0.8	e	11.8	14%	-4.5	e	12.4	17%	-3.9	e
45	14.4	25%	e	13.5	21%	-0.9	e	13.2	20%	-1.2	e	12.2	16%	-2.2	e
46	12.7	18%	e	12.5	17%	-0.2	e	11.9	14%	-0.8	e	11.7	13%	-1.0	e
47	11.4	12%	e	10.8	9%	-0.6		11.5	13%	0.1	e	11.7	13%	0.3	e
48	15.8	31%	e	15.1	28%	-0.7	e	15.0	28%	-0.8	e	14.4	25%	-1.4	e
	Average Wind Speed (mph)	**Average % of Time Exceeding**	**Total**	**Average Wind Speed (mph)**	**Average % of Time Exceeding**	**Speed Change (mph)**	**Total**	**Average Wind Speed (mph)**	**Average % of Time Exceeding**	**Speed Change (mph)**	**Total**	**Average Wind Speed (mph)**	**Average % of Time Exceeding**	**Speed Change (mph)**	**Total**
	13.1	20%	38 of 48	12.5	19%	-0.5	33 of 48	12.8	20%	-0.3	37 of 48	12.3	18%	-0.8	34 of 48

Notes

1 Wind speeds listed are based on an Equivalent Wind Speed (EWS) (EWS = [U_{Mean} x (1 + 3 T.I.)] /1.45.

2 "Speed Change" values listed are relative to the "Existing" Configuration (or first configuration listed).

3 "Hours Change" values listed are relative to the "Existing" Configuration (or first configuration listed).

Table 1.2. Pedestrian Wind Comfort Results (Configurations A, H, I, J)

Criterion wind speed = 11 mph

Test Location	Existing			Project (Canopy Removed)				Cumulative 2030 (Canopy Removed)				Cumulative 2050 (Canopy Removed)			
	Wind Speed Exceeded 10% of time (mph)	% of Time Exceeding Criterion	Exceedance	Wind Speed Exceeded 10% of time (mph)	% of Time Exceeding Criterion	Speed Change (mph)	Exceedance	Wind Speed Exceeded 10% of time (mph)	% of Time Exceeding Criterion	Speed Change (mph)	Exceedance	Wind Speed Exceeded 10% of time (mph)	% of Time Exceeding Criterion	Speed Change (mph)	Exceedance
1	14.0	24%	e	17.0	37%	3.0	e	16.6	34%	2.6	e	17.1	35%	3.1	e
2	12.1	15%	e	11.0	10%	-1.1	e	11.0	10%	-1.1	e	10.8	10%	-1.3	
3	12.2	15%	e	10.2	7%	-2.0		10.2	7%	-2.0		9.9	6%	-2.3	
4	10.7	9%		12.0	15%	1.3	e	12.0	15%	1.3	e	11.7	13%	1.0	e
5	11.7	14%	e	14.1	25%	2.4	e	14.0	25%	2.3	e	13.6	23%	1.9	e
6	11.4	12%	e	8.4	5%	-3.0		8.2	4%	-3.2		8.0	4%	-3.4	
7	8.7	2%		7.9	2%	-0.8		7.1	1%	-1.6		6.4	1%	-2.3	
8	4.9			8.5	3%	3.6		8.4	2%	3.5		7.3	1%	2.4	
9	5.3			4.5		-0.8		4.5		-0.8		4.5		-0.8	
10	19.6	42%	e	20.5	44%	0.9	e	20.7	44%	1.1	e	18.9	39%	-0.7	e
11	14.9	26%	e	15.8	29%	0.9	e	16.3	31%	1.4	e	14.2	24%	-0.7	e
12	13.3	21%	e	13.4	21%	0.1	e	13.1	20%	-0.2	e	13.7	22%	0.4	e
13	10.6	9%		11.0	10%	0.4	e	11.7	13%	1.1	e	11.4	12%	0.8	e
14	13.0	19%	e	13.2	20%	0.2	e	13.3	20%	0.3	e	11.7	13%	-1.3	e
15	12.2	16%	e	12.5	17%	0.3	e	11.8	14%	-0.4	e	13.1	19%	0.9	e
16	10.1	7%		10.4	8%	0.3		11.2	11%	1.1	e	8.9	4%	-1.2	
17	13.5	19%	e	14.5	23%	1.0	e	17.6	38%	4.1	e	15.5	30%	2.0	e
18	15.7	32%	e	16.1	34%	0.4	e	16.3	35%	0.6	e	15.3	30%	-0.4	e
19	13.6	22%	e	14.0	24%	0.4	e	15.4	28%	1.8	e	15.4	29%	1.8	e
20	12.8	18%	e	13.0	19%	0.2	e	15.9	29%	3.1	e	16.2	31%	3.4	e
21	13.5	22%	e	13.2	20%	-0.3	e	14.2	25%	0.7	e	13.3	21%	-0.2	e
22	9.6	6%		9.6	6%			10.5	9%	0.9		11.4	11%	1.8	e
23	13.7	22%	e	13.0	18%	-0.7	e	13.0	18%	-0.7	e	11.9	14%	-1.8	e
24	16.6	33%	e	14.0	23%	-2.6	e	14.2	24%	-2.4	e	13.5	21%	-3.1	e
25	18.0	39%	e	14.5	26%	-3.5	e	14.2	25%	-3.8	e	14.0	23%	-4.0	e
26	18.9	41%	e	17.2	36%	-1.7	e	16.5	34%	-2.4	e	15.6	30%	-3.3	e
27	9.1	5%		5.2		-3.9		5.3		-3.8		5.9		-3.2	
28	12.1	15%	e	4.4		-7.7		4.3		-7.8		4.6		-7.5	
29	16.0	32%	e	13.8	23%	-2.2	e	13.8	23%	-2.2	e	12.9	18%	-3.1	e
30	15.6	29%	e	15.7	32%	0.1	e	15.7	31%	0.1	e	15.9	30%	0.3	e
31	10.7	9%		10.8	10%	0.1		10.8	10%	0.1		11.1	11%	0.4	e
32	8.8	4%		8.2	3%	-0.6		8.1	3%	-0.7		8.2	3%	-0.6	
33	11.8	14%	e	14.2	24%	2.4	e	14.1	24%	2.3	e	14.4	25%	2.6	e

Table 1.2. Pedestrian Wind Comfort Results (Configurations A, H, I, J)

Criterion wind speed = 11 mph

Test Location	Existing			Project (Canopy Removed)				Cumulative 2030 (Canopy Removed)				Cumulative 2050 (Canopy Removed)			
	Wind Speed Exceeded 10% of time (mph)	% of Time Exceeding Criterion	Exceedance	Wind Speed Exceeded 10% of time (mph)	% of Time Exceeding Criterion	Speed Change (mph)	Exceedance	Wind Speed Exceeded 10% of time (mph)	% of Time Exceeding Criterion	Speed Change (mph)	Exceedance	Wind Speed Exceeded 10% of time (mph)	% of Time Exceeding Criterion	Speed Change (mph)	Exceedance
34	13.8	22%	e	19.9	41%	6.1	e	20.1	41%	6.3	e	20.6	42%	6.8	e
35	13.9	23%	e	17.0	36%	3.1	e	17.1	35%	3.2	e	17.4	36%	3.5	e
36	12.4	15%	e	12.8	18%	0.4	e	13.1	19%	0.7	e	13.4	21%	1.0	e
37	14.7	24%	e	15.5	30%	0.8	e	15.5	30%	0.8	e	16.1	31%	1.4	e
38	13.6	22%	e	12.8	18%	-0.8	e	13.2	20%	-0.4	e	13.9	21%	0.3	e
39	15.6	30%	e	18.1	37%	2.5	e	18.1	36%	2.5	e	18.3	37%	2.7	e
40	20.5	44%	e	19.1	40%	-1.4	e	21.6	45%	1.1	e	19.6	40%	-0.9	e
41	12.1	15%	e	12.4	17%	0.3	e	13.8	22%	1.7	e	11.6	13%	-0.5	e
42	11.0	10%	e	11.0	10%		e	11.4	12%	0.4	e	11.1	11%	0.1	e
43	13.6	22%	e	13.5	21%	-0.1	e	13.6	22%		e	10.6	8%	-3.0	
44	16.3	32%	e	16.1	32%	-0.2	e	12.3	16%	-4.0	e	13.1	20%	-3.2	e
45	14.4	25%	e	13.6	22%	-0.8	e	13.9	23%	-0.5	e	13.0	19%	-1.4	e
46	12.7	18%	e	12.7	18%		e	12.4	17%	-0.3	e	11.8	14%	-0.9	e
47	11.4	12%	e	11.4	12%		e	12.5	17%	1.1	e	12.4	16%	1.0	e
48	15.8	31%	e	15.7	31%	-0.1	e	15.5	30%	-0.3	e	15.0	28%	-0.8	e
	Average Wind Speed (mph)	**Average % of Time Exceeding**	**Total**	**Average Wind Speed (mph)**	**Average % of Time Exceeding**	**Speed Change (mph)**	**Total**	**Average Wind Speed (mph)**	**Average % of Time Exceeding**	**Speed Change (mph)**	**Total**	**Average Wind Speed (mph)**	**Average % of Time Exceeding**	**Speed Change (mph)**	**Total**
	13.1	20%	38 of 48	13.0	21%	-0.1	37 of 48	13.2	22%	0.2	38 of 48	12.8	20%	-0.3	37 of 48

Notes

1 Wind speeds listed are based on an Equivalent Wind Speed (EWS) (EWS = [U_{Mean} x (1 + 3 T.I.)] /1.45.

2 "Speed Change" values listed are relative to the "Existing" Configuration (or first configuration listed).

3 "Hours Change" values listed are relative to the "Existing" Configuration (or first configuration listed).

Table 1.3. Pedestrian Wind Comfort Results (Configurations A, K, L, M)

Criterion wind speed = 11 mph

Test Location	Existing			Project (Sm. Canopy)				Cumulative 2030 (Sm. Canopy)				Cumulative 2050 (Sm. Canopy)			
	Wind Speed Exceeded 10% of time (mph)	% of Time Exceeding Criterion	Exceedance	Wind Speed Exceeded 10% of time (mph)	% of Time Exceeding Criterion	Speed Change (mph)	Exceedance	Wind Speed Exceeded 10% of time (mph)	% of Time Exceeding Criterion	Speed Change (mph)	Exceedance	Wind Speed Exceeded 10% of time (mph)	% of Time Exceeding Criterion	Speed Change (mph)	Exceedance
1	14.0	24%	e	17.1	36%	3.1	e	16.6	34%	2.6	e	17.0	34%	3.0	e
2	12.1	15%	e	10.5	9%	-1.6		10.5	9%	-1.6		10.6	9%	-1.5	
3	12.2	15%	e	10.3	7%	-1.9		10.2	7%	-2.0		10.1	6%	-2.1	
4	10.7	9%		12.0	15%	1.3	e	12.0	15%	1.3	e	11.6	13%	0.9	e
5	11.7	14%	e	14.0	25%	2.3	e	14.1	25%	2.4	e	13.6	23%	1.9	e
6	11.4	12%	e	8.2	4%	-3.2		8.1	4%	-3.3		8.2	4%	-3.2	
7	8.7	2%		7.9	1%	-0.8		7.5	1%	-1.2		6.5	1%	-2.2	
8	4.9			8.6	3%	3.7		8.5	2%	3.6		7.4	1%	2.5	
9	5.3			4.5		-0.8		4.4		-0.9		4.6		-0.7	
10	19.6	42%	e	20.5	44%	0.9	e	20.5	43%	0.9	e	18.9	39%	-0.7	e
11	14.9	26%	e	15.6	29%	0.7	e	16.0	30%	1.1	e	14.3	24%	-0.6	e
12	13.3	21%	e	13.4	21%	0.1	e	12.9	19%	-0.4	e	13.8	22%	0.5	e
13	10.6	9%		10.9	10%	0.3		11.7	13%	1.1	e	11.7	13%	1.1	e
14	13.0	19%	e	13.2	20%	0.2	e	13.1	20%	0.1	e	12.0	15%	-1.0	e
15	12.2	16%	e	12.3	16%	0.1	e	11.8	14%	-0.4	e	13.3	20%	1.1	e
16	10.1	7%		10.4	8%	0.3		11.2	11%	1.1	e	8.7	3%	-1.4	
17	13.5	19%	e	14.4	23%	0.9	e	17.5	38%	4.0	e	15.6	31%	2.1	e
18	15.7	32%	e	15.9	33%	0.2	e	16.1	34%	0.4	e	15.6	32%	-0.1	e
19	13.6	22%	e	13.9	23%	0.3	e	15.2	28%	1.6	e	15.6	29%	2.0	e
20	12.8	18%	e	12.9	18%	0.1	e	15.7	28%	2.9	e	16.3	31%	3.5	e
21	13.5	22%	e	13.3	21%	-0.2	e	14.0	24%	0.5	e	13.3	21%	-0.2	e
22	9.6	6%		9.7	6%	0.1		10.4	9%	0.8		11.1	10%	1.5	e
23	13.7	22%	e	13.3	20%	-0.4	e	13.0	18%	-0.7	e	12.0	14%	-1.7	e
24	16.6	33%	e	14.0	23%	-2.6	e	14.0	23%	-2.6	e	13.7	22%	-2.9	e
25	18.0	39%	e	14.4	26%	-3.6	e	14.2	25%	-3.8	e	14.0	23%	-4.0	e
26	18.9	41%	e	17.1	36%	-1.8	e	16.4	34%	-2.5	e	15.6	30%	-3.3	e
27	9.1	5%		5.0		-4.1		5.0		-4.1		5.6		-3.5	
28	12.1	15%	e	4.2		-7.9		4.2		-7.9		4.5		-7.6	
29	16.0	32%	e	13.5	22%	-2.5	e	13.7	23%	-2.3	e	12.9	19%	-3.1	e
30	15.6	29%	e	15.5	31%	-0.1	e	15.5	30%	-0.1	e	15.8	30%	0.2	e
31	10.7	9%		10.7	9%			10.5	8%	-0.2		10.7	9%		
32	8.8	4%		8.1	3%	-0.7		8.1	3%	-0.7		8.2	3%	-0.6	
33	11.8	14%	e	14.4	25%	2.6	e	14.0	24%	2.2	e	14.4	25%	2.6	e

Table 1.3. Pedestrian Wind Comfort Results (Configurations A, K, L, M)

Criterion wind speed = 11 mph

Test Location	Existing			Project (Sm. Canopy)				Cumulative 2030 (Sm. Canopy)				Cumulative 2050 (Sm. Canopy)			
	Wind Speed Exceeded 10% of time (mph)	% of Time Exceeding Criterion	Exceedance	Wind Speed Exceeded 10% of time (mph)	% of Time Exceeding Criterion	Speed Change (mph)	Exceedance	Wind Speed Exceeded 10% of time (mph)	% of Time Exceeding Criterion	Speed Change (mph)	Exceedance	Wind Speed Exceeded 10% of time (mph)	% of Time Exceeding Criterion	Speed Change (mph)	Exceedance
34	13.8	22%	e	20.2	41%	6.4	e	19.9	41%	6.1	e	20.5	41%	6.7	e
35	13.9	23%	e	17.3	36%	3.4	e	16.9	35%	3.0	e	17.4	36%	3.5	e
36	12.4	15%	e	13.1	19%	0.7	e	12.8	18%	0.4	e	13.5	21%	1.1	e
37	14.7	24%	e	15.9	30%	1.2	e	15.4	29%	0.7	e	16.2	31%	1.5	e
38	13.6	22%	e	13.0	19%	-0.6	e	13.0	18%	-0.6	e	13.9	21%	0.3	e
39	15.6	30%	e	18.4	37%	2.8	e	18.1	36%	2.5	e	18.3	37%	2.7	e
40	20.5	44%	e	19.1	40%	-1.4	e	21.2	44%	0.7	e	19.8	41%	-0.7	e
41	12.1	15%	e	12.7	18%	0.6	e	3.6		-8.5		11.6	13%	-0.5	e
42	11.0	10%	e	10.9	10%	-0.1		10.9	10%	-0.1		11.2	11%	0.2	e
43	13.6	22%	e	13.6	22%		e	13.3	20%	-0.3	e	10.4	8%	-3.2	
44	16.3	32%	e	16.1	32%	-0.2	e	12.2	15%	-4.1	e	13.5	22%	-2.8	e
45	14.4	25%	e	13.9	23%	-0.5	e	13.5	21%	-0.9	e	13.1	19%	-1.3	e
46	12.7	18%	e	13.1	20%	0.4	e	12.2	16%	-0.5	e	12.1	15%	-0.6	e
47	11.4	12%	e	11.7	13%	0.3	e	12.5	17%	1.1	e	12.6	17%	1.2	e
48	15.8	31%	e	15.7	31%	-0.1	e	15.4	30%	-0.4	e	15.0	28%	-0.8	e
	Average Wind Speed (mph)	**Average % of Time Exceeding**	**Total**	**Average Wind Speed (mph)**	**Average % of Time Exceeding**	**Speed Change (mph)**	**Total**	**Average Wind Speed (mph)**	**Average % of Time Exceeding**	**Speed Change (mph)**	**Total**	**Average Wind Speed (mph)**	**Average % of Time Exceeding**	**Speed Change (mph)**	**Total**
	13.1	20%	38 of 48	13.0	21%	0.0	34 of 48	12.9	21%	-0.2	35 of 48	12.8	20%	-0.2	36 of 48

Notes

1 Wind speeds listed are based on an Equivalent Wind Speed (EWS) (EWS = [U_{Mean} x (1 + 3 T.I.)] /1.45.

2 "Speed Change" values listed are relative to the "Existing" Configuration (or first configuration listed).

