Appendix C
Energy Study

City of San José 2023-2031 Housing Element Update

Energy Study

prepared for

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1 Project Description

1.1 Introduction

This study analyzes the potential energy impacts of the 2023-2031 Housing Element Update ("the Housing Element Update" or "the project") for the City of San José. The City of San José (City) last updated its Housing Element for the 2014-2023 planning period in 2015. The City's 2014-2023 Housing Element Update was adopted by City Council on January 27, 2015 and certified by HCD on April 30, 2015. The Housing Element Update has been developed to comply with State law requirements analyzing existing and projected housing needs, and updating goals, policies, objectives, and implementation programs for the preservation, improvement, and development of housing in the City. The purpose of this study is to analyze the energy impacts related to both temporary construction activity and long-term operation of the project. Table 1 provides a summary of project impacts.

Table 1 Summary of Impacts

Issue	Finding
Would the proposed project result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	Less than significant impact
Would the proposed project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	Less than significant impact

1.2 Project Background

Project Location

The City is located in the easterly half of the Santa Clara Valley at the southern tip of the San Francisco Bay. The City is the largest in Santa Clara County, both in terms of population and land area. At slightly over a million people, the City is also the tenth largest city in the United States (U.S.).

Project Baseline

State CEQA Guidelines Section 15125 provides guidance for establishing the baseline against which project impacts can be evaluated. Ordinarily, the appropriate baseline would be the actual environmental conditions existing at the time of CEQA analysis (typically when the Notice of Preparation [NOP] is published). However, due to complications from the Covid-19 pandemic, collection of 2020 Census data was disrupted and complete demographic data for 2020-2022 is not available. The most recent complete data set available at the time of this analysis (September 2022) was the 2019 American Community Survey (ACS) estimates. There is no confirmed date for when the 2022 data will be released. Therefore, 2019 is the baseline for the purposes of this CEQA analysis; unless otherwise stated, demographic data presented in the following sections comes from the 2019 ACS estimates. In some cases, data from before or after 2019 is presented to provide historical context and to highlight past and projected trends.

Population

The total population of the City has increased dramatically during the last 50 years, especially during the 1960s and 1970s. Although the rate of growth has slowed since the 1970s, the City is still experiencing substantial growth. The City added an average of 12,795 residents per year since 2000, an increase of 14.3 percent since 2000, for a total population of 945,942 at the beginning of 2010. As of 2019, total population of the City was estimated to be 1,021,786, nearly an 11 percent increase from 2010. Rapid population growth is expected to continue for Santa Clara County and for the City into the future. Santa Clara County's population is projected by ABAG to increase to 2.4 million by 2035, representing growth of 33 percent over the existing population. This is faster than the Bay region's projected growth of 27 percent over the same period.

Housing

There exists a diverse range of housing types and densities to serve the City's diverse population. Single family detached units constituted 54.6 percent of the housing stock in 2008. Multi-family development (which includes apartments, condominiums, and townhouses) has been the fastest growing housing type in recent years, adding over twice as many units since 2000 and accounting for 75 percent of all residential construction. This suggests an increase in higher-density, smaller, more affordable (though not necessarily subsidized) units. The City's housing stock in 2020 was made up of 52.6 percent single family detached homes, 9.7 percent single family attached homes, 6.9 percent multifamily homes with 2 to 4 units, 27.5 percent multifamily homes with 5 or more units, and 3.3 percent mobile homes. The housing type that experienced the most growth between 2010 and 2020 was Multiple Family, 5+ Units per Building, up 25 percent. The primary housing types that made up the City's housing stock in 2020 are shown in Table 2.

Table 2 Housing Units by Type

Housing Type	# of Units	Percent of Total
Single Family Detached[1]	176,908	52.5%
Single Family Attached[1]	32,620	9.7%
Multiple Family, 2-4 Units per Building	23,353	7.0%
Multiple Family, 5+ Units per Building	92,667	27.5%
Mobile Homes	10,959	3.3%
Total	**336,507**	**100%**

Source: City of San José 2022

[1] A single family housing unit is a separate building that either has open spaces on all sides or is separated from other units by dividing walls that extend from ground to roof, such as a townhouse.

Existing and projected population households are shown in Table 3 for both the City and Santa Clara County. In 2019, there were approximately 325,114 households within the City. Looking forward, ABAG projects that approximately 117,215 additional households will be added in the City by 2040. This rate of growth is relatively consistent with the anticipated rate in the County as a whole.

Table 3 Population and Housing Estimates and Projections

Source	Population		Households	
	2019	2040	2019	2040
Santa Clara County	1,927,852	2,538,320	640,215	860,810
City of San José	1,021,786	1,377,145	325,114	448,310
City as a Percent of County	-	54.3%	-	32%

Source: ABAG Projections 2020. American Census Survey 2019

Employment

Santa Clara County is one of the Bay Area region's major job generators. Santa Clara County provided 28 percent of the Bay Area region's employment in 2000, or 1.0 million jobs, according to ABAG. The City added approximately 103,390 jobs between 1990 and 2000, growing from approximately 329,090 to nearly 432,480 jobs (a 31 percent increase). Following the "dot-com" collapse, ABAG estimates show reductions in jobs across all sectors in 2005, with employment in the City decreasing about 69,100 jobs. However, since that time the number of jobs in the City has continued to increase. By the baseline year of 2019, there were approximately 535,727 jobs in the City.

As shown in Table 4, ABAG expects Santa Clara County jobs to reach 1.3 million jobs by 2040; an increase of nearly 57 percent over 2019 levels. During the same time period, ABAG projects that the City's employment will nearly double from 369,500 to 708,980. With these projections, the City's share of total jobs in the County will increase from approximately 41 percent to 50 percent.

Table 4 ABAG Employment Projections

Jurisdiction(s)	Employed Residents 2019	Percent		Employed Residents 2040	Percent	
		County Employment	Bay Area Employment		County Employment	Bay Area Employment
City of San José	369,500	41%	11%	708,980	50%	14%
Santa Clara County	906,270	--	26%	1,412,620	--	28%

Source: American Community Survey, 5-year Estimates, 2019. ABAG Projections, 2020

Employed residents are expected to increase steadily in the County, growing from 906,270 to 1,412,620 between 2019 and 2040 (an increase of 56 percent). Employment in the City (under the existing 2040 General Plan) is projected to grow even faster, with the number of employed residents growing from 369,500 in 2019 to 708,980 in 2040, for an increase of 92 percent.

1.3 Housing Element Update

The City must plan for 62,200 housing units during the 2023-2031 planning period (i.e., the 6th Cycle). Table 5 summarizes the City's approach to meeting the assigned RHNA, broken out by type of housing units and income level. As shown in Table 5, approximately 20,399 units have been planned or approved for development consistent with existing 2040 General Plan land use designations and zoning since the 6th cycle RHNA projection period began on June 30, 2022. Additionally, 3,552 ADUs are forecasted to be issued during the planning period given recent

development trends. A total of 204 alternative housing units have also been identified through HCD's project Homekey.[1] Together, planned, approved, and forecasted housing units comprise 24,155 housing units out of the City's total 62,200 RHNA.

Table 5 Planned and Projected Housing Units

Type of Housing Unit	Low	Moderate	Above Moderate	Total
Planned and Approved	5,344	178	14,877	20,399
ADUs	2,131	1,066	355	3,552
Alternative Sites	204	0	0	204
Opportunity Sites	21,799	11,779	19,854	53,432
Total	**29,478**	**13,023**	**35,086**	**77,587**
Buffer	*24%*	*22%*	*27%*	*25%*

Source: City of San José 2022

To achieve the full 62,200 housing units, the City has identified opportunity sites that are vacant or underutilized to allow development for the remaining 38,045 units. Per HCD's guidelines, the City also included a buffer of 15,387 units (or approximately 25% of the 62,200 RHNA), for a total of 53,432 units in opportunity sites. As Table 5 demonstrates, the Housing Element Update is able to accommodate the City's share of RHNA at all income levels.

Changes to the 2040 General Plan land use designations and zoning to allow for residential units in certain areas of the City will be required for some of these opportunity sites where housing is currently not permitted. These actions, described in Sections 0 and 0 below, are the primary components of the project and are the subject of this EIR.

Growth Areas

Growth areas are areas identified in the 2040 General Plan for higher density development to support job and/or housing growth within the existing City boundaries through redevelopment and intensification of already developed properties. Each of the growth areas identified in the 2040 General Plan have specific development capacities with a maximum number of housing units allowed. By focusing on specific growth areas, the 2040 General Plan sought to reduce environmental impacts while fostering transit use and walkability, protecting the quality of existing neighborhoods, and enabling the development of new Urban Village areas that are attractive to the growing demographic groups (i.e., an aging population and young workers seeking an urban experience). Growth areas identified in the 2040 General Plan include:

- North San José (including the Rincon Urban Village)
- Downtown
- Diridon Station Area
- Specific Plan Areas
- Neighborhood Business Districts (NBD)

[1] Project Homekey seeks to sustain and rapidly expand permanent and interim housing for persons experiencing homelessness or at risk of homelessness, and who are inherently impacted by, or at increased risk for, medical conditions due to the COVID-19 pandemic. For more information on Project Homekey in San José please visit https://www.sanjoseca.gov/your-government/departments-offices/housing/homelessness-response/project-homekey.

- Urban Villages with adopted plans ("Planned UVs")
- Urban Villages without adopted plans ("Unplanned UVs")

A complete map of all planned growth areas identified by the City is shown in Figure 1.