3 "Hours Change" values listed are relative to the "Existing" Configuration (or first configuration listed).

Table 2.1. Pedestrian Wind Hazard Results (Configurations A, E, F, G)

Criterion wind speed = 36 mph

Test Location	Existing			Project (Lrg. Canopy)				Cumulative 2030 (Lrg. Canopy)				Cumulative 2050 (Lrg. Canopy)			
	Wind Speed Exceeded 1 hour/year (mph)	Hours/yr Exceeding Criterion	Exceedance	Wind Speed Exceeded 1 hour/year (mph)	Hours/yr Exceeding Criterion	Hours Change	Exceedance	Wind Speed Exceeded 1 hour/year (mph)	Hours/yr Exceeding Criterion	Hours Change	Exceedance	Wind Speed Exceeded 1 hour/year (mph)	Hours/yr Exceeding Criterion	Hours Change	Exceedance
1	28.6	0		34.8	0	0		35.8	0	0		37.0	2	2	e
2	26.4	0		24.2	0	0		24.3	0	0		23.9	0	0	
3	25.7	0		22.2	0	0		22.3	0	0		22.3	0	0	
4	23.5	0		22.6	0	0		22.8	0	0		22.4	0	0	
5	24.8	0		27.3	0	0		27.6	0	0		27.0	0	0	
6	23.8	0		30.1	0	0		30.4	0	0		30.0	0	0	
7	18.4	0		21.0	0	0		21.3	0	0		20.9	0	0	
8	18.8	0		22.6	0	0		22.3	0	0		21.9	0	0	
9	13.2	0		15.7	0	0		15.3	0	0		15.4	0	0	
10	36.9	2	e	37.9	3	1	e	38.6	4	2	e	39.3	5	3	e
11	28.5	0		28.2	0	0		29.5	0	0		26.9	0	0	
12	26.0	0		26.8	0	0		26.3	0	0		27.9	0	0	
13	22.9	0		23.2	0	0		23.2	0	0		23.5	0	0	
14	25.4	0		24.8	0	0		25.1	0	0		20.9	0	0	
15	22.4	0		22.9	0	0		22.3	0	0		26.1	0	0	
16	19.8	0		19.8	0	0		22.0	0	0		19.2	0	0	
17	26.9	0		28.4	0	0		34.5	0	0		28.2	0	0	
18	28.6	0		28.9	0	0		32.6	0	0		29.0	0	0	
19	26.1	0		26.8	0	0		28.5	0	0		30.1	0	0	
20	26.7	0		26.7	0	0		30.7	0	0		31.4	0	0	
21	25.1	0		24.4	0	0		26.2	0	0		24.7	0	0	
22	20.9	0		21.2	0	0		24.4	0	0		25.0	0	0	
23	26.8	0		25.5	0	0		26.0	0	0		23.5	0	0	
24	34.8	0		27.4	0	0		27.8	0	0		26.2	0	0	
25	33.1	0		26.6	0	0		26.4	0	0		25.2	0	0	
26	35.1	0		29.4	0	0		28.7	0	0		28.2	0	0	
27	21.1	0		10.1	0	0		10.6	0	0		11.3	0	0	
28	23.0	0		13.1	0	0		14.1	0	0		14.1	0	0	
29	29.9	0		25.0	0	0		26.0	0	0		26.3	0	0	
30	33.4	0		34.6	0	0		36.2	1	1	e	37.2	2	2	e
31	21.9	0		18.8	0	0		18.7	0	0		19.0	0	0	
32	22.4	0		22.0	0	0		22.1	0	0		21.6	0	0	
33	23.7	0		25.9	0	0		25.5	0	0		26.8	0	0	

Table 2.1. Pedestrian Wind Hazard Results (Configurations A, E, F, G)

Criterion wind speed = 36 mph

Test Location	Existing			Project (Lrg. Canopy)				Cumulative 2030 (Lrg. Canopy)				Cumulative 2050 (Lrg. Canopy)			
	Wind Speed Exceeded 1 hour/year (mph)	Hours/yr Exceeding Criterion	Exceedance	Wind Speed Exceeded 1 hour/year (mph)	Hours/yr Exceeding Criterion	Hours Change	Exceedance	Wind Speed Exceeded 1 hour/year (mph)	Hours/yr Exceeding Criterion	Hours Change	Exceedance	Wind Speed Exceeded 1 hour/year (mph)	Hours/yr Exceeding Criterion	Hours Change	Exceedance
34	27.9	0		41.1	9	9	e	40.3	6	6	e	42.5	12	12	e
35	35.2	0		31.6	0	0		31.2	0	0		32.4	0	0	
36	26.9	0		28.9	0	0		30.0	0	0		30.0	0	0	
37	28.7	0		33.3	0	0		32.0	0	0		31.4	0	0	
38	28.1	0		26.0	0	0		27.5	0	0		24.3	0	0	
39	28.9	0		34.5	0	0		35.0	0	0		34.0	0	0	
40	37.8	3	e	33.5	0	-3		37.0	2	-1	e	35.3	0	-3	
41	22.9	0		22.3	0	0		26.6	0	0		22.6	0	0	
42	20.6	0		19.6	0	0		18.8	0	0		20.1	0	0	
43	26.2	0		25.6	0	0		24.5	0	0		19.5	0	0	
44	30.0	0		28.6	0	0		21.8	0	0		23.3	0	0	
45	27.8	0		26.1	0	0		24.7	0	0		24.5	0	0	
46	23.6	0		23.3	0	0		22.1	0	0		21.9	0	0	
47	22.4	0		20.6	0	0		21.7	0	0		22.7	0	0	
48	29.9	0		28.3	0	0		28.1	0	0		27.8	0	0	
	Average Wind Speed (mph)	**Total Hours**	**Total**	**Average Wind Speed (mph)**	**Total Hours**	**Hours Change**	**Total**	**Average Wind Speed (mph)**	**Total Hours**	**Hours Change**	**Total**	**Average Wind Speed (mph)**	**Total Hours**	**Hours Change**	**Total**
	26.3	5	2 of 48	25.9	12	7	2 of 48	26.4	13	8	4 of 48	25.9	21	16	4 of 48

Notes

1 Wind speeds listed are based on an Equivalent Wind Speed (EWS) (EWS = [U_{Mean} x (1 + 3 T.I.)] /1.45.

2 "Speed Change" values listed are relative to the "Existing" Configuration (or first configuration listed).

3 "Hours Change" values listed are relative to the "Existing" Configuration (or first configuration listed).

Table 2.2. Pedestrian Wind Hazard Results (Configurations A, H, I, J)

Criterion wind speed = 36 mph

Test Location	Existing			Project (Canopy Removed)				Cumulative 2030 (Canopy Removed)				Cumulative 2050 (Canopy Removed)			
	Wind Speed Exceeded 1 hour/year (mph)	Hours/yr Exceeding Criterion	Exceedance	Wind Speed Exceeded 1 hour/year (mph)	Hours/yr Exceeding Criterion	Hours Change	Exceedance	Wind Speed Exceeded 1 hour/year (mph)	Hours/yr Exceeding Criterion	Hours Change	Exceedance	Wind Speed Exceeded 1 hour/year (mph)	Hours/yr Exceeding Criterion	Hours Change	Exceedance
1	28.6	0		35.7	0	0		35.8	0	0		37.0	2	2	e
2	26.4	0		26.1	0	0		25.3	0	0		25.0	0	0	
3	25.7	0		22.0	0	0		21.0	0	0		21.2	0	0	
4	23.5	0		23.5	0	0		22.8	0	0		22.3	0	0	
5	24.8	0		28.5	0	0		27.7	0	0		26.5	0	0	
6	23.8	0		31.3	0	0		30.6	0	0		28.8	0	0	
7	18.4	0		20.9	0	0		21.0	0	0		19.8	0	0	
8	18.8	0		21.9	0	0		21.2	0	0		21.1	0	0	
9	13.2	0		16.3	0	0		15.9	0	0		15.7	0	0	
10	36.9	2	e	39.1	5	3	e	39.2	5	3	e	39.1	4	2	e
11	28.5	0		30.5	0	0		31.0	0	0		27.7	0	0	
12	26.0	0		27.0	0	0		26.5	0	0		28.5	0	0	
13	22.9	0		24.5	0	0		23.7	0	0		24.7	0	0	
14	25.4	0		26.5	0	0		25.8	0	0		21.6	0	0	
15	22.4	0		23.5	0	0		22.5	0	0		26.8	0	0	
16	19.8	0		20.5	0	0		22.1	0	0		20.2	0	0	
17	26.9	0		28.8	0	0		33.7	0	0		28.3	0	0	
18	28.6	0		29.7	0	0		32.9	0	0		29.2	0	0	
19	26.1	0		27.1	0	0		29.7	0	0		29.5	0	0	
20	26.7	0		27.2	0	0		32.5	0	0		32.0	0	0	
21	25.1	0		24.9	0	0		26.7	0	0		24.7	0	0	
22	20.9	0		21.7	0	0		24.9	0	0		27.0	0	0	
23	26.8	0		26.0	0	0		25.8	0	0		23.7	0	0	
24	34.8	0		28.3	0	0		27.5	0	0		26.2	0	0	
25	33.1	0		27.2	0	0		26.6	0	0		27.5	0	0	
26	35.1	0		31.8	0	0		30.7	0	0		30.8	0	0	
27	21.1	0		14.2	0	0		14.1	0	0		14.0	0	0	
28	23.0	0		12.3	0	0		11.7	0	0		11.5	0	0	
29	29.9	0		26.2	0	0		26.1	0	0		26.0	0	0	
30	33.4	0		33.5	0	0		33.7	0	0		34.4	0	0	
31	21.9	0		22.6	0	0		22.7	0	0		24.0	0	0	
32	22.4	0		23.5	0	0		22.2	0	0		22.0	0	0	
33	23.7	0		26.9	0	0		27.1	0	0		28.6	0	0	

Table 2.2. Pedestrian Wind Hazard Results (Configurations A, H, I, J)

Criterion wind speed = 36 mph

Test Location	Existing			Project (Canopy Removed)				Cumulative 2030 (Canopy Removed)				Cumulative 2050 (Canopy Removed)			
	Wind Speed Exceeded 1 hour/year (mph)	Hours/yr Exceeding Criterion	Exceedance	Wind Speed Exceeded 1 hour/year (mph)	Hours/yr Exceeding Criterion	Hours Change	Exceedance	Wind Speed Exceeded 1 hour/year (mph)	Hours/yr Exceeding Criterion	Hours Change	Exceedance	Wind Speed Exceeded 1 hour/year (mph)	Hours/yr Exceeding Criterion	Hours Change	Exceedance
34	27.9	0		41.4	9	9	e	42.5	14	14	e	43.2	17	17	e
35	35.2	0		32.7	0	0		32.3	0	0		34.6	0	0	
36	26.9	0		29.4	0	0		29.9	0	0		29.7	0	0	
37	28.7	0		36.6	1	1	e	33.0	0	0		33.9	0	0	
38	28.1	0		27.7	0	0		28.6	0	0		30.6	0	0	
39	28.9	0		33.5	0	0		34.5	0	0		33.9	0	0	
40	37.8	3	e	35.6	0	-3		40.9	10	7	e	39.3	5	2	e
41	22.9	0		22.8	0	0		28.3	0	0		21.3	0	0	
42	20.6	0		20.6	0	0		21.2	0	0		20.8	0	0	
43	26.2	0		26.8	0	0		26.9	0	0		20.6	0	0	
44	30.0	0		29.7	0	0		22.7	0	0		24.5	0	0	
45	27.8	0		26.8	0	0		26.9	0	0		25.6	0	0	
46	23.6	0		23.7	0	0		23.2	0	0		22.4	0	0	
47	22.4	0		22.7	0	0		23.1	0	0		23.6	0	0	
48	29.9	0		29.9	0	0		29.5	0	0		28.5	0	0	
	Average Wind Speed (mph)	**Total Hours**	**Total**	**Average Wind Speed (mph)**	**Total Hours**	**Hours Change**	**Total**	**Average Wind Speed (mph)**	**Total Hours**	**Hours Change**	**Total**	**Average Wind Speed (mph)**	**Total Hours**	**Hours Change**	**Total**
	26.3	5	2 of 48	26.9	15	10	3 of 48	27.2	29	24	3 of 48	26.6	28	23	4 of 48

Notes

1 Wind speeds listed are based on an Equivalent Wind Speed (EWS) (EWS = [U_{Mean} x (1 + 3 T.I.)] /1.45.

2 "Speed Change" values listed are relative to the "Existing" Configuration (or first configuration listed).

3 "Hours Change" values listed are relative to the "Existing" Configuration (or first configuration listed).