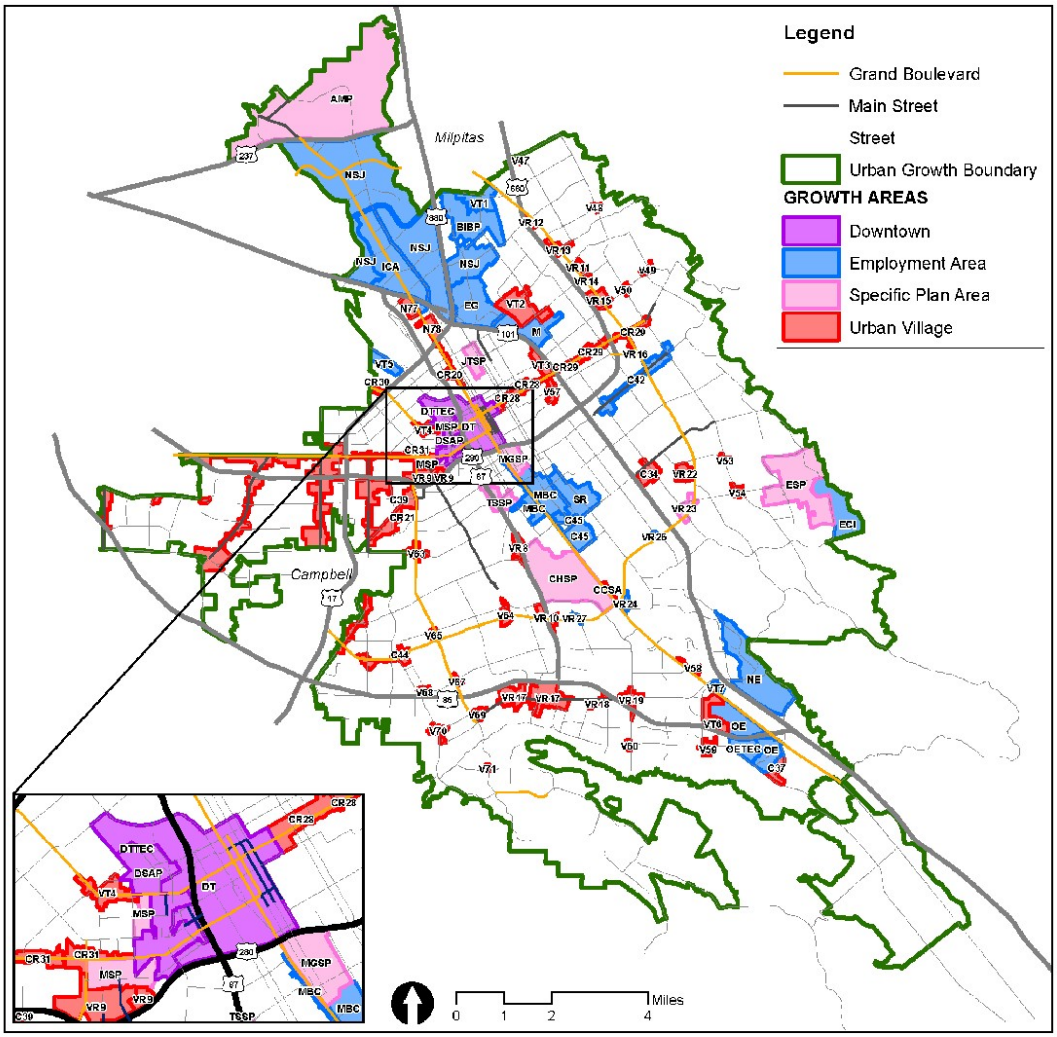
To facilitate the development of the 38,045 opportunity site housing units, the City conducted a comprehensive inventory of remaining development capacity in previously identified growth areas and of land suitable and available for residential development. The City also considered recent development trends, including the effects of the Covid-19 pandemic (for a full description of the City's methodology, refer to Chapter 5 of the Housing Element Update). Through this exercise, the City found that some growth areas have an excess of available land suitable for residential development, while some growth areas have an excess of unused residential development capacity. Table 6 shows the growth areas with available land for residential development that currently lack residential growth capacity as assigned by the 2040 General Plan. As part of the project, the City proposes to reallocate the required units for each growth area from the North San José and Rincon Urban Village Growth Area, which has a planned growth capacity surplus of approximately 23,000 units. The total development capacity for the City would remain unchanged; no additional growth beyond what was analyzed under the 2040 General Plan EIR would occur.

Table 6 Growth Areas Receiving Additional Growth Capacity from North San José

Urban Villages/Growth Areas	Planned Growth Capacity in Housing Element Update (Units)	Remaining Growth Capacity in 2040 General Plan (Units)	Units to be Reallocated from North San José
Saratoga Avenue	680	225	455
Blossom Hill Road/Snell Avenue	753	209	544
Camden Avenue/Hillsdale Avenue	676	450	147
Capitol Expressway/Highway 87 Light Rail	617	531	723
Curtner Light Rail Station	463	435	28
S. Bascom Avenue (South)	694	195	499
S. De Anza Boulevard	754	463	291
Urban Villages (Aborn Road/San Felipe Road, Almaden Expressway/Hillsdale Avenue, Camden Avenue/Kooser Road, Hamilton Avenue/Meridian Avenue, McKee Road/Toyon Avenue, McKee Road/White Road, Piedmont Road/Sierra Road, Santa Teresa Boulevard/Snell Avenue)	1,973	1,430	408
Total Reallocation from North San José and Rincon Urban Village			**3,095**

Source: City of San José 2022

Figure 1 Planned Growth Areas



Downtown
DT = Downtown
DSAP = Diridon Station Area Plan

Specific Plan Areas
AMP = Alivio (Master Plan)
CHSP = Communications Hill
ESP = Evergreen
JTSP = Jackson-Taylor (Residential Strategy)
MGSP = Martha Gardens
MSP = Midtown
TSSP = Tamien Station Area
VR23 = E. Capitol Ex/Silver Creek Rd

Employment Area
BIBP = Berryessa International Business Park
DTTEC = Downtown Transit Employment Center
ECI = Evergreen Campus Industrial
EG = East Gish
ICA = Industrial Core Area
M = Mabury
MBC = Monterey Business Corridor
NE = New Edenvale
NSJ = North San Jose
OE = Old Edenvale
OETEC = Old Edenvale Transit Employment Center
SR = Senter Road