Table 2.3. Pedestrian Wind Hazard Results (Configurations A, K, L, M)

Criterion wind speed = 36 mph

Test Location	Existing			Project (Sm. Canopy)				Cumulative 2030 (Sm. Canopy)				Cumulative 2050 (Sm. Canopy)			
	Wind Speed Exceeded 1 hour/year (mph)	Hours/yr Exceeding Criterion	Exceedance	Wind Speed Exceeded 1 hour/year (mph)	Hours/yr Exceeding Criterion	Hours Change	Exceedance	Wind Speed Exceeded 1 hour/year (mph)	Hours/yr Exceeding Criterion	Hours Change	Exceedance	Wind Speed Exceeded 1 hour/year (mph)	Hours/yr Exceeding Criterion	Hours Change	Exceedance
1	28.6	0		35.6	0	0		35.5	0	0		37.2	2	2	e
2	26.4	0		24.6	0	0		24.7	0	0		25.0	0	0	
3	25.7	0		21.4	0	0		21.4	0	0		21.4	0	0	
4	23.5	0		22.9	0	0		23.0	0	0		22.5	0	0	
5	24.8	0		27.5	0	0		27.6	0	0		27.2	0	0	
6	23.8	0		29.9	0	0		29.9	0	0		30.0	0	0	
7	18.4	0		20.1	0	0		20.6	0	0		20.3	0	0	
8	18.8	0		21.5	0	0		21.2	0	0		21.5	0	0	
9	13.2	0		15.8	0	0		15.6	0	0		15.9	0	0	
10	36.9	2	e	38.8	4	2	e	39.1	5	3	e	39.0	4	2	e
11	28.5	0		30.1	0	0		30.3	0	0		27.9	0	0	
12	26.0	0		27.3	0	0		26.2	0	0		27.5	0	0	
13	22.9	0		24.3	0	0		23.0	0	0		24.0	0	0	
14	25.4	0		25.9	0	0		25.6	0	0		22.1	0	0	
15	22.4	0		23.4	0	0		22.4	0	0		27.0	0	0	
16	19.8	0		20.4	0	0		22.2	0	0		20.1	0	0	
17	26.9	0		28.4	0	0		34.2	0	0		28.5	0	0	
18	28.6	0		29.1	0	0		32.5	0	0		29.7	0	0	
19	26.1	0		26.5	0	0		29.6	0	0		29.9	0	0	
20	26.7	0		26.8	0	0		32.6	0	0		32.3	0	0	
21	25.1	0		25.1	0	0		26.1	0	0		24.7	0	0	
22	20.9	0		21.5	0	0		24.1	0	0		26.3	0	0	
23	26.8	0		25.6	0	0		26.0	0	0		23.8	0	0	
24	34.8	0		27.4	0	0		27.9	0	0		27.1	0	0	
25	33.1	0		26.4	0	0		26.6	0	0		27.4	0	0	
26	35.1	0		31.4	0	0		30.6	0	0		31.1	0	0	
27	21.1	0		13.4	0	0		13.9	0	0		14.1	0	0	
28	23.0	0		10.8	0	0		10.9	0	0		11.4	0	0	
29	29.9	0		25.3	0	0		26.0	0	0		26.5	0	0	
30	33.4	0		32.4	0	0		33.3	0	0		35.0	0	0	
31	21.9	0		21.9	0	0		22.0	0	0		23.2	0	0	
32	22.4	0		22.2	0	0		22.3	0	0		22.8	0	0	
33	23.7	0		27.2	0	0		27.1	0	0		28.8	0	0	

Table 2.3. Pedestrian Wind Hazard Results (Configurations A, K, L, M)

Criterion wind speed = 36 mph

Test Location	Existing			Project (Sm. Canopy)				Cumulative 2030 (Sm. Canopy)				Cumulative 2050 (Sm. Canopy)			
	Wind Speed Exceeded 1 hour/year (mph)	Hours/yr Exceeding Criterion	Exceedance	Wind Speed Exceeded 1 hour/year (mph)	Hours/yr Exceeding Criterion	Hours Change	Exceedance	Wind Speed Exceeded 1 hour/year (mph)	Hours/yr Exceeding Criterion	Hours Change	Exceedance	Wind Speed Exceeded 1 hour/year (mph)	Hours/yr Exceeding Criterion	Hours Change	Exceedance
34	27.9	0		42.0	12	12	e	42.2	12	12	e	44.1	20	20	e
35	35.2	0		32.9	0	0		32.3	0	0		34.7	0	0	
36	26.9	0		29.1	0	0		29.8	0	0		30.0	0	0	
37	28.7	0		36.8	1	1	e	34.4	0	0		35.2	0	0	
38	28.1	0		26.7	0	0		28.9	0	0		30.7	0	0	
39	28.9	0		34.4	0	0		34.5	0	0		33.9	0	0	
40	37.8	3	e	35.4	0	-3		40.4	8	5	e	39.6	6	3	e
41	22.9	0		23.4	0	0		6.6	0	0		21.2	0	0	
42	20.6	0		20.3	0	0		20.1	0	0		20.9	0	0	
43	26.2	0		25.9	0	0		26.2	0	0		21.2	0	0	
44	30.0	0		29.8	0	0		22.5	0	0		24.9	0	0	
45	27.8	0		26.4	0	0		25.6	0	0		26.1	0	0	
46	23.6	0		24.1	0	0		22.9	0	0		23.0	0	0	
47	22.4	0		22.8	0	0		23.4	0	0		24.2	0	0	
48	29.9	0		29.5	0	0		29.3	0	0		29.5	0	0	
	Average Wind Speed (mph)	**Total Hours**	**Total**	**Average Wind Speed (mph)**	**Total Hours**	**Hours Change**	**Total**	**Average Wind Speed (mph)**	**Total Hours**	**Hours Change**	**Total**	**Average Wind Speed (mph)**	**Total Hours**	**Hours Change**	**Total**
	26.3	5	2 of 48	26.5	17	12	3 of 48	26.5	25	20	3 of 48	26.9	32	27	4 of 48

Notes

1 Wind speeds listed are based on an Equivalent Wind Speed (EWS) (EWS = [U_{Mean} x (1 + 3 T.I.)] /1.45.

2 "Speed Change" values listed are relative to the "Existing" Configuration (or first configuration listed).

3 "Hours Change" values listed are relative to the "Existing" Configuration (or first configuration listed).

Appendix WSE
Water Supply Evaluation

FINAL REPORT | NOVEMBER 2021

UCSF New Hospital at Parnassus Heights Water Supply Evaluation

PREPARED FOR

University of California
San Francisco

UCSF
University of California
San Francisco

PREPARED BY

WEST YOST
Water. Engineered.

UCSF New Hospital at Parnassus Heights
Water Supply Evaluation

Prepared for

University of California
San Francisco

Project No. 712-60-21-07

Project Manager: Jim Connell, PE	11-09-21 Date
QA/QC Review: Elizabeth Drayer, PE	11-09-21 Date

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FINAL REPORT | NOVEMBER 2021

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LIST OF ACRONYMS AND ABBREVIATIONS

BARDP	Bay Area Regional Desalination Project
BAWSCA	Bay Area Water Supply and Conservation Agency
Bay-Delta Plan Amendment	2018 amendments to the Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary
City	City of San Francisco
CPHP	Comprehensive Parnassus Heights Plan
EIR	Environmental Impact Report
FEIR	Final Environmental Impact Report
FY	Fiscal Year
GPCD	Gallons Per Capita Per Day
Groveland CSD	Groveland Community Services District
ISG	Individual Supply Guarantee
LRDP	Long Range Development Plan
LUA	Land Use Allocation
mgd	Million gallons per day
NHPH	New Hospital at Parnassus Heights Project
RWS	Regional Water System
SB 610	Senate Bill 610
SFPUC	San Francisco Public Utilities Commission
SMP	Surface Mining Permit
SWRCB	State Water Resources Control Board
UCSF	University of California San Francisco
USEPA	U.S. Environmental Protection Agency
UWMP	Urban Water Management Plan
WSAP	Water Shortage Allocation Plan
WSE	Water Supply Evaluation
WSIP	Water System Improvement Program

UCSF New Hospital at Parnassus Heights
Water Supply Evaluation

EXECUTIVE SUMMARY

The purpose of this Water Supply Evaluation (WSE) is to evaluate the availability and reliability of water supplies to serve existing facilities and future planned development that is proposed under the University of California San Francisco (UCSF) New Hospital at Parnassus Heights Project (NHPH or Project) at the Parnassus Heights campus site. This evaluation is based on existing UCSF water demands at the Parnassus Heights campus site, water use trends, projected water demands for the future planned development and available water supplies from the San Francisco Public Utilities Commission (SFPUC).

The NHPH includes construction of a new hospital and related improvements on the Parnassus Heights campus site in the City of San Francisco (City). This WSE was prepared in support of the Project Environmental Impact Report (EIR).

Projected Water Demands

The existing Parnassus Heights campus site water demand is approximately 0.33 million gallons per day (mgd) (Fiscal Year (FY) 2018/19 data).

The NHPH components that would change the operational demand for potable water compared to existing conditions include the proposed New Hospital and the renovation of Moffitt and Long Hospitals. Under the NHPH, the New Hospital would provide 336 new inpatient beds; and the proposed renovation of Moffitt and Long Hospitals would result in a decrease of 129 inpatient beds at these two hospitals. As a result, under the NHPH there would be a net increase of 207 inpatient beds over existing conditions, for a total of up to 682 beds at the campus site. The resulting net increase in water demand due to the NHPH is projected to be 0.06 mgd.

With this projected increase in water demand due to the NHPH, the total future water demand for the Parnassus Heights campus site is projected to be approximately 0.39 mgd. When considering the NHPH in conjunction with other development on the Parnassus Heights campus site planned under the Comprehensive Parnassus Heights Plan (CPHP), the campus site water demand would increase to approximately 0.40 mgd by 2030, and to 0.53 mgd by CPHP buildout in 2050. These projected water demands do not take into consideration ongoing projects by UCSF to reduce water demands at the Parnassus Heights campus site. Over the past 10 years, potable water demand at the Parnassus Heights campus site has decreased from a maximum of 0.56 mgd in FY 2010/11 to a minimum of 0.31 mgd in FY 2016/17 as a result of the UCSF Water Action Plan. With full implementation of the ongoing water conservation projects, UCSF staff estimate UCSF can reduce existing FY 2018/19 water demand by about 20 percent, not including the planned CPHP development, including the proposed NHPH.

Water Supply Availability and Reliability

As discussed in this WSE, UCSF purchases all of its water supplies from the SFPUC. UCSF is an in-City Retail Customer of the SFPUC. According to the 2020 Urban Water Management Plan (UWMP) for the City and County of San Francisco, prepared by SFPUC (SFPUC 2020 UWMP), SFPUC does not anticipate any water supply shortage during Normal water years through 2045. However, SFPUC does expect water shortages for Single Dry and Multiple Dry water years through 2045. During Single Dry and Multiple Dry water years,

SFPUC expects to meet the water supply shortfalls through implementation of its Water Shortage Contingency Plan, as described in the SFPUC 2020 UWMP.

The reliability of SFPUC's water supplies is impacted by the SFPUC's Water System Improvement Plan (WSIP) and the Water Shortage Allocation Plan (WSAP). The WSIP aims to meet customer water needs in non-drought and drought conditions through the completion of defined improvements to the Regional Water System (RWS) that improve seismic, delivery, water quality, and water supply reliability for the RWS. The WSAP outlines the reductions in water allocated to wholesale and retail customers that would occur if SFPUC declares a water shortage emergency.

As discussed in this WSE, greater shortfalls are projected in the SFPUC 2020 UWMP than were projected in the SFPUC 2015 UWMP as a result of the 2018 amendments to the Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary (Bay-Delta Plan Amendment) requiring additional water demand reductions in Dry Years.

With full implementation of the Bay-Delta Plan Amendment, water supplies for in-City retail customers could be curtailed by up to approximately 35 percent. Given that the Parnassus Heights campus site includes a variety of medical uses, and the SFPUC General Manager has some discretion in allocating Dry Year demand reductions, the SFPUC rationing during periods of drought may not be as severe for the Parnassus Heights campus site as for other retail customers.

For the 2020 UWMP, SFPUC updated the water supply availability and reliability findings of the 2015 UWMP considering the potential impacts of the Bay-Delta Plan Amendment on future SFPUC supply availability and reliability projections. These potential impacts are discussed in Section 7 of this WSE (see Appendix A for SFPUC's updated water supply availability and reliability projections with and without the Bay-Delta Plan Amendment). As described in SFPUC's 2020 UWMP and this WSE, the SFPUC is pursuing several courses of action to address the potential water shortages.

Based on the technical analyses described in this WSE and the SFPUC 2020 UWMP, this WSE finds that the increase in potable water demands for the Parnassus Heights campus site upon implementation of the Project would not be so large as to affect the ability of the SFPUC to meet demand with existing and planned supplies during Normal, Single Dry, and Multiple Dry years through 2045, which is the farthest year of analysis included in the SFPUC 2020 UWMP.

1.0 INTRODUCTION

The UCSF 2014 Long Range Development Plan (LRDP) outlines projected development levels and patterns for UCSF at all of its main campus sites through the year 2035. The 2014 LRDP Final EIR (FEIR) was certified by the Regents in November 2014 and includes, among other things, analysis of the potential environmental impacts from then-envisioned development at the Parnassus Heights campus site.

Since the adoption of the 2014 LRDP and certification of the 2014 LRDP FEIR, UCSF undertook a planning process to re-envision and revitalize the Parnassus Heights campus site as a whole to integrate UCSF's clinical, educational, and research missions in ways that promote collaboration and synergies in the UCSF Parnassus Heights campus community. The planning process resulted in the development of the CPHP and the amendment of the 2014 LRDP (Amendment #7) to include a larger development program for the Parnassus Heights campus site than was previously envisioned. One of the CPHP Initial Phase projects proposed to be developed by 2030 under the amended LRDP was the construction of a New Hospital. Under the amended LRDP, a New Hospital was proposed which would provide 384 new inpatient beds. When considering the New Hospital in conjunction with a decrease of 184 inpatient beds that would occur with a proposed renovation of Moffitt and Long Hospitals, a net increase in 200 inpatient beds over existing conditions would occur under the amended LRDP, for a total of 675 inpatient beds at the campus site. A WSE was prepared in support of the CPHP and LRDP amendment.

Subsequent to the approval of Amendment #7 to the 2014 LRDP, the University reexamined the hospital program at the Parnassus Heights campus site, including the proposed size of the New Hospital, and proposed use of Moffitt and Long Hospitals. Under the currently proposed NHPH, the New Hospital would be comparatively smaller in size and provide 336 new inpatient beds; and the proposed renovation of Moffitt and Long Hospitals would result in a net decrease of 129 inpatient beds at these two hospitals. As a result, under the NHPH there would be a net increase of 207 inpatient beds over existing conditions, for a total of up to 682 beds at the campus site. Consequently, the net increase in inpatient beds under the currently proposed NHPH would be approximately the same as that originally planned under the CPHP and LRDP amendment, as would also be the associated net increase in water demand. This WSE was prepared in support of the currently proposed NHPH.

1.1 Legal Requirement for Completion of a Water Supply Assessment

California Senate Bill 610 (SB 610) amended state law, effective January 1, 2002, to improve the link between information on water supply availability and certain land use decisions made by cities and counties. SB 610 sought to promote more collaborative planning between local water suppliers and cities and counties. The statute requires detailed information regarding water availability to be provided to the city and county decision-makers prior to approval of specified large development projects. The purpose of this coordination is to ensure that prudent water supply planning has been conducted, and that planned water supplies are adequate to meet existing demands, anticipated demands from approved projects and tentative maps, and the demands of proposed projects.

SB 610 amended California Water Code sections 10910 through 10915 (inclusive) to require land use lead agencies to:

- Identify any public water purveyor that may supply water for a proposed development project
- Request a WSA from the identified water purveyor

The purpose of a WSA is to demonstrate the sufficiency of the purveyor's water supplies to satisfy the water demands of the proposed development, while still meeting the water purveyor's existing and planned future uses. Water Code sections 10910 through 10915 delineate the specific information that must be included in the WSA.

Although the SB 610 requirements do not specifically apply to UCSF, because it is not a city or a county, UCSF has voluntarily elected to prepare a WSA-like document, a WSE, to determine and demonstrate the sufficiency of the SFPUC's water supplies to satisfy the water demand of the proposed NHPH at the Parnassus Heights campus site.

The SFPUC prepared a 2020 UWMP for the City and County of San Francisco[1], which evaluated the projected water demands, including demands for UCSF, and available water supplies for the City and County.

1.2 Water Supply Evaluation Purpose, Format and Organization

The purpose of this WSE is to perform an evaluation of the availability and reliability of water supplies to serve development completed to date, future planned development under the UCSF 2014 LRDP as amended by the CPHP, and the proposed hospital development, based on existing UCSF water demands, water use trends, and available water supplies from the City.

Evaluation criteria and assumptions used for this WSE are consistent with those used by SFPUC in the 2020 UWMP. Furthermore, this WSE has been prepared and organized to parallel and be consistent with the requirements for a WSA per Water Code sections 10910 through 10915, such that this evaluation provides a comprehensive and up-to-date evaluation of the availability and reliability of water supplies to serve the proposed development.

This WSE includes the following sections:

- Section 1: Introduction
- Section 2: Description of Proposed Project
- Section 3: Required Determinations
- Section 4: SFPUC Water System
- Section 5: SFPUC Water Demands
- Section 6: SFPUC Water Supplies
- Section 7: Water Supply Reliability
- Section 8: Determination of Water Supply Sufficiency Based on Requirements of SB 610
- Section 9: References

Relevant citations of Water Code sections 10910 through 10915 are included throughout this WSE in italics to demonstrate consistency with the specific requirements of SB 610.

[1] 2020 Urban Water Management Plan for the City and County of San Francisco, adopted by the SFPUC, June 2021.

The purpose of this WSE is not to reserve water, or to function as a "will serve" letter or any other form of commitment to supply water (see Water Code section 10914). The provision of water service will continue to be undertaken in a manner consistent with applicable City policies and procedures, consistent with existing law.

This WSE will be included as an appendix to the Draft EIR for the NHPH, and the conclusions reached in this document will be considered in analyzing the NHPH's potential impacts on water supply.

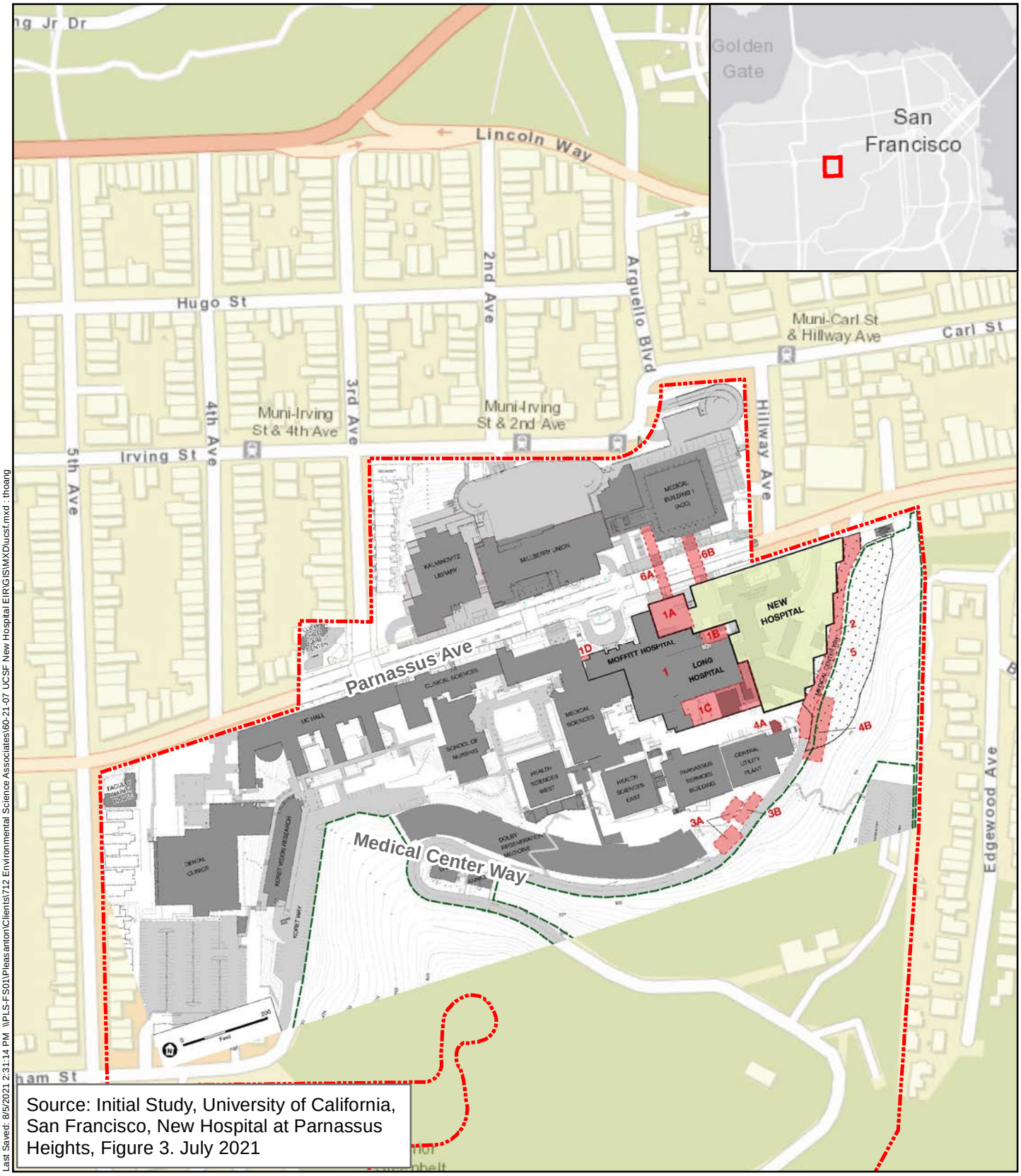
2.0 DESCRIPTION OF THE PROPOSED PROJECT

The NHPH consists of the proposed New Hospital, and a number of related improvements, including a renovation of Moffitt and Long Hospitals; widening of Medical Center Way in the vicinity of the New Hospital; replacement of diesel fuel tanks and medical gas tanks; vegetation management and slope stabilization improvements; and a proposed pedestrian bridge and tunnel across Parnassus Avenue. Figure 2-1 shows the location of the proposed project.

2.1 Project Objectives

Primary objectives of the NHPH include the following:

- Meet seismic requirements of California Senate Bill 1953 by developing a new, seismically-sound, state-of-the-art inpatient facility.
- Site and develop a new inpatient facility in a way that optimizes operational activities with other clinical facilities at Parnassus Heights, such as Long Hospital and Medical Building 1.
- Increase inpatient beds at Parnassus Heights to address severe constraints on capacity and access to care.
- Develop a new inpatient facility that has sufficient space to accommodate modern regulatory requirements or industry standards of contemporary hospitals, such as construction codes, sizes of operating rooms, ratio of operating rooms to pre-and post-recovery areas, and space for privacy and infection control issues.
- Develop a new inpatient facility that has sufficient space to accommodate modern technology, including telemedicine, robotics, and new diagnostic, imaging, testing, treatment, surgery and laboratory equipment, all requiring substantial infrastructure and space.
- Develop a new inpatient facility that has sufficient space to accommodate patient satisfaction requirements of contemporary hospitals, such as private patient rooms of sufficient size.
- Develop spaces for clinical and translational research and learning in or adjacent to clinical areas where patients are located.



Source: Initial Study, University of California, San Francisco, New Hospital at Parnassus Heights, Figure 3. July 2021

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Symbology

UCSF Parnassus Heights Campus Site Boundary

N

0 350

Scale in Feet

UCSF
University of California
San Francisco

WEST YOST

Figure 2-1

Site Location

University of California San Francisco
New Hospital at Parnassus Heights
Water Supply Evaluation

2.2 Projected Water Demand

The UCSF campus has made substantial progress towards reducing its overall water consumption. UCSF implemented new technologies that contributed to this decrease such as the recycling of condensed steam, recycling excess filter water from laboratories, replacing or retrofitting old water equipment, and fixing leaks. Table 2-1 summarizes the reduction of the Parnassus Heights campus site total annual and average daily water consumption from 2009 to 2019.

Table 2-1. Parnassus Heights Campus Site Total Water Consumption

Fiscal Year	Annual Potable Water Use, gallons	Average Daily Potable Water Use, mgd
2009-2010	197,546,800	0.54
2010-2011	204,395,488	0.56
2011-2012	187,829,532	0.51
2012-2013	171,047,404	0.47
2013-2014	154,981,860	0.42
2014-2015	136,492,048	0.37
2015-2016	121,867,900	0.33
2016-2017	114,034,096	0.31
2017-2018	121,779,636	0.33
2018-2019	121,967,384	0.33

Source: University of California San Francisco, Parnassus Water Data 2009/2010 to 2018/2019

The Parnassus Heights campus site water demands were estimated based on projected land use on the campus. The projected water demand is summarized in Table 2-2. The existing Parnassus Heights water demand is estimated to be 0.33 mgd (FY 2018/19 data).

The NHPH components that would change the operational demand for potable water compared to existing conditions include the proposed New Hospital and the renovation of Moffitt and Long Hospitals. Under the NHPH, the New Hospital would provide 336 new inpatient beds; and the proposed renovation of Moffitt and Long Hospitals would result in a decrease of 129 inpatient beds at these two hospitals. As a result, under the NHPH there would be a net increase of number of 207 inpatient beds over existing conditions, for a total of up to 682 beds at the campus site. The increase in water demand due to the NHPH is projected to be 0.06 mgd.

When considering the NHPH in conjunction with other development planned on the Parnassus Heights campus site under the CPHP, the net increase in water demand for the campus site (some existing water uses will be removed) is projected to be 0.06 mgd by 2030, and 0.20 mgd by CPHP buildout in 2050. With this projected increase in total water demand, the future water demand for the Parnassus Heights campus site is projected to be approximately 0.40 mgd by 2030, and 0.53 mgd by CPHP buildout in 2050. This projected water demand does not take into consideration ongoing projects by UCSF to reduce water demands at the Parnassus Heights campus site. With full implementation of the ongoing water conservation projects, UCSF staff estimate UCSF can reduce existing FY 2018/19 water demand by about 20 percent, not including the planned CPHP development, including the proposed NHPH.

Table 2-2. Parnassus Heights Plan Projected Water Demand

Project	Net Change in Water Demand, mgd	Net Change in Water Demand, af/year
NHPH Water Demand[(a)]	0.06	67.3
Existing Parnassus Demand (FY 2018/19)	0.33	370.0
Projected Parnassus Heights Campus Site Water Demand with NHPH in 2030	0.39	437.3
Other Planned Development on Parnassus Campus	0.14	156.9
Projected Future Parnassus Heights Campus Site Water Demand with CPHP Buildout in 2050	0.53	594

(a) Water demand for the NHPH is based on UCSF water demand factor of 280 gallons per year per Adjusted Patient Day and a net increase of 207 inpatient beds when considering the new inpatient beds at the New Hospital in conjunction with the decrease in inpatient beds associated with the renovation of Moffitt and Long Hospitals (207*280/1,000,000).

3.0 REQUIRED DETERMINATIONS

This section describes the required determinations for a WSA.

3.1 Does SB 610 apply to the Proposed Project?

Cities and counties are the only lead agencies specifically required by SB 610 to prepare a water supply assessment for certain projects. Although the SB 610 requirements do not specifically apply to UCSF because it is not a city or county, the University has voluntarily elected to prepare a WSA-like document to determine and demonstrate the sufficiency of the SFPUC's water supplies to satisfy the water demand of the planned development.

This WSE has been prepared to document the projected water demands for the proposed UCSF New Hospital at the Parnassus Heights campus site and to demonstrate that adequate water supplies are available to meet the projected water demands. For completeness and clarity, this WSE has been prepared to be consistent with the requirements of SB 610 for a WSA, although SB 610 does not apply to campus development.

3.2 Who is the Identified Public Water System?

> *10910(b) The city or county, at the time that it determines whether an environmental impact report, a negative declaration, or a mitigated negative declaration is required for any project subject to the California Environmental Quality Act pursuant to Section 21080.1 of the Public Resources Code, shall identify any water system that is, or may become as a result of supplying water to the project identified pursuant to this subdivision, a public water system, as defined by Section 10912, that may supply water for the project*
>
> *10912 (c) "Public water system" means a system for the provision of piped water to the public for human consumption that has 3,000 or more service connections…*

The UCSF Parnassus Heights campus site is located within the City and County of San Francisco within the SFPUC water service area; therefore, the SFPUC is the public water system for the proposed project.

3.3 Does the City have an adopted Urban Water Management Plan (UWMP) and does the UWMP include the projected water demand for the Proposed Project?

> *10910(c)(1) The city or county, at the time it makes the determination required under Section 21080.1 of the Public Resources Code, shall request each public water system identified pursuant to subdivision (b) to determine whether the projected water demand associated with a proposed project was included as part of the most recently adopted urban water management plan adopted pursuant to Part 2.6 (commencing with Section 10610).*

The SPFUC 2020 UWMP does not specifically identify existing and projected water demands for UCSF. The potable water demand projections included in the SFPUC 2020 UWMP are summarized in Table 3-1.

Table 3-1. Potable Water Demands Included in the SFPUC 2020 UWMP[a,b]

	Actual, mgd	Projected, mgd				
	2020	2025	2030	2035	2040	2045
Total Retail Demand, mgd	68.8	70.7	72.4	74.5	77.4	80.8

(a) Total Retail 2020 actual demands from the SFPUC 2020 UWMP, Table 4-1.

(b) Includes both In-City and Suburban Retail demands. Groveland Community Services District (Groveland CSD) is accounted for as a retail customer for the purpose of this table and subsequent retail supply and demand comparisons. Demand projections were provided by Groveland CSD based on its population projections and assumed per capita water use of 107 GPCD (projections are subject to change as part of its UWMP process).

As described below, the existing water demands for the UCSF Parnassus Heights campus site are estimated to be approximately 0.33 mgd and would increase by approximately 0.06 mgd with the NHPH. The net increase in water demand associated with other development planned on the Parnassus Heights campus site under the CPHP is projected to increase an additional 0.14 mgd. The total water demand associated with buildout of all planned development at the campus site under the CPHP, including the NHPH, would be 0.53 mgd (0.33 mgd + 0.06 mgd + 0.14 mgd), not accounting for additional water conservation measures anticipated by UCSF. The projected water demand at buildout of the campus site (0.53 mgd) is approximately 0.66 percent of the SFPUC projected total 2045 retail potable water demand. If the incremental demand (0.20 mgd) due to planned development on the campus site is compared to the SFPUC 2045 total retail demand, it would represent an even smaller fraction (about 0.25 percent). If the 20 percent reduction in existing use can be achieved, the net increase in demand would be 0.13 mgd, which would represent about 0.16 percent of the total retail demand in 2045.

4.0 SFPUC WATER SYSTEM

Refer to Section 3.1 of the SFPUC 2020 UWMP for descriptions of the RWS and Section 6.1 of the SFPUC 2020 UWMP for water rights held by City and County of San Francisco and the SFPUC WSIP.

5.0 SFPUC WATER DEMANDS

> *10910(c)(2) If the projected water demand associated with the proposed project was accounted for in the most recently adopted urban water management plan, the public water system may incorporate the requested information from the urban water management plan in preparing the elements of the assessment required to comply with subdivisions (d), (e), (f), and (g).*

The descriptions provided below for the SFPUC's retail water demands have been taken, for the most part, from the SFPUC 2020 UWMP.

5.1 Historical and Existing Water Demand

Water use within San Francisco (i.e., the in-City retail service area) continues to be among the lowest in the State and below historical consumption. Both total consumption and per capita water use (i.e., gallons of water consumed per person per day [GPCD]) have been on a general decline since the mid-1970s. Many factors have contributed to this reduction in water use, including significant changes to the mix of industrial and commercial businesses and their associated water demand, and the general characteristics of water use by San Franciscans. As shown in Figure 5-1, annual gross retail water use has declined since 2001, in spite of increasing population.