C42 = Story Rd
C 45 = County Fairgrounds

VR16 = S. Capitol Av/Capitol Ex
VR24 = Monterey Hy/Senter Rd
VR26 = E. Capitol Ex/McLaughlin Av
VR27 = W. Capitol Ex/Vistapark Dr

Employment Areas (cont.)
VT1 = Lundy/Milpitas BART
VT5 = Santa Clara/Airport West (FMC)
CT7 = Blossom Hill Rd/Monterey Rd

Urban Villages
C34 = Tully Rd/S. King Rd
C35 = Valley Fair/Sanatana Row
C36 = Paseo de Saratoga
C37 = Santa Teresa Bl/Bernal Rd
C38 = Winchester Bl
C39 = S. Bascom Av (North)
C40 = S. Bascom Av (South)
C41 = Saratoga Av
C43 = S. De Anza Bl
C44 = Camden Av/Hillsdale Av

CCSA = Capitol CaltrainStation Area

CR20 = N. 1st St
CR21 = Southwest Ex
CR28 = E. Santa Clara St
CR30 = The Alameda (West)
CR 31 = W. San Carlos St
CR32 = Stevens Creek Bl

N77 = Rincon South 1
N78 = Rincon South 2

V47 = Landess Av/Morrill Av
V48 = Piedmont Rd/Sierra Rd
V49 = McKee Rd/Toyon Av
V50 = McKee Rd/White Rd
V53 = Quimby Rd/S. White Rd
V54 = Aborn Rd/San Felipe Rd

Urban Villages (cont.)
V57 = S. 24th St/William Ct
V58 = Monterey Rd/Chynoweth Av
V59 = Santa Teresa Bl/Cottle Rd
V60 = Santa Teresa Bl/Snell Av
V61 = Bollinger Rd/Miller Av
V62 = Bolling Rd/Lawrence Ex
V63 = Hamilton Av/Meridian Av
V64 = Almaden Ex/Hillsdale Av
V65 = Foxworthy Av/Meridian Av
V67 = Branham Ln/Meridian Av
V68 = Camden Av/Branham Ln
V69 = Kooser Rd/Meridian Av
V70 = Camden Av/Kooser Rd
V71 = Meridian Av/Redmond Av

VR8 = Curtner Light Rail/Caltrain
VR9 = Race St Light Rail
VR10 = Capitol Ex/Hy 87 Light Rail
VR11 = Penitencia Creek Light Rail
VR12 = N. Capitol Av/Hostetter Rd
VR13 = N. Capitol Av/Berryessa Rd
VR14 = N. Capitol Av/Madbury Rd
VR15 = N. Capitol Av/McKee Rd
VR17 = Oakridge Maill and Vicinity
VR18 = Blossom Hill Rd/Cahalan Av
VR19 = Blossom Hill Rd/Snell Av
VR22 = Arcadia/Eastridge

VT2 = Berryessa BART
VT3 = Five Wounds BART
VT4 = The Alameda (East)
VT6 = Blossom Hill Rd/Hitachi

2040 General Plan Amendments and Zoning Code Amendments

Several land use and zoning changes would be required to facilitate the development of the City's RHNA and to allow for the reallocation of residential development capacity discussed in Section 0. These would occur within the North San José and Rincon Urban Village growth area. While 2040 General Plan-designated land uses within this growth area are primarily employment-related (i.e., industrial and commercial), a Transit Employment Residential Overlay (TERO) allows for transit-oriented residential development as an alternate use on certain sites within the growth area.

The TERO is intended to make efficient use of land to provide residential units in support of nearby industrial employment centers. This overlay supports residential development as an alternate use at a minimum average net density of 75 units per acre. Sites with this overlay may also be developed with uses consistent with the underlying designation. This designation permits development with commercial uses on the first two floors and residential use on the upper floors, as well as wholly residential projects. Land within this overlay area may also be converted for the development of new schools and parks as needed to support residential development.

Due to a variety of economic factors, development within TERO areas of the North San José and Rincon Urban Village growth area has continued to be primarily employment-related despite the residential overlay, resulting in the 23,000-unit residential development capacity surplus referenced in Section 0.

One site (1601 Technology) would be added to the TERO General Plan and Zoning overlay and 11 other sites would be removed from the General Plan and Zoning TERO overlay because the sites are no longer feasible residential properties due to changed circumstances.

Similar to the TERO, two new General Plan land use designation overlays would be introduced: the Affordable Housing Overlay (AHO) and Mixed Income Housing Overlay (MIHO). The AHO overlay would support residential development as an alternate use at a minimum average net density of 75 units per acre. The residential uses however must be one hundred percent affordable at incomes at or below eighty percent of area median income (AMI). Sites with this overlay could also continue to be developed with uses consistent with the current underlying land use designation. The Mixed-Income Housing Overlay (MIHO) would support residential development as an alternate use at a minimum average net density of 75 units per acre. This overlay would require at least twenty-five percent (25 percent) of the units be affordable at or below eighty percent (80 percent) of area median income (AMI).

In addition to the proposed General Plan land use designation overlays, Zoning overlays would be introduced consistent with the new land use overlays designations (AHO and MIHO), that would include development standards.