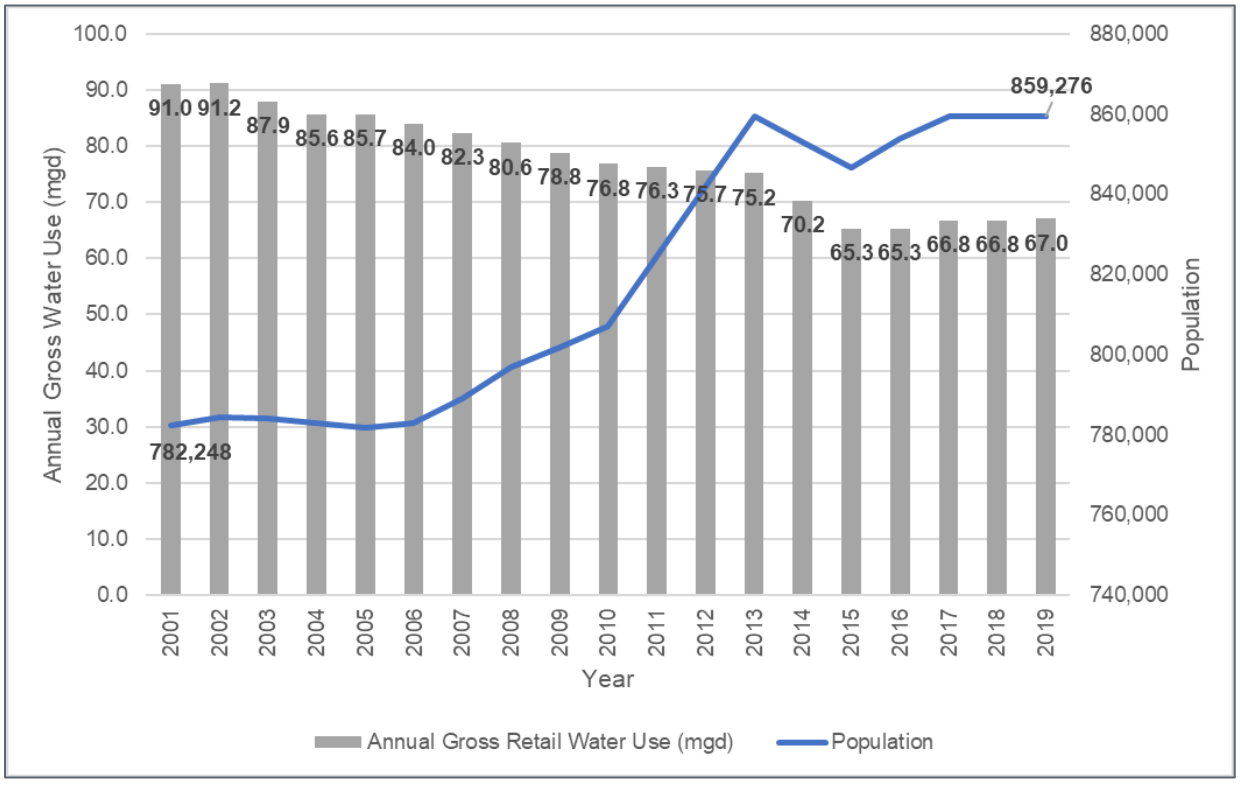

Figure 5-1. Trends in Retail Water Use Since 2001[2]

2 Data for 2001 through 2010 from SFPUC 2015 UWMP Tables 5-1 and 5-2. Data for 2013 and 2015 through 2019 from California State Water Resources Control Board Urban Water Supplier Monitoring Reports, downloaded May 28, 2020. Data for 2011, 2012, and 2014 interpolated from adjacent data.

5.2 Future Water Demand

In the 2020 UWMP, the SFPUC utilized end-use methodology to forecast both demands and conservation savings. The model was updated over the years to incorporate the latest growth forecasts, extend the projection period, reflect changes to the SFPUC's conservation programming, incorporate the latest codes and ordinances, and to respond to a variety of other needs. It relies on household and employment forecasts provided by the San Francisco Planning Department's Land Use Allocation (LUA) 2017.

Table 5-1 provides a summary of SFPUC's future water demand projections for its various water use types. The table segregates water demands into three sectors of water use: single family residential, multi-family residential, and non-residential, and shows both in-City retail and suburban retail water demands.

Table 5-1. Projected Retail Water Demands

Retail Sector or Use Type	Actual Demand, mgd[a]	Projected Demand, mgd[b]				
	2020	2025	2030	2035	2040	2045
In-City Retail						
Single Family Residential	14.5	13.7	13.5	13.4	13.5	13.5
Multi-Family Residential	22.9	23.7	25.6	27.9	30.3	33.0
Non-residential	20.9	22.9	22.9	22.8	23.1	23.6
Water Loss[c]	7.2	6	6	6	6	6
Subtotal In-City Retail Demand	**65.3**	**66.3**	**68.0**	**70.0**	**72.9**	**76.2**
Suburban Retail						
Single Family Residential[d]	0.1	0.1	0.1	0.1	0.1	0.1
Non-residential	3.1	4.0	4.0	4.0	4.0	4.0
Groveland CSD[e]	0.3	0.3	0.3	0.3	0.3	0.3
Water Loss[c]	0	0	0	0	0	0
Subtotal Suburban Retail Demand	**3.5**	**4.4**	**4.4**	**4.4**	**4.4**	**4.4**
Total Retail Demand	**68.8**	**70.7**	**72.4**	**74.5**	**77.4**	**80.6**

Source: SFPUC 2020 UWMP; Table 4-1

(a) Actual consumption data are obtained from customer billing data.

(b) Single family residential and multi-family residential demand projections are from an econometric model developed for the SFPUC. Non-residential demands include commercial/industrial demands, which are also from an econometric model, as well as municipal and irrigation demands, which are assumed to remain constant at the previous five-year average level.

(c) Water losses include both apparent and real losses. Suburban retail water losses are considered to be negligible. Estimate of actual water loss in 2020 is based on a draft audit under review as of the publication of the SFPUC 2020 UWMP.

(d) Suburban retail residential demands are for single family only as no multi-family residential buildings are served.

(e) Groveland CSD is accounted for as a retail customer for the purpose of this table and subsequent retail supply and demand comparisons. Demand projections were provided by Groveland CSD based on its population projections and assumed per capita water use of 107 GPCD (projections are subject to change as part of its UWMP process). In the corresponding standardized tables in Appendix B of the SFPUC 2020 UWMP, Groveland CSD is not reported as retail, but rather wholesale.

6.0 SFPUC MUNICIPAL WATER SUPPLIES

10910(c)(2) If the projected water demand associated with the proposed project was accounted for in the most recently adopted urban water management plan, the public water system may incorporate the requested information from the urban water management plan in preparing the elements of the assessment required to comply with subdivisions (d), (e), (f) and (g).

10910(d)(1) The assessment required by this section shall include an identification of any existing water supply entitlements, water rights, or water service contracts relevant to the identified water supply for the proposed project, and a description of the quantities of water received in prior years by the public water system…under the existing water supply entitlements, water rights, or water service contracts.

10910(e) If no water has been received in prior years by the public water system…under the existing water supply entitlements, water rights, or water service contracts, the public water system…shall also include in its water supply assessment…an identification of the other public water systems or water service contract holders that receive a water supply or have existing water supply entitlements, water rights, or water service contracts, to the same source of water as the public water system.

10910(f) If a water supply for a proposed project includes groundwater, the following additional information shall be included in the water supply assessment.

(1) A review of any information contained in the urban water management plan relevant to the identified water supply for the proposed project.

(2) A description of any groundwater basin or basins from which the proposed project will be supplied. For those basins for which a court or the board has adjudicated the rights to pump groundwater, a copy of the order or decree adopted by the court or the board and a description of the amount of groundwater the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), has the legal right to pump under the order or decree. For basins that have not been adjudicated, information as to whether the department has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most recent bulletin of the department that characterizes the condition of the groundwater basin, and a detailed description by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), of the efforts being undertaken in the basin or basins to eliminate the long-term overdraft condition.

(3) A detailed description and analysis of the amount and location of groundwater pumped by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), for the past five years from any groundwater basin from which the proposed project will be supplied. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historical use records.

(4) A detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), from any basin from which the proposed project will be supplied. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historical use records.

(5) An analysis of the sufficiency of the groundwater from the basin or basins from which the proposed project will be supplied to meet the projected water demand associated with the proposed project. A water assessment shall not be required to include the information required by this paragraph if the public water system determines, as part of the review required by paragraph (1), that the sufficiency of groundwater necessary to meet the initial and projected water demand associated with the project was addressed in the description and analysis required by paragraph (4) of subdivision (b) of Section 10631.

The descriptions provided below for SFPUC's water supplies have been taken, for the most part, from SFPUC's 2020 UWMP.

6.1 Water Supply Overview

Over 2.7 million people in San Francisco and throughout the Bay Area rely on water supplied by the SFPUC to meet their daily water needs. The RWS is a municipal-owned utility operated by the SFPUC, a department of the City and County of San Francisco, and serves both retail and wholesale customers. The RWS supplies high-quality drinking water from the Tuolumne River watershed and from local reservoirs in the Alameda and Peninsula watersheds. The RWS draws an average of 85 percent of its supply from the Tuolumne River watershed, collected in Hetch Hetchy Reservoir in Yosemite National Park. This water feeds into an aqueduct system delivering water 167 miles by gravity to Bay Area reservoirs and customers. The remaining 15 percent of the RWS supply is drawn from local surface waters in the Alameda and Peninsula watersheds. The split between these resources varies from year to year depending on the water year hydrology and operational circumstances. Separate from the RWS, the in-City distribution system is also owned and operated by the SFPUC and serves a population of nearly 900,000 in San Francisco. In-City retail customers are primarily served with RWS supply, but a few customers also receive groundwater and recycled water. Similarly, suburban retail customers are primarily served with RWS supply, but a few customers receive groundwater.

Complete descriptions of the RWS and local water supplies are provided in the SFPUC 2020 UWMP as follows:

- Retail water supplies from the RWS are described in Section 6.1 of the SFPUC 2020 UWMP
- Local groundwater supplies, including the Westside Groundwater Basin, are described in Section 6.2.1 of the SFPUC 2020 UWMP
- Local recycled water supplies, including the Harding Park Recycled Water Project and Pacifica Recycled Water Project, are described in Section 6.2.1 of the SFPUC 2020 UWMP

6.2 Future Local Supplies

The San Francisco Groundwater Supply Project is described in Section 6.2.2 of the SFPUC 2020 UWMP. Since 2016, four wells have been completed and the start-up phase of the project has begun. Starting in April 2017, small amounts of groundwater have been blended with RWS supplies for drinking water. Two remaining wells are under construction as part of the next phase of the project.

The proposed Westside and Eastside Recycled Water Projects, as well as non-potable water supplies associated with onsite water systems implemented in compliance with San Francisco's Non-potable Water Ordinance (Health Code Chapter 12C), are also described in Section 6.2.2 of the SFPUC 2020 UWMP.

6.3 Summary of Existing and Additional Planned Future Water Supplies

Table 6-1 shows the existing and projected retail water supply documented in the SFPUC 2020 UWMP.

Table 6-1. Existing and Projected Retail Water Supply

Retail Sector or Use Type	Actual Supply, mgd	Projected Supply, mgd[b]				
	2020	2025	2030	2035	2040	2045
Regional Water System[a]	66.5	67.2	67.5	68.6	70.5	73.7
Groundwater						
San Francisco Groundwater Supply Project[b]	0.4	1.0	2.0	3.0	4.0	4.0
Westside Groundwater Basin for In-City Irrigation[b,c]	1.5	—	—	—	—	—
Castlewood Well System[d]	0.3	0.4	0.4	0.4	0.4	0.4
Subtotal Groundwater	**2.2**	**1.4**	**2.4**	**3.4**	**4.4**	**4.4**
Recycled Water						
Westside Recycled Water Project[e]	—	1.6	1.8	1.8	1.8	1.8
Harding Park Recycled Water Project[f]	0.0	0.2	0.2	0.2	0.2	0.2
Sharp Park Recycled Water Project[g]	0.1	0.1	0.1	0.1	0.1	0.1
Treasure Island Recycled Water Project[h]	0	0.2	0.4	0.4	0.4	0.4
Subtotal Recycled Water	**0.1**	**2.1**	**2.5**	**2.5**	**2.5**	**2.5**
Total Retail Supply	**68.8**	**70.7**	**72.4**	**74.5**	**77.4**	**80.6**

Source: SFPUC 2020 UWMP; Table 6-5

(a) Assuming that the retail supply allocation remains 81 mgd through 2045, up to 81 mgd of RWS supply may be used.

(b) The San Francisco Groundwater Supply Project will ramp up potable water production from 1 mgd in 2025 to 4 mgd by 2030. About 1.5 mgd of groundwater currently serves irrigation at Golden Gate Park, the San Francisco Zoo, and the Great Highway medians. This 1.5 mgd of groundwater will be converted to potable supply under the San Francisco Groundwater Supply Project.

(c) No groundwater will be used for in-city irrigation once the Westside Recycled Water Project comes online.

(d) Castlewood County Service Area is served by the Castlewood Well System.

(e) The Westside Recycled Water Project will supply Golden Gate Park (1.2 mgd), Lincoln Park (0.1 mgd) and the Zoo (0.3 mgd) by 2025, and the Presidio (0.2 mgd) by 2030.

(f) Irrigation at Harding Park and Fleming Golf Courses is provided recycled water from the North San Mateo County Sanitation District. The Harding Park Recycled Water Project was not operational in 2020 and is planned to be back online by 2025.

(g) Irrigation at Sharp Park Golf Course is provided recycled water from North Coast County Water District. The Sharp Park Recycled Water Project was fully online in 2020 and approximately 0.1 mgd was provided in 2020.

(h) Recycled water operations will begin in 2025, but the full infrastructure for delivery will not be built out at that time; the full capacity of 0.4 mgd annual average is anticipated to be reached by 2030.

7.0 WATER SUPPLY RELIABILITY

10910(c)(4) If the city or county is required to comply with this part pursuant to subdivision (b), the water supply assessment for the project shall include a discussion with regard to whether the total projected water supplies, determined to be available by the city or county for the project during Normal, Single Dry, and Multiple Dry water years during a 20-year projection, will meet the projected water demand associated with the proposed project, in addition to existing and planned future uses, including agricultural and manufacturing uses.

10911(a) If, as a result of its assessment, the public water system concludes that its water supplies are, or will be, insufficient, the public water system shall provide to the city or county its plans for acquiring additional water supplies, setting forth the measures that are being undertaken to acquire and develop those water supplies. If the city or county, if either is required to comply with this part pursuant to subdivision (b), concludes as a result of its assessment, that water supplies are, or will be, insufficient, the city or county shall include in its water supply assessment its plans for acquiring additional water supplies, setting forth the measures that are being undertaken to acquire and develop those water supplies. Those plans may include, but are not limited to, information concerning all of the following:

(1) The estimated total costs, and the proposed method of financing the costs, associated with acquiring the additional water supplies.

(2) All federal, state, and local permits, approvals, or entitlements that are anticipated to be required in order to acquire and develop the additional water supplies.

Based on the consideration set forth in paragraphs (1) and (2), the estimated timeframes within which the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), expects to able to acquire additional water supplies.

The reliability discussion provided below has been taken, for the most part, from the SFPUC 2020 UWMP.

The SFPUC 2020 UWMP describes the reliability of the SFPUC water supply. Reliability of the RWS is expressed in terms of the system's ability to deliver water during droughts. Reliability may be quantified by the amount and frequency of water delivery reductions (i.e., deficiencies) required to balance customer demands with available supplies. The SFPUC plans deliveries under the premise that a drought more severe than the worst drought on record may occur. Potential system-wide and retail deficiencies are described in this section.

The total amount of water the SFPUC can deliver to retail and wholesale customers depends on several factors, including the amount of water that is available to the SFPUC from natural runoff, the amount of water in reservoir storage, and the amount of that water that must be released from the RWS for purposes other than customer deliveries (e.g., required instream flow releases below RWS reservoirs). For planning purposes, the SFPUC "normal year" is based on historical hydrology under conditions that allow the reservoirs to be filled over the course of the snowmelt season, allowing full deliveries to customers.

Other than during the drought of 1976-77, drought sequences in the past did not seriously affect the ability of the RWS to sustain full deliveries to its retail and wholesale customers. However, in the six-year period from 1987-92, a shortfall developed between the SFPUC's supplies and its customers' demands such that significant rationing of water supply became necessary. Following the 1987-92 drought experience, the SFPUC includes the concept of its "firm" capability in water supply planning, which is defined as the amount of water the RWS can be expected to deliver during drought periods. The following sections describe the SFPUC water supply reliability and potential impacts to that reliability:

- Water System Improvement Program
- Dry-year Water Supply Projects
- Alternative Water Supply Program
- Projected SFPUC RWS Supply Reliability
- Potential Changes in SFPUC RWS Reliability

7.1 Water System Improvement Program

SFPUC's WSIP was approved on October 31, 2008, with the purpose of improving the delivery reliability of the RWS. The initial objectives of the WSIP related to water supply were to:

- Meet average annual water demand of 265 mgd from the SFPUC watersheds for retail and wholesale customers during non-drought years for system demands through 2018
- Meet dry-year delivery needs through 2018 while limiting rationing to a maximum 20 percent system-wide reduction in water service during extended droughts
- Diversify water supply options during non-drought and drought periods
- Improve use of new water sources and drought management, including groundwater, recycled water, conservation, and transfers

The WSIP provides benefits to retail customers by improving the reliability of wholesale water purchased from SFPUC, especially during periods of drought. The program aims to meet customer water needs in non-drought and drought conditions and provides dry-year water supply projects to augment all year type water supplies during drought. The WSIP includes both local projects (located within San Francisco) and regional projects (spread over seven different counties from the Sierra foothills to San Francisco). As reported in the SFPUC 2020 UWMP, the WSIP is now approximately 96 percent complete. The current forecasted date to complete the overall WSIP (including regional and local projects) is spring 2023.

7.2 Dry-Year Water Supply Projects

Approximately 85 percent of the SFPUC supply is sourced from the Tuolumne River watershed (through Hetch Hetchy Reservoir) and the remaining 15 percent comes from local watersheds, which include the Alameda Creek watershed and San Mateo County watersheds. Water supply from the local watersheds is stored in the following reservoirs: San Antonio, Calaveras, Crystal Springs, Pilarcitos, and San Andreas. These water supplies are used for all year types, and SFPUC has historically met demand in its service area in all year types.

During dry years, the WSIP limits systemwide rationing to a maximum of 20 percent in any one year. The following projects are a part of the WSIP and will help meet water demand during dry years, as well as will help to improve the seismic, delivery, water quality, and water supply reliability for the RWS:

- Calaveras Dam Replacement Project
- Alameda Creek Recapture Project
- Lower Crystal Springs Dam Improvements
- Regional Groundwater Storage and Recovery Project
- Dry-Year Water Transfer

In order to achieve its target of meeting at least 80 percent of its customer demand during droughts at 265 mgd, the SFPUC must successfully implement the Dry-Year water supply projects included in the WSIP and described in detail in the following sections.

7.2.1 Calaveras Dam Replacement Project

Calaveras Dam is located near a seismically active fault zone and was determined to be seismically vulnerable. To address this vulnerability, the SFPUC constructed a new dam of equal height downstream of the existing dam. The Environmental Impact Report was certified by the San Francisco City Planning Commission in 2011, and construction of the new dam was completed in September 2018. As of December 2020, reservoir storage was at 55 percent of total capacity. Maximum reservoir storage since refill began was 67 percent of capacity, in May of 2019. Storage has declined since then due to dry hydrologic conditions. The project reached final completion in July 2019 and has been in the closeout phase since 2019 without the Calaveras Reservoir reaching sufficient level to fulfill Initial Fill Plan inspections. The project team continues to monitor and is ready to resume reservoir initial fill inspections in 2021.

7.2.2 Alameda Creek Recapture Project

The Alameda Creek Recapture Project will recapture the water system yield lost due to instream flow releases at Calaveras Reservoir or bypassed around the Alameda Creek Diversion Dam and return this yield to the RWS through facilities in the Sunol Valley. Water that naturally infiltrates from Alameda Creek will be recaptured into an existing quarry pond known as SMP (Surface Mining Permit) -24 Pond F2. The project will be designed to allow the recaptured water to be pumped to the Sunol Valley Water Treatment Plant or to San Antonio Reservoir. Construction of this project will occur from spring 2021 to spring 2023.

7.2.3 Lower Crystal Springs Dam Improvements

The Lower Crystal Springs Dam Improvements were completed in May 2012. While the project has been completed, permitting issues for reservoir operation have become significant. While the reservoir elevation was lowered due to Division of Safety of Dams restrictions, the habitat for the Fountain Thistle, an endangered plant, followed the lowered reservoir elevation. Raising the reservoir elevation now requires that new plant populations be restored incrementally before the reservoir elevation is raised. The result is that it may be several years before the original reservoir elevation can be restored.

7.2.4 Regional Groundwater Storage and Recovery Project

The Groundwater Storage and Recovery Project is a strategic partnership between SFPUC and three San Mateo County agencies: the California Water Service Company (serving South San Francisco and Colma), the City of Daly City, and the City of San Bruno. The project seeks to balance the management of groundwater and surface water resources in a way that safeguards supplies during times of drought. During years of normal or heavy rainfall, the project would provide additional surface water to the partner agencies in San Mateo County, allowing them to reduce the amount of groundwater that they pump from the South Westside Groundwater Basin. Over time, the reduced pumping would allow the aquifer to recharge and result in increased groundwater storage of up to 61,000 acre-feet (approximately 20 billion gallons). In dry years, when less surface water is available, the saved water will be pumped from up to 16 new groundwater well recovery facilities. Construction of 13 of the wells is expected to be completed in 2021 with the remaining wells to be constructed starting in 2021.

7.2.5 Dry-Year Water Transfer

In 2012, a Dry-Year transfer was proposed between the Modesto Irrigation District and the SFPUC. Negotiations were terminated because an agreement could not be reached. Subsequently, the SFPUC is having ongoing discussions with the Oakdale Irrigation District for a one-year transfer agreement with the SFPUC for 2 mgd (2,240 acre-feet).

7.3 Alternative Water Supply Program

In early 2020, the SFPUC began implementation of the Alternative Water Supply Planning Program (AWSP), a program designed to investigate and plan for new water supplies to address future long-term water supply reliability challenges and vulnerabilities on the RWS.

Included in the AWSP is a suite of diverse, non-traditional supply projects that, to a great degree, leverage regional partnerships and are designed to meet the water supply needs of the SFPUC Retail and Wholesale Customers through 2045. As of the most recent Alternative Water Supply Planning Quarterly Update, SFPUC has budgeted $264 million over the next ten years to fund water supply projects. The drivers for the program include: (1) the adoption of the Bay-Delta Plan Amendment and the resulting potential limitations to RWS supply during dry years; (2) the net supply shortfall following the implementation of WSIP; (3) San Francisco's perpetual obligation to supply 184 mgd to the Wholesale Customers; (4) adopted Level of Service Goals to limit rationing to no more than 20 percent system-wide during droughts; and (5) the potential need to identify water supplies that would be required to offer permanent status to interruptible customers.

The SFPUC is considering several water supply options and opportunities to meet all foreseeable water supply needs, including surface water storage expansion, recycled water expansion, water transfers, desalination, and potable reuse. These efforts and their expected benefit to supply reliability are listed below, and described in further detail in the SFPUC 2020 UWMP:

- Daly City Recycled Water Expansion (Regional; Normal and Dry-Year Supply)
- Alameda County Water District – Union Sanitary District Purified Water Partnership (Regional; Normal and Dry-Year Supply)
- Crystal Springs Purified Water (Regional; Normal and Dry-Year Supply)
- Los Vaqueros Reservoir Expansion (Regional; Dry Year Supply)
- Bay Area Brackish Water Desalination (Regional; Normal and Dry-Year Supply)
- Calaveras Reservoir Expansion (Regional; Dry Year Supply)
- Groundwater Banking (Dry Year Supply)
- Inter-Basin Collaborations

Capital projects under consideration would be costly and are still in the early feasibility and conceptual planning stages. The exact yields from these projects are not quantified at this time, as these supply projects would take 10 to 30 years to implement and the exact amount of water that can be reasonably developed is currently unknown.

7.4 Projected SFPUC RWS Supply Reliability

Procedures to allocate RWS supplies during SFPUC system shortages have been developed to allocate required reductions to SFPUC's retail and wholesale customers.

The wholesale customers and SFPUC adopted the Amended and Restated Water Supply Agreement in 2019, which included a Water Shortage Allocation Plan (WSAP) to allocate water from the RWS to retail and wholesale customers during system-wide shortages of 20 percent or less. The WSAP has two tiers which are described below.

- The Tier One Plan allocates water between SFPUC and its retail and wholesale customers collectively based on the level of the shortage (up to 20 percent). This plan applies only when SFPUC determines that a system-wide water shortage exists and issues a declaration of a water shortage emergency under California Water Code section 350. The SFPUC may also opt to request voluntary cutbacks from retail customers and the wholesale customers to achieve necessary water use reductions during drought periods. The allocations outlined in the Tier One Plan are provided in Table 7-1.

Table 7-1. Tier One Plan Water Shortage Allocations

System Wide Reduction Required	Share of Available Water	
	SFPUC	Wholesale Customers
≤ 5%	35.5%	64.5%
6% to 10%	36.0%	64.0%
11% to 15%	37.0%	63.0%
16% to 20%	37.5%	62.5%

- The Tier Two Plan allocates the collective wholesale customer share among the wholesale customers based on a formula that accounts for each wholesale customer's Individual Supply Guarantee (ISG), seasonal use of all available water supplies, and residential per capita use. The water made available to the wholesale customers collectively will be allocated among them in proportion to each wholesale customer's Allocation Basis, which is the weighted average of the wholesale customer's ISG and the Base/Seasonal Component. The Allocation Basis is used as the numerator over the sum of all wholesale customers' Allocation Bases to calculate each wholesale customer's Allocation Factor. The final shortage allocation for each wholesale customer is determined by multiplying the amount of water available to the wholesale customers collectively over the Tier One Plan by the wholesale customer's Allocation Factor. Bay Area Water Supply and Conservation Agency (BAWSCA) calculates each wholesale customer's Allocation Factors annually in preparation for a potential water shortage emergency.

As described in the next section, with the Bay-Delta Plan Amendment, reductions greater than 20 percent may be required. For water shortages greater than 20 percent, the SFPUC will meet with the wholesale customers to determine if modifications to the Tier One Plan can be agreed upon by the SFPUC and its wholesale customers. If an agreement cannot be reached, SFPUC may allocate water at its discretion, subject to challenge by the wholesale customers, unless all of the wholesale customers direct that a particular Tier Two allocation methodology be used.

7.5 Potential Changes in SFPUC RWS Reliability

In December 2018, the State Water Resources Control Board (SWRCB) adopted amendments to the Water Quality Control Plan for the Bay-Delta Plan Amendment to establish water quality objectives to maintain the health of the Bay-Delta ecosystem. The SWRCB is required by law to regularly review this plan. The adopted Bay-Delta Plan Amendment was developed with the stated goal of increasing salmonid populations in three San Joaquin River tributaries (the Stanislaus, Merced, and Tuolumne Rivers) and the Bay-Delta. The Bay-Delta Plan Amendment requires the release of 40 percent of the "unimpaired flow" on the three tributaries from February through June in every year type, whether wet, normal, dry, or critically dry.

The SFPUC 2020 UWMP provides water supply reliability tables both with and without the Bay-Delta Plan Amendment for comparison.

The SWRCB has stated that it intends to implement the Bay-Delta Plan Amendment on the Tuolumne River by the year 2022, assuming all required approvals are obtained by that time. But implementation of the Plan Amendment is uncertain for several reasons.

- Since adoption of the Bay-Delta Plan Amendment, over a dozen lawsuits have been filed in both state and federal court, challenging the SWRCB's adoption of the Bay-Delta Plan Amendment, including two legal challenges filed by the federal government, at the request of the U.S. Department of Interior, Bureau of Reclamation in state and federal courts. These cases are in the early stage and there have been no dispositive court rulings to date.
- The Bay-Delta Plan Amendment is not self-implementing and does not allocate responsibility for meeting its new flow requirements to the SFPUC or any other water rights holders. Rather, the Plan Amendment merely provides a regulatory framework for flow allocation, which must be accomplished by other regulatory and/or adjudicatory proceedings, such as a comprehensive water rights adjudication or, in the case of the Tuolumne River, the 401 certification process in the Federal Energy Regulatory Commission's relicensing proceeding for Don Pedro Dam. The license amendment process is currently expected to be completed in the 2022-23 timeframe. This process and the other regulatory and/or adjudicatory proceedings would likely face legal challenges and have lengthy timelines, and quite possibly could result in a different assignment of flow responsibility (and therefore a different water supply impact on the SFPUC).
- In recognition of the obstacles to implementation of the Bay-Delta Plan Amendment, SWRCB Resolution No. 2018-0059 adopting the Bay-Delta Plan Amendment directed staff to help complete a "Delta watershed-wide agreement, including potential flow measures for the Tuolumne River" by March 1, 2019, and to incorporate such agreements as an "alternative" for a future amendment to the Bay-Delta Plan to be presented to the SWRCB "as early as possible after December 1, 2019." In accordance with the SWRCB's instruction, on March 1, 2019, SFPUC, in partnership with other key stakeholders, submitted a proposed project description for the Tuolumne River that could be the basis for a voluntary substitute agreement with the SWRCB ("March 1st Proposed Voluntary Agreement"). On March 26, 2019, the SFPUC adopted Resolution No. 19-0057 to support SFPUC's participation in the Voluntary Agreement negotiation process. To date, those negotiations are ongoing under the California Natural Resources Agency, California Environmental Protection Agency and the leadership of the Newsom administration. The negotiations for a voluntary agreement have made significant progress since an initial framework was presented to the SWRCB on

December 12, 2018. The package submitted on March 1, 2019 is the product of renewed discussions since Governor Newsom took office. While significant work remains, the package represents an important step forward in bringing together diverse California water interests.

As discussed above and in other recently prepared SFPUC WSAs, implementation of the plan amendment is uncertain for several reasons. Whether the Bay Delta Plan Amendment will be implemented, when it will be implemented, and the form that implementation will take, as well as how the amendment will affect SFPUC's water supply, are currently unknown. Given the uncertainty, the SFPUC has estimated total shortfalls in water supply through 2045 under two increasingly supply-limited scenarios:

- Scenario 1: Without implementation of the Bay-Delta Plan Amendment
- Scenario 2: With implementation of the Bay-Delta Plan Amendment as adopted

The SFPUC has estimated that water supply shortfalls during Dry Years would be lowest without implementation of the Bay-Delta Plan Amendment and highest with implementation of the Bay-Delta Plan Amendment.

Under both scenarios, the SFPUC would have adequate water to meet total retail demands through 2045 in normal years. For Single Dry Years and Multiple Dry Years of an extended drought, the SFPUC estimates that shortfalls in water supplies relative to retail demand would occur both with and without implementation of the Bay-Delta Plan Amendment. Without implementation of the Bay-Delta Plan Amendment, there would be a 5.3 percent water demand reduction in fourth and fifth years of a multiple year drought in 2045[3]. With implementation of the Bay-Delta Plan Amendment, shortfalls of up to 25.4 percent would occur in Single Dry Years and up to 35.4 percent in Multiple Dry Years.

The projected SFPUC water supply reliability estimates are shown in Appendix A and are taken from Tables 8-4 and 8-6 of the SFPUC 2020 UWMP.

In June 2021, in response to various comments from wholesale customers regarding the reliability of the Regional Water System as described in SFPUC's 2020 UWMP, the SFPUC provided a memorandum describing SFPUC's efforts to remedy the potential effects of the Bay-Delta Plan Amendment. Although the memorandum was addressed to SFPUC's wholesale customers, the actions described are applicable to the entire Regional Water System and therefore are also applicable to SFPUC's retail customers. As described in the memorandum (included in Appendix A of this WSE), SFPUC's efforts include the following:

- Pursuing a Tuolumne River Voluntary Agreement
- Evaluating the drought planning scenario in light of climate change
- Pursuing alternative water supplies
- In litigation with the State over the Bay-Delta Plan Amendment
- In litigation with the State over the proposed Don Pedro FERC Water Quality Certification

[3] Per footnote d of Table 8-6 of the SFPUC 2020 UWMP (included in Appendix A of this WSE), "As amended in 2018, the WSAP Tier One Allocation Plan requires retail customers to conserve a minimum of 5% during droughts". Therefore, Total Water Demand is reduced by 4 MGD (5.3 percent) in the fourth and fifth years of a multi-dry year drought by 2045 in both Table 8-6 of the SFPUC 2020 UWMP and Table 8-2 of this WSE.