In addition to reallocating 3,095 units to other growth areas shown in Table 6, the City proposes to expand the TERO areas within the North San José and Rincon Urban Village growth area to encourage more residential development, as part of the implementation of an updated Housing Element. Zoning in these areas would also be updated, consistent with the new overlay. New TERO sites and accompanying zoning changes are shown in Figure 2.

Interim Housing Communities

Bridge Housing Communities

The City operates five interim housing communities, which are sometimes called Bridge Housing Communities (BHCs). The first BHC opened in January 2020 to provide interim housing for formerly unhoused individuals. The purpose of interim housing is to give participants an opportunity to stabilize their lives and work toward self-sufficiency. The first two BHC sites are located on Mabury Road near the Berryessa BART station, and on Felipe Avenue near Story Road.

Emergency Interim Housing

During the coronavirus pandemic, the City built three Emergency Interim Housing (EIH) communities. These are similar to the two BHCs although the site design and construction are slightly different. The EIH communities have been used to house medically vulnerable unhoused residents who are at risk of severe illness or death if they contract COVID-19. As the pandemic subsides, the EIH communities are being rolled into a broader interim housing program with the BHCs. The three EIH sites are located at the intersection of Bernal Road and Monterey Road; on Rue Ferrari near the entrance to Highway 101; and on Evans Lane near the entrance to Almaden Expressway. A fourth EIH community is under construction near SJPD headquarters.

Safe Parking Program

The City provides opportunities for homeless families and individuals living in cars and RVs to park in safe places overnight. The Safe Parking Program allows businesses and non-profits to establish Safe Parking Areas in their parking lots.

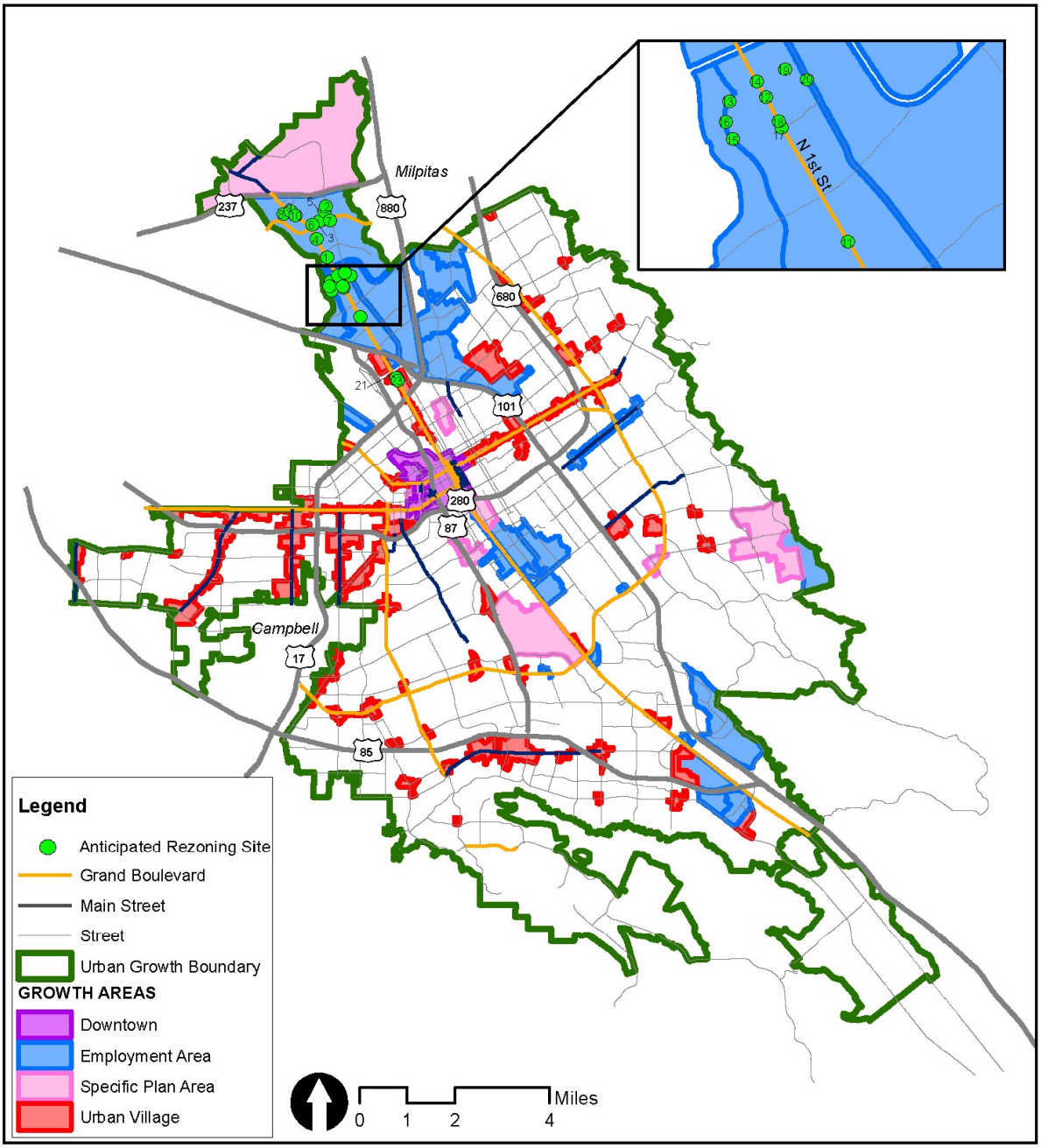
1.4 Changes to Future Development Actions

The Housing Element Update establishes policies, goals and guidelines, and reallocations of planned housing development capacities within the City that may or may not be built on any particular site, therefore this programmatic environmental document is necessarily general and not project-specific. The CEQA Guidelines instruct that environmental review of a planning-level document need not contain the level of detail required for review of a specific construction project, for example CEQA Guidelines, Section 15146 states that “the degree of specificity required will correspond to the degree of specificity involved in the underlying activity”.