8.0 DETERMINATION OF WATER SUPPLY SUFFICIENCY BASED ON THE REQUIREMENTS OF SB 610

10910(c)(4) If the city or county is required to comply with this part pursuant to subdivision (b), the water supply assessment for the project shall include a discussion with regard to whether the total projected water supplies, determined to be available by the city or county for the project during Normal, Single Dry, and Multiple Dry water years during a 20-year projection, will meet the projected water demand associated with the proposed project, in addition to existing and planned future uses, including agricultural and manufacturing uses.

10911 (a) If, as a result of its assessment, the public water system concludes that its water supplies are, or will be, insufficient, the public water system shall provide to the city or county its plans for acquiring additional water supplies, setting forth the measures that are being undertaken to acquire and develop those water supplies.

Pursuant to Water Code section 10910(c)(4) and based on the technical analyses described in this WSE, and the SFPUC 2020 UWMP, this WSE finds that the increase in potable water demands due to the NHPH would not be so large as to affect the ability of the SFPUC to meet demand with existing and planned supplies during Normal, Single Dry, and Multiple Dry years through 2045, which is the farthest year of analysis included in the SFPUC 2020 UWMP.

As discussed in this WSE, SFPUC is aggressively implementing projects to improve the reliability of the RWS to meet the water demands of its customers through 2045.

Table 8-1 summarizes the projected availability of SFPUC's existing and planned future water supplies and SFPUC's projected water demands in Normal, Single Dry, and Multiple Dry years through 2045 assuming full implementation of the Bay-Delta Plan Amendment and is based on Table 8-4 of the SFPUC's 2020 UWMP (see Appendix A). As shown in Table 8-1, water demand within the SFPUC in-City service area is not expected to exceed the SFPUC water supply during Normal water years. However, water demand is expected to exceed the reduced SFPUC water supply during Single Dry and Multiple Dry water years beginning in 2025, resulting in the supply deficits shown in Table 8-1. SFPUC expects to meet these supply shortfalls through water demand reductions met by implementation of its Water Shortage Contingency Plan.

Table 8-2 summarizes the projected availability of SFPUC's existing and planned future water supplies and SFPUC's projected water demands in Normal, Single Dry, and Multiple Dry years through 2045 assuming no implementation of the Bay-Delta Plan Amendment and is based on Table 8-6 of the SFPUC's 2020 UWMP (see Appendix A). As shown in Table 8-2, assuming no implementation of the Bay-Delta Plan Amendment, water demand within the SFPUC in-City service area is not expected to exceed the SFPUC water supply during Normal, Single Dry, or Multiple Dry water years through 2045.

The SFPUC may allocate different levels of rationing to individual retail customers based on customer type to achieve the required level of retail system-wide rationing. The SFPUC may also impose a lower level of rationing that takes into account the installation of water-efficient plumbing fixtures and non-potable water systems associated with new construction.

Table 8-1. SFPUC Summary of Retail Water Demand Versus Supply During Hydrologic Normal, Single Dry, and Multiple Dry Years Assuming Full Implementation of the Bay-Delta Plan Amendment[(a)]

Hydrologic Condition		Supply and Demand Comparison, mgd				
		2025	2030	2035	2040	2045
Normal Year						
Available Water Supply		70.7	72.4	74.5	77.4	80.6
Total Water Demand		70.7	72.4	74.5	77.4	80.6
Potential Surplus (Deficit)		0	0	0	0	0
Percent Shortfall of Demand		—	—	—	—	—
Single Dry Year						
Available Water Supply		59.5	61.4	63.8	66.4	60.1
Total Water Demand		70.7	72.4	74.5	77.4	80.6
Potential Surplus (Deficit)		(11.2)	(11.0)	(10.7)	(11.0)	(20.5)
Percent Shortfall of Demand		15.9%	15.1%	14.4%	14.2%	25.4%
Multiple Dry Years						
Multiple Dry Year 1	Available Water Supply	59.5	61.4	63.8	66.4	60.1
	Total Water Demand	70.7	72.4	74.5	77.4	80.6
	Potential Surplus (Deficit)	(11.2)	(11.0)	(10.7)	(11.0)	(20.5)
	Percent Shortfall of Demand	15.9%	15.1%	14.4%	14.2%	25.4%
Multiple Dry Year 2	Available Water Supply	51.5	53.4	55.5	57.9	60.1
	Total Water Demand	70.7	72.4	74.5	77.4	80.6
	Potential Surplus (Deficit)	(19.2)	(19.0)	(19.0)	(19.5)	(20.5)
	Percent Shortfall of Demand	27.2%	26.3%	25.5%	25.2%	25.4%
Multiple Dry Year 3	Available Water Supply	51.5	53.4	55.5	57.9	60.1
	Total Water Demand	70.7	72.4	74.5	77.4	80.6
	Potential Surplus (Deficit)	(19.2)	(19.0)	(19.0)	(19.5)	(20.5)
	Percent Shortfall of Demand	27.2%	26.3%	25.5%	25.2%	25.4%
Multiple Dry Year 4	Available Water Supply	51.5	53.4	55.5	52.0	52.1
	Total Water Demand	70.7	72.4	74.5	77.4	80.6
	Potential Surplus (Deficit)	(19.2)	(19.0)	(19.0)	(24.5)	(28.5)
	Percent Shortfall of Demand	27.2%	26.3%	25.5%	32.8%	35.4%
Multiple Dry Year 5	Available Water Supply	51.5	53.4	51.4	52.0	52.1
	Total Water Demand	70.7	72.4	74.5	77.4	80.6
	Potential Surplus (Deficit)	(19.2)	(19.0)	(23.1)	(24.5)	(28.5)
	Percent Shortfall of Demand	27.2%	26.3%	31.0%	32.8%	35.4%

(a) From Table 8-4 of the SFPUC 2020 UWMP (see Appendix A for additional information).

Table 8-2. SFPUC Summary of Retail Water Demand Versus Supply During Hydrologic Normal, Single Dry, and Multiple Dry Years Assuming No Implementation of the Bay-Delta Plan Amendment[a]

Hydrologic Condition		Supply and Demand Comparison, mgd				
		2025	2030	2035	2040	2045
Normal Year						
Available Water Supply		70.7	72.4	74.5	77.4	80.6
Total Water Demand		70.7	72.4	74.5	77.4	80.6
Potential Surplus (Deficit)		0	0	0	0	0
Percent Shortfall of Demand		—	—	—	—	—
Single Dry Year						
Available Water Supply		70.7	72.4	74.5	77.4	80.6
Total Water Demand		70.7	72.4	74.5	77.4	80.6
Potential Surplus (Deficit)		0	0	0	0	0
Percent Shortfall of Demand		—	—	—	—	—
Multiple Dry Years						
Multiple Dry Year 1	Available Water Supply	70.7	72.4	74.5	77.4	80.6
	Total Water Demand	70.7	72.4	74.5	77.4	80.6
	Potential Surplus (Deficit)	0	0	0	0	0
	Percent Shortfall of Demand	—	—	—	—	—
Multiple Dry Year 2	Available Water Supply	70.7	72.4	74.5	77.4	80.6
	Total Water Demand	70.7	72.4	74.5	77.4	80.6
	Potential Surplus (Deficit)	0	0	0	0	0
	Percent Shortfall of Demand	—	—	—	—	—
Multiple Dry Year 3	Available Water Supply	70.7	72.4	74.5	77.4	80.6
	Total Water Demand	70.7	72.4	74.5	77.4	80.6
	Potential Surplus (Deficit)	0	0	0	0	0
	Percent Shortfall of Demand	—	—	—	—	—
Multiple Dry Year 4	Available Water Supply	70.7	72.4	74.5	77.4	80.6
	Total Water Demand	70.7	72.4	74.5	77.4	76.6
	Potential Surplus (Deficit)	0	0	0	0	4.0[b]
	Percent Shortfall of Demand	—	—	—	—	—
Multiple Dry Year 5	Available Water Supply	70.7	72.4	74.5	77.4	80.6
	Total Water Demand	70.7	72.4	74.5	77.4	76.6
	Potential Surplus (Deficit)	0	0	0	0	4.0[b]
	Percent Shortfall of Demand	—	—	—	—	—

(a) From Table 8-6 of the SFPUC 2020 UWMP (see Appendix A for more information).

(b) Per footnote d of Table 8-6 of the SFPUC 2020 UWMP (included in Appendix A of this WSE), "As amended in 2018, the WSAP Tier One Allocation Plan requires retail customers to conserve a minimum of 5% during droughts". Therefore, Total Water Demand is reduced by 4 MGD (5.3 percent) in the fourth and fifth years of a multi-dry year drought by 2045.

9.0 REFERENCES

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San Francisco Public Utilities Commission. Calaveras Dam Replacement Project. https://sfwater.org/index.aspx?page=979. Accessed in April 2020.

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University of California San Francisco. Water Action Plan FY2013/2014. 2014.

Appendix A

Updated SFPUC Water Supply Availability and Reliability Projections

San Francisco
Water Power Sewer
Services of the San Francisco Public Utilities Commission

525 Golden Gate Avenue, 13th Floor
San Francisco, CA 94102
T 415.554.3155
F 415.554.3161
TTY 415.554.3488

TO: SFPUC Wholesale Customers

FROM: Steven R. Ritchie, Assistant General Manager, Water

DATE: June 2, 2021

RE: Regional Water System Supply Reliability and UWMP 2020

This memo is in response to various comments from Wholesale Customers we have received regarding the reliability of the Regional Water System supply and San Francisco's 2020 Urban Water Management Plan (UWMP).

As you are all aware, the UWMP makes clear the potential effect of the amendments to the Bay-Delta Water Quality Control Plan adopted by the State Water Resources Control Board on December 12, 2018 should it be implemented. Regional Water System-wide water supply shortages of 40-50% could occur until alternative water supplies are developed to replace those shortfalls. Those shortages could increase dramatically if the State Water Board's proposed Water Quality Certification of the Don Pedro Federal Energy Regulatory Commission (FERC) relicensing were implemented.

We are pursuing several courses of action to remedy this situation as detailed below.

Pursuing a Tuolumne River Voluntary Agreement

The State Water Board included in its action of December 12, 2018 a provision allowing for the development of Voluntary Agreements as an alternative to the adopted Plan. Together with the Modesto and Turlock Irrigation Districts, we have been actively pursuing a Tuolumne River Voluntary Agreement (TRVA) since January 2017. We believe the TRVA is a superior approach to producing benefits for fish with a much more modest effect on our water supply. Unfortunately, it has been a challenge to work with the State on this, but we continue to persist, and of course we are still interested in early implementation of the TRVA.

Evaluating our Drought Planning Scenario in light of climate change

Ever since the drought of 1987-92, we have been using a Drought Planning Scenario with a duration of 8.5 years as a stress test of our Regional Water System supplies. Some stakeholders have criticized this methodology as being too conservative. This fall we anticipate our Commission convening a workshop

regarding our use of the 8.5-year Drought Planning Scenario, particularly in light of climate change resilience assessment work that we have funded through the Water Research Foundation. We look forward to a valuable discussion with our various stakeholders and the Commission.

Pursuing Alternative Water Supplies

The SFPUC continues to aggressively pursue Alternative Water Supplies to address whatever shortfall may ultimately occur pending the outcome of negotiation and/or litigation. The most extreme degree of Regional Water System supply shortfall is modeled to be 93 million gallons per day under implementation of the Bay-Delta Plan amendments. We are actively pursuing more than a dozen projects, including recycled water for irrigation, purified water for potable use, increased reservoir storage and conveyance, brackish water desalination, and partnerships with other agencies, particularly the Turlock and Modesto Irrigation Districts. Our goal is to have a suite of alternative water supply projects ready for CEQA review by July 1, 2023.

In litigation with the State over the Bay-Delta Plan Amendments

On January 10, 2019, we joined in litigation against the State over the adoption of the Bay-Delta Water Quality Control Plan Amendments on substantive and procedural grounds. The lawsuit was necessary because there is a statute of limitations on CEQA cases of 30 days, and we needed to preserve our legal options in the event that we are unsuccessful in reaching a voluntary agreement for the Tuolumne River. Even then, potential settlement of this litigation is a possibility in the future.

In litigation with the State over the proposed Don Pedro FERC Water Quality Certification

The State Water Board staff raised the stakes on these matters by issuing a Water Quality Certification for the Don Pedro FERC relicensing on January 15, 2021 that goes well beyond the Bay-Delta Plan amendments. The potential impact of the conditions included in the Certification appear to virtually double the water supply impact on our Regional Water System of the Bay-Delta Plan amendments. We requested that the State Water Board reconsider the Certification, including conducting hearings on it, but the State Water Board took no action. As a result, we were left with no choice but to once again file suit against the State. Again, the Certification includes a clause that it could be replaced by a Voluntary Agreement, but that is far from a certainty.

I hope this makes it clear that we are actively pursuing all options to resolve this difficult situation. We remain committed to creating benefits for the Tuolumne River while meeting our Water Supply Level of Service Goals and Objectives for our retail and wholesale customers.

cc.: SFPUC Commissioners
Nicole Sandkulla, CEO/General Manager, BAWSCA

Table 8-4. Retail Supply and Demand Comparison for Projected Normal & Dry Year Scenarios With Bay-Delta Plan Amendment (mgd)

[Standardized Table 7-2 Retail: Normal Year Supply and Demand Comparison]

[Standardized Table 7-3 Retail: Single Dry Year Supply and Demand Comparison]

[Standardized Table 7-4 Retail: Multiple Dry Years Supply and Demand Comparison]

Year	Retail Supply and Demand	Normal Year	Single Dry Year[a]	Multiple Dry Years[b]				
				Year 1	Year 2	Year 3	Year 4	Year 5
2025	Total Retail Demand	70.7	70.7	70.7	70.7	70.7	70.7	70.7
	Baseline Retail Demand[c]	*70.7*	*70.7*	*70.7*	*70.7*	*70.7*	*70.7*	*70.7*
	WSA 5% Demand Reduction	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*
	Total Retail Supply	70.7	59.5	59.5	51.5	51.5	51.5	51.5
	Retail Groundwater[e]	*1.4*	*1.4*	*1.4*	*1.4*	*1.4*	*1.4*	*1.4*
	Retail Recycled Water[f]	*2.1*	*2.1*	*2.1*	*2.1*	*2.1*	*2.1*	*2.1*
	RWS Supply Utilized by Retail[g]	*67.2*	*56.0*	*56.0*	*48.0*	*48.0*	*48.0*	*48.0*
	Difference (Supply Surplus or Shortfall)	0.0	-11.2	-11.2	-19.2	-19.2	-19.2	-19.2
	Difference as Percentage of Demand	0.0%	-15.9%	-15.9%	-27.2%	-27.2%	-27.2%	-27.2%
2030	Total Retail Demand	72.4	72.4	72.4	72.4	72.4	72.4	72.4
	Baseline Retail Demand[c]	*72.4*	*72.4*	*72.4*	*72.4*	*72.4*	*72.4*	*72.4*
	WSA 5% Demand Reduction	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*
	Total Retail Supply	72.4	61.4	61.4	53.4	53.4	53.4	53.4
	Retail Groundwater[e]	*2.4*	*2.4*	*2.4*	*2.4*	*2.4*	*2.4*	*2.4*
	Retail Recycled Water[f]	*2.5*	*2.5*	*2.5*	*2.5*	*2.5*	*2.5*	*2.5*
	RWS Supply Utilized by Retail[g]	*67.5*	*56.5*	*56.5*	*48.5*	*48.5*	*48.5*	*48.5*
	Difference (Supply Surplus or Shortfall)	0.0	-11.0	-11.0	-19.0	-19.0	-19.0	-19.0
	Difference as Percentage of Demand	0.0%	-15.1%	-15.1%	-26.3%	-26.3%	-26.3%	-26.3%
2035	Total Retail Demand	74.5	74.5	74.5	74.5	74.5	74.5	74.5
	Baseline Retail Demand[c]	*74.5*	*74.5*	*74.5*	*74.5*	*74.5*	*74.5*	*74.5*
	WSA 5% Demand Reduction	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*
	Total Retail Supply	74.5	63.8	63.8	55.5	55.5	55.5	51.4
	Retail Groundwater[e]	*3.4*	*3.4*	*3.4*	*3.4*	*3.4*	*3.4*	*3.4*
	Retail Recycled Water[f]	*2.5*	*2.5*	*2.5*	*2.5*	*2.5*	*2.5*	*2.5*
	RWS Supply Utilized by Retail[g]	*68.6*	*57.9*	*57.9*	*49.6*	*49.6*	*49.6*	45.5
	Difference (Supply Surplus or Shortfall)	0.0	-10.7	-10.7	-19.0	-19.0	-19.0	-23.1
	Difference as Percentage of Demand	0.0%	-14.4%	-14.4%	-25.5%	-25.5%	-25.5%	-31.0%
2040	Total Retail Demand	77.4	77.4	77.4	77.4	77.4	77.4	77.4
	Baseline Retail Demand[c]	*77.4*	*77.4*	*77.4*	*77.4*	*77.4*	*77.4*	*77.4*
	WSA 5% Demand Reduction	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*
	Total Retail Supply	77.4	66.4	66.4	57.9	57.9	52.0	52.0
	Retail Groundwater[e]	*4.4*	*4.4*	*4.4*	*4.4*	*4.4*	*4.4*	*4.4*
	Retail Recycled Water[f]	*2.5*	*2.5*	*2.5*	*2.5*	*2.5*	*2.5*	*2.5*

Year	Retail Supply and Demand	Normal Year	Single Dry Year[a]	Multiple Dry Years[b]				
				Year 1	Year 2	Year 3	Year 4	Year 5
	RWS Supply Utilized by Retail[g]	*70.5*	*59.5*	*59.5*	*51.0*	*51.0*	45.1	45.1
	Difference (Supply Surplus or Shortfall)	0.0	-11.0	-11.0	-19.5	-19.5	-24.5	-25.4
	Difference as Percentage of Demand	0.0%	-14.2%	-14.2%	-25.2%	-25.2%	-32.8%	-32.8%
2045	Total Retail Demand	80.6	80.6	80.6	80.6	80.6	80.6	80.6
	Baseline Retail Demand[c]	*80.6*	*80.6*	*80.6*	*80.6*	*80.6*	*80.6*	*80.6*
	WSA 5% Demand Reduction	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*
	Total Retail Supply	80.6	60.1	60.1	60.1	60.1	52.1	52.1
	Retail Groundwater[e]	*4.4*	*4.4*	*4.4*	*4.4*	*4.4*	*4.4*	*4.4*
	Retail Recycled Water[f]	*2.5*	*2.5*	*2.5*	*2.5*	*2.5*	*2.5*	*2.5*
	RWS Supply Utilized by Retail[g]	*73.7*	*53.2*	*53.2*	*53.2*	*53.2*	45.2	45.2
	Difference (Supply Surplus or Shortfall)	0.0	-20.5	-20.5	-20.5	-20.5	-28.5	-28.5
	Difference as Percentage of Demand	0.0%	-25.4%	-25.4%	-25.4%	-25.4%	-35.4%	-35.4%

Normal, single dry, and multiple dry year conditions are on a water year basis.

a During a single dry year, system-wide shortages of 30 – 40% are in effect (see Table 8-3). For this analysis, shortages greater than 20% are considered to have the same retail/wholesale allocation as the maximum Stage 4, 16-20% system-wide shortage in the WSAP.

b During multiple dry years, system-wide shortages of 30 – 55% are in effect (see Table 8-3). For this analysis, shortages greater than 20% are considered to have the same retail/wholesale allocation as the maximum Stage 4, 16-20% system-wide shortage in the WSAP.

c Total retail demands correspond to those in Table 4-1, and reflect passive and active conservation, onsite water reuse savings, and water loss. Demands for Groveland CSD is included in the table above. However, in the corresponding standardized tables in Appendix B, Groveland CSD is accounted for as a wholesale customer instead of a retail customer, as explained in Section 2.4.

d As amended in 2018, the WSAP Tier One Allocation Plan requires retail customers to conserve a minimum of 5% during droughts. If, during a declared water shortage, retail demands on the Regional Water System are lower than the retail allocation in a dry year, retail demands on the RWS will be reduced by 5%. An N/A on this row means that either this 5% rationing requirement doesn't apply (i.e. no declared water shortage), or retail customers are already rationing greater than 5%.

e Groundwater supplies are assumed to be equivalent to projected demands for the San Francisco Groundwater Supply Project (ramping up to 4 mgd by 2040) and Castlewood CSA (0.4 mgd). Groundwater availability would not be affected by dry year conditions.

f Recycled water supplies are assumed to be equivalent to projected demands related to the Westside Recycled Water Project (1.6 mgd by 2021 and 1.8 mgd by 2030), Harding Park and Fleming Golf Courses (0.23 mgd), and Sharp Park Golf Course (up to 0.1 mgd) and Treasure Island (0.2 mgd by 2025 and 0.4 mgd by 2030). Recycled water availability would not be affected by dry year conditions.

g Procedures for RWS allocations and the WSAP are described in Section 8.3. Groundwater and recycled water are assumed to be used before RWS supplies to meet retail demand. However, in normal years, if groundwater and recycled water supplies are not available, up to 81 mgd of RWS supply could be used.

Table 8-6. Retail Supply and Demand Comparison for Projected Normal & Dry Year Scenarios Without Bay-Delta Plan Amendment (mgd)

Year	Retail Supply and Demand	Normal Year	Single Dry Year[a]	Multiple Dry Years[b]				
				Year 1	Year 2	Year 3	Year 4	Year 5
2025	Total Retail Demand	70.7	70.7	70.7	70.7	70.7	70.7	70.7
	Baseline Retail Demand[c]	*70.7*	*70.7*	*70.7*	*70.7*	*70.7*	*70.7*	*70.7*
	WSA 5% Demand Reduction	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*
	Total Retail Supply	70.7	70.7	70.7	70.7	70.7	70.7	70.7
	Retail Groundwater[e]	*1.4*	*1.4*	*1.4*	*1.4*	*1.4*	*1.4*	*1.4*
	Retail Recycled Water[f]	*2.1*	*2.1*	*2.1*	*2.1*	*2.1*	*2.1*	*2.1*
	RWS Supply Utilized by Retail[g]	*67.2*	*67.2*	*67.2*	*67.2*	*67.2*	*67.2*	*67.2*
	Difference (Supply Surplus or Shortfall)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Difference as Percentage of Demand	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2030	Total Retail Demand	72.4	72.4	72.4	72.4	72.4	72.4	72.4
	Baseline Retail Demand[c]	*72.4*	*72.4*	*72.4*	*72.4*	*72.4*	*72.4*	*72.4*
	WSA 5% Demand Reduction	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*
	Total Retail Supply	72.4	72.4	72.4	72.4	72.4	72.4	72.4
	Retail Groundwater[e]	*2.4*	*2.4*	*2.4*	*2.4*	*2.4*	*2.4*	*2.4*
	Retail Recycled Water[f]	*2.5*	*2.5*	*2.5*	*2.5*	*2.5*	*2.5*	*2.5*
	RWS Supply Utilized by Retail[g]	*67.5*	*67.5*	*67.5*	*67.5*	*67.5*	*67.5*	*67.5*
	Difference (Supply Surplus or Shortfall)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Difference as Percentage of Demand	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2035	Total Retail Demand	74.5	74.5	74.5	74.5	74.5	74.5	74.5
	Baseline Retail Demand[c]	*74.5*	*74.5*	*74.5*	*74.5*	*74.5*	*74.5*	*74.5*
	WSA 5% Demand Reduction	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*
	Total Retail Supply	74.5	74.5	74.5	74.5	74.5	74.5	74.5
	Retail Groundwater[e]	*3.4*	*3.4*	*3.4*	*3.4*	*3.4*	*3.4*	*3.4*
	Retail Recycled Water[f]	*2.5*	*2.5*	*2.5*	*2.5*	*2.5*	*2.5*	*2.5*
	RWS Supply Utilized by Retail[g]	*68.6*	*68.6*	*68.6*	*68.6*	*68.6*	*68.6*	*68.6*
	Difference (Supply Surplus or Shortfall)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Difference as Percentage of Demand	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2040	Total Retail Demand	77.4	77.4	77.4	77.4	77.4	77.4	77.4
	Baseline Retail Demand[c]	*77.4*	*77.4*	*77.4*	*77.4*	*77.4*	*77.4*	*77.4*
	WSA 5% Demand Reduction	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*
	Total Retail Supply	77.4	77.4	77.4	77.4	77.4	77.4	77.4
	Retail Groundwater[e]	*4.4*	*4.4*	*4.4*	*4.4*	*4.4*	*4.4*	*4.4*
	Retail Recycled Water[f]	*2.5*	*2.5*	*2.5*	*2.5*	*2.5*	*2.5*	*2.5*
	RWS Supply Utilized by Retail[g]	*70.5*	*70.5*	*70.5*	*70.5*	*70.5*	*70.5*	*70.5*
	Difference (Supply Surplus or Shortfall)	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Year	Retail Supply and Demand	Normal Year	Single Dry Year[a]	Multiple Dry Years[b]				
				Year 1	Year 2	Year 3	Year 4	Year 5
	Difference as Percentage of Demand	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2045	Total Retail Demand	80.6	80.6	80.6	80.6	80.6	76.6	76.6
	Baseline Retail Demand[c]	*80.6*	*80.6*	*80.6*	*80.6*	*80.6*	*80.6*	*80.6*
	WSA 5% Demand Reduction	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*-4.0*	*-4.0*
	Total Retail Supply	80.6	80.6	80.6	80.6	80.6	80.6	80.6
	Retail Groundwater[e]	*4.4*	*4.4*	*4.4*	*4.4*	*4.4*	*4.4*	*4.4*
	Retail Recycled Water[f]	*2.5*	*2.5*	*2.5*	*2.5*	*2.5*	*2.5*	*2.5*
	RWS Supply Utilized by Retail[g]	*73.7*	*73.7*	*73.7*	*73.7*	*73.7*	*73.7*	*73.7*
	Difference (Supply Surplus or Shortfall)	0.0	0.0	0.0	0.0	0.0	4.0	4.0
	Difference as Percentage of Demand	0.0%	0.0%	0.0%	0.0%	0.0%	5.3%	5.3%

Normal, single dry, and multiple dry year conditions are on a water year basis.

a During all single dry years, no RWS system-wide shortages are in effect.

b During multiple dry years, no RWS system-wide shortages are in effect until years 4 and 5 at 2045 levels of demand. During those years, a 10% system-wide shortage is in effect.

c Total retail demands correspond to those in Table 4-1, and reflect passive and active conservation, onsite water reuse savings, and water loss. Demands from Groveland CSD are included in the table above. However, in the corresponding standardized tables in Appendix B, Groveland CSD is accounted for as a wholesale customer instead of a retail customer, as explained in Section 2.4.

d As amended in 2018, the WSAP Tier One Allocation Plan requires retail customers to conserve a minimum of 5% during droughts. If, during a declared water shortage, retail demands on the Regional Water System are lower than the retail allocation in a dry year, retail demands on the RWS will be reduced by 5%. An N/A on this row means that either this 5% rationing requirement doesn't apply (i.e. no declared water shortage), or retail customers are already rationing greater than 5%.

e Groundwater supplies are assumed to be equivalent to projected demands for the San Francisco Groundwater Supply Project (ramping up to 4 mgd by 2040) and Castlewood CSA (0.4 mgd). Groundwater availability would not be affected by dry year conditions.

f Recycled water supplies are assumed to be equivalent to projected demands related to the Westside Recycled Water Project (1.6 mgd by 2021 and 1.8 mgd by 2030), Harding Park and Fleming Golf Courses (0.23 mgd), and Sharp Park Golf Course (up to 0.1 mgd) and Treasure Island (0.2 mgd by 2025 and 0.4 mgd by 2030). Recycled water availability would not be affected by dry year conditions.

g Procedures for RWS allocations and the WSAP are described in Section 8.3. Groundwater and recycled water are assumed to be used before RWS supplies to meet retail demand. However, if groundwater and recycled water supplies are not available, up to 81 mgd of RWS supply could be used.

Appendix B

New Hospital at Parnassus Heights
Land Use and Water Demand Summary Table

Appendix B. Parnassus Heights Campus Projected Water Demand Summary Table

Project	Existing Area, gsf	Area to be Demolished , gsf	Area to be Added, gsf	Net Change in Area, gsf	Net Change[a]	Units	Unit Water Demand	Units for unit water demand	Net Change in Water Demand, gpy	Net Change in Water Demand, af/year	Net Change in Water Demand, CCF/year	Net Change in Water Demand, GPD
NHPH Project [b]	-	-	900,000	900,000	207	Beds	280	gpy/APD [e]	21,155,400	64.9	28,283	57,960
Other Planned Development												
Irving Street Arrival Improvements (Medical Building 1 modifications)	-	30,000	45,000	15,000	NA	Gross Square Feet	-	NA	-	-	-	-
Research and Academic Building (RAB)[c]	-	233,000	270,000	37,000	37,000	Gross Square Feet	0.10	gpd/gsf [d]	1,350,500	4.1	1,805	3,700
Initial Aldea Housing Densification	-	24,000	177,000	153,000	142	Dwelling Units	90	gpd/Dwelling unit [f]	4,664,700	14.3	6,236	12,780
Millberry Union New Towers and Terrace	-	153,000	260,000	107,000	107,000	Gross Square Feet	0.10	gpd/gsf [d]	3,905,500	12.0	5,221	10,700
Hotel for Patients and Families	-	-	48,000	48,000	64	Rooms	150	gpd/room [g]	3,504,000	10.8	4,684	9,600
New Program Adjacent to RAB	-	135,000	582,000	447,000	447,000	Gross Square Feet	0.10	gpd/gsf [d]	16,315,500	50.1	21,812	44,700
West Side Housing	-	-	281,000	281,000	430	Dwelling Units	90	gpd/Dwelling unit [f]	14,125,500	43.3	18,884	38,700
Child Care on Proctor Site[h]	-	11,000	35,000	24,000	24,000	Gross Square Feet	0.10	gpd/gsf [d]	876,000	2.7	1,171	2,400
Future Phase of Aldea Housing	-	102,000	327,000	225,000	190	Dwelling Units	90	gpd/Dwelling unit [f]	6,241,500	19.2	8,344	17,100
Small Daycare Center at Aldea	-	-	15,000	15,000	15,000	Gross Square Feet	0.10	gpd/gsf [d]	547,500	1.7	732	1,500
Open Space	-	-		-			-	NA	-	-	-	-
Utilities and Infrastructure	-	-		-			-	NA	-	-	-	-
Circulation, Transportation and Parking	-	-		-			-	NA	-	-	-	-
Total Additional Demand including New Hospital									**72,686,100**	**223.1**	**97,174**	**199,140**
Existing Parnassus Demand (2018)									**118,335,096**	**363.2**	**158,202**	**324,206**
Future Parnassus Demand									**191,021,196**	**586.2**	**255,376**	**523,346**

(a) From draft Project Description.
(b) Area to be added for NHPH Project: there would also be minor increases in sizes of Moffit and Long Hospital.
(c) The demolition of UC hall is accounted for in the Net Change estimate.
(d) Based on average water demand for Parnassus FY 2017/2018 (118,335,096 gallons per year/365/3,266,900 gsf).
(e) Based on water demand per Adjusted Patient Day for UC San Francisco FY 2018/2019.
(f) Based on Aldea housing water demand for 2019.
(g) Assumes three persons per room and 50 gpd/person.
(h) The demolition of the existing Kirkham and Lucia Child Care Centers are accounted for in the Net Change estimate.