The City’s inventory of sites is a state-mandated requirement to ensure that the City’s RHNA can be accommodated. In other words, the housing inventory demonstrates that there is enough land zoned at appropriate densities to accommodate the RHNA allocation. However, this inventory does not include all potential residential development sites within the City limits, and does not mean that sites in the inventory will be developed at the allowable densities. In addition, information about the design and placement of buildings on the sites will not be available unless/until a specific development is proposed.

It is important to note that while the law requires the City’s Housing Element Update to include an inventory of housing sites and requires the City to zone those sites for multifamily housing, the City is not required to develop housing on these sites. Future development on the identified sites will be up to the property owners and will be largely dependent on market forces and (in the case of affordable housing) available subsidies.

Figure 2 Anticipated Rezoning Sites



Anticipated Rezoning Sites

1 - (APN: 097-06-032) 3331 N 1st St, San Jose, CA, 95134
2 - (APN: 097-07-028) 255 Baypointe Pkwy, San Jose, CA, 95134
3 - (APN: 097-07-039) 111 Baypointe Pkwy, San Jose, CA, 95134
4 - (APN: 097-07-040) 3550 N 1st St, San Jose, CA, 95134
5 - (APN: 097-07-047) 240 Baypointe Pkwy, San Jose, CA, 95134
6 - (APN: 097-07-063) No Address Assigned, San Jose, CA, 95134
7 - (APN: 097-07-085) No Address Assigned, San Jose, CA, 95134
8 - (APN: 097-52-027) 71 Vista Montana, San Jose, CA, 95134
9 - (APN: 097-53-007) 4001 N 1st St, San Jose, CA, 95134
10 - (APN: 097-53-008) 3939 N 1st St, San Jose, CA, 95134
11 - (APN: 101-02-011) 2347 N 1st St, San Jose, CA, 95134
12 - (APN: 101-29-005) 3011 N 1st St, San Jose, CA, 95134
13 - (APN: 101-29-006) 3000 Orchard Pkwy, San Jose, CA, 95134
14 - (APN: 101-29-007) 3003 N 1st St, San Jose, CA, 95134
15 - (APN: 101-29-010) 2820 Orchard Pkwy, San Jose, CA, 95134
16 - (APN: 101-29-011) 2904 Orchard Pkwy, San Jose, CA, 95134
17 - (APN: 101-29-012) 3 W Plumeria Dr, San Jose, CA, 95134
18 - (APN: 101-29-013) 2825 N 1st St, San Jose, CA, 95134
19 - (APN: 101-30-004) 101 Daggett Dr, San Jose, CA, 95134
20 - (APN: 101-30-006) 2865 Zanker Rd, San Jose, CA, 95134
21 - (APN: 235-02-031) 1488 N 1st St, San Jose, CA, 95112
22 - (APN: 235-02-033) 1550 N 1st St, San Jose, CA, 95112
23 - (APN: 235-02-035) 1490 N 1st St, San Jose, CA, 95112

2 Background

2.1 Overview of Energy

California is one of the lowest per capita energy users in the United States, ranked 50th in the nation, due to its energy efficiency programs and mild climate. California consumed 280,738 gigawatt-hours (GWh) of electricity and 11,923 million therms of natural gas in 2021 (California Energy Commission [CEC] 2022a). The single largest end-use sector for energy consumption in California is transportation (34 percent), followed by industry (25 percent), residential (22 percent), and commercial (20 percent) (United States Energy Information System [U.S. EIA] 2020a). Most of California's electricity is generated in-state with approximately 30 percent imported from the northwest and southwest in 2021. In addition, approximately 34 percent of California's electricity supply comes from renewable energy sources, such as wind, solar photovoltaic, geothermal, and biomass (CEC 2022b).

To reduce statewide vehicle emissions, California requires that all motorists use California Reformulated Gasoline, which is sourced almost exclusively from in-state refineries. Gasoline is the most used transportation fuel in California with 13.8 billion gallons sold in 2021 and is used by light-duty cars, pickup trucks, and sport utility vehicles (U.S. EIA 2022a). Diesel is the second most-used fuel in California with 1.6 billion gallons sold in 2020 and is used primarily by heavy duty-trucks, delivery vehicles, buses, trains, ships, boats and barges, farm equipment, and heavy-duty construction and military vehicles (CEC 2022c). Both gasoline and diesel are primarily petroleum-based, and their consumption releases greenhouse gas (GHG) emissions, including CO_2 and N_2O. The transportation sector is the single largest source of GHG emissions in California, accounting for 40 percent of all inventoried emissions in 2019 (California Air Resources Board [CARB] 2021).

2.2 Regional and Local Energy Setting

Energy use relates directly to environmental quality because energy use can adversely affect air quality and can generate GHG emissions that contribute to climate change. Fossil fuels are burned to create electricity that powers residences, heats and cools buildings, and powers vehicles. Transportation energy use corresponds to the fuel efficiency of cars, trucks, and public transportation; the different travel modes such as single-passenger automobile, carpool, and public transit; and the miles traveled using these modes.

2.2.1 Energy Supply

Petroleum

California is one of the top producers of petroleum in the nation with drilling operations occurring throughout the state but concentrated primarily in Kern and Los Angeles counties. A network of crude oil pipelines connects production areas to oil refineries in the Los Angeles area, the San Francisco Bay area, and the Central Valley. California oil refineries also process Alaskan and foreign crude oil received at ports in Los Angeles, Long Beach, and the San Francisco Bay area. Crude oil production in California and Alaska is in decline, and California refineries depend increasingly on foreign imports (CEC 2022d). According to the U.S. EIA, California's field production of crude oil totaled 134.6 million barrels in 2021 (U.S. EIA 2022b).

City of San José Petroleum Infrastructure

In general, individual users, such as residents and employees, purchase petroleum fuels. There are over 50 gasoline stations but no petroleum refineries in San José (U.S. EIA 2023, GasBuddy 2023). According to the California Department of Conservation (DOC) Division of Oil, Gas, and Geothermal Resources (DOGGR), there are no oil and gas wells in San José (DOGGR 2023).

Alternative Fuels

A variety of alternative fuels are used to reduce petroleum-based fuel demand. Their use is encouraged through various statewide regulations and plans, such as the Low Carbon Fuel Standard and Senate Bill (SB) 32. Conventional gasoline and diesel may be replaced, depending on the capability of the vehicle, with alternative fuels such as hydrogen, biodiesel, and electricity. Currently, 54 hydrogen and 35 biodiesel refueling stations are located in California. Two hydrogen refueling stations are located in San José. Dozens of vehicle charging stations exist in San José (U.S. DOE n.d.).

Electricity

In 2021, California's overall electric generation including imported energy from throughout the northwestern and southwestern United States, totaled 277,764 GWh (CEC 2022b). Primary fuel sources for the state's power mix in 2021 included the following (CEC 2022b):

- Natural gas (37.9 percent)
- Large hydroelectric (9.2 percent)
- Solar (14.2 percent)
- Nuclear (9.3 percent)
- Wind (11.4 percent)
- Geothermal (4.8 percent)
- Small hydroelectric (1.0 percent)
- Biomass (2.3 percent)
- Coal (3.0 percent)
- Petroleum coke (<1 percent)
- Waste heat (<1 percent)
- Oil (<1 percent)
- Other Unspecified (6.8 percent)

According to the 2018 Integrated Energy Policy Report, California's electric grid relies increasingly on clean sources of energy such as solar, wind, geothermal, hydroelectricity, and biomass (CEC 2018). As this transition advances, the grid is also expanding to serve new sectors including electric vehicles, rail, and space and water heating. California has installed more renewable energy than any other state in the United States with 67,461 GW of generation (CEC 2022b).

City of San José Electricity Providers

Pacific Gas & Electric Company (PG&E) transmits and delivers electricity and natural gas to residents and businesses in the City of San José. The San José City Council created San José Clean Energy (SJCE), which provides clean electricity to the city; however, residents and businesses may opt out and continue to receive electricity from PG&E.

City of San José Electric Power Infrastructure

There is one petroleum power plant, 17 natural gas power plants, two biomass plants, and three solar farms in San José (U.S. EIA 2022d). Additionally, San José is served by a number of electricity substations.

2.2.2 Energy Demand

Petroleum

State

In 2020, transportation accounted for 34 percent of California's total energy demand, amounting to approximately 2,356 trillion British thermal units (Btu) (U.S. EIA 2020). According to the CEC, California's 2020 fuel sales totaled 11.2 billion gallons of gasoline and 1.6 billion gallons of diesel (CEC 2022c).

Santa Clara County

Santa Clara County fuel sales are compared to statewide sales herein to provide regional and statewide context for fuel consumption. As shown in Table 7, Santa Clara County consumed an estimated 511 million gallons of gasoline and 35 million gallons of diesel fuel in 2020, which was approximately 4.1 percent of statewide gasoline consumption and approximately 2.0 percent of statewide diesel fuel consumption (CEC 2022c).

Table 7 2020 Annual Gasoline and Diesel Consumption

Natural Gas	Santa Clara County (gallons)	California (gallons)	Proportion of Statewide Consumption
Gasoline	511,000,000	12,572,00,00	4.1%
Diesel	35,000,000	1,744,000,000	2.0%

Source: CEC 2022c

Electricity

State

California consumed approximately 277,763 GWh in 2021. Residential electricity demand accounted for approximately 36 percent of California's electricity consumption in 2020, and non-residential demand account for approximately 64 percent (CEC 2022a).

Santa Clara County

Electricity consumption in Santa Clara County is compared to statewide consumption herein to provide regional and statewide context. As shown in Table 8, Santa Clara County consumed approximately 16,436 GWh in 2020 (CEC 2022a), which was approximately 20 percent of the combined electricity consumption by Pacific Gas & Electric (PG&E) and SVP (the two major electricity providers in Santa Clara County) and approximately six percent of statewide electricity consumption (CEC 2022a).

Table 8 2019 Electricity Consumption

Energy Type	Santa Clara County (GWh)	PG&E and SVP (GWh)	California (GWh)	Proportion of PG&E and SVP Consumption	Proportion of Statewide Consumption
Electricity	16,665	82,241	279,510	20%	6.0%

Source: CEC 2022a

2.2.3 Regulatory Setting

Federal

Energy Independence and Security Act of 2007

The Energy Independence and Security Act, enacted by Congress in 2007, is designed to improve vehicle fuel economy and help reduce the United States' dependence on foreign oil. It expands the production of renewable fuels, reducing dependence on oil, and confronting climate change. Specifically, it does the following:

- Increases the supply of alternative fuel sources by setting a mandatory Renewable Fuel Standard, requiring fuel producers to use at least 36 billion gallons of biofuel in 2022, which represents a nearly five-fold increase over 2007 levels
- Reduces U.S. demand for oil by setting a national fuel economy standard of 35 miles per gallon (mpg) by 2020 – an increase in fuel economy standards of 40 percent relative to 2007 levels

The Energy Independence and Security Act of 2007 also set energy efficiency standards for lighting (specifically light bulbs) and appliances. Development would also be required to install photosensors and energy-efficient lighting fixtures consistent with the requirements of 42 USC Section 17001 et seq.

Energy Policy and Conservation Act

Enacted in 1975, the Energy Policy and Conservation Act established fuel economy standards for new light-duty vehicles sold in the United States. The law placed responsibility on the National Highway Traffic and Safety Administration (NHTSA), a part of the United States Department of Transportation (U.S. DOT), for establishing and regularly updating vehicle standards. The United States Environmental Protection Agency (U.S. EPA) administers the Corporate Average Fuel Economy (CAFE) program, which determines vehicle manufacturers' compliance with existing fuel economy standards.

Corporate Average Fuel Economy Standards

The Corporate Average Fuel Economy (CAFE) standards are federal rules established by the NHTSA that set fuel economy and GHG emissions standards for all new passenger cars and light trucks sold in the United States. The CAFE standards generally become more stringent with time, reaching an estimated 38.3 miles per gallon for the combined industry-wide fleet for model year 2020 (77 Federal Register 62624 et seq. [October 15, 2012 Table I-1). It is, however, legally infeasible for individual municipalities to adopt more stringent fuel efficiency standards. The CAA (42 United States Code [USC] Section 7543[a]) states that "no state or any political subdivision therefore shall adopt or attempt to enforce any standard relating to the control of emissions from new motor vehicles or new motor vehicle engines subject to this part." In August 2016, the U.S. EPA and NHTSA announced the adoption of the phase two programs related to the fuel economy and GHG standards for medium- and heavy-duty trucks. The phase two program will apply to vehicles with model year 2018 through 2027 for certain trailers, and model years 2021 through 2027 for semi-trucks, large pickup trucks, vans, and all types and sizes of buses and work trucks. The final standards are expected to lower CO_2 emissions by approximately 1.1 billion MT of CO_2 and reduce oil consumption by up to two billion barrels over the lifetime of the vehicles sold under the program (NHSTA 2019).

As of September 2018, NHSTA and U.S. EPA were undergoing the rulemaking process to establish the Safer Affordable Fuel Efficient (SAFE) Vehicles Rule for Model Years 2021-2026 Passenger Cars and Light Trucks (SAFE Vehicles Rule). The SAFE Vehicles Rule would amend the existing CAFE standards such that the requirements for model years 2021 through 2026 are lowered to the 2020 standards of 43.7 miles per gallon (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 duty trucks (U.S. EPA 2018). In September 2019, the U.S. EPA and NHTSA published a final action, the SAFE Vehicles Rule Part One: One National Program, in the Federal Register. The action withdraws California's waiver for its GHG and zero-emission vehicles programs under the Clean Air Act and clarifies federal authority to preempt other state programs related to fuel economy standards. The joint action officially took effect November 26, 2019. In April 2021, the Biden administration, USEPA, and Department of Transportation began the process of dropping limitations on California's waiver. In December 2021, NHTSA issued a repealing of the SAFE Vehicle Rule Part One. In March 2022, USEPA did the same, thereby reinstating California's waiver and the ability of other states to adopt the California standards (Center for Climate and Energy Solutions [C2ES] 2022).

Construction Equipment Fuel Efficiency Standard

The U.S. EPA sets emission standards for construction equipment. The first federal standards (Tier 1) were adopted in 1994 for all off-road engines over 50 horsepower (hp) and were phased in by 2000. A new standard was adopted in 1998 that introduced Tier 1 for all equipment below 50 hp and established the Tier 2 and Tier 3 standards. The Tier 2 and Tier 3 standards were phased in by 2008 for all equipment. The current iteration of emissions standards for construction equipment are the Tier 4 efficiency requirements are contained in 40 Code of Federal Regulations Parts 1039, 1065, and 1068 (originally adopted in 69 Federal Register 38958 [June 29, 2004], and most recently updated in 2014 [79 Federal Register 46356]). Emissions requirements for new off-road Tier 4 vehicles were to be completely phased in by the end of 2015.

Energy Star Program

In 1992, the U.S. EPA introduced Energy Star as a voluntary labeling program designed to identify and promote energy-efficient products to reduce GHG emissions. The program applies to major household appliances, lighting, computers, and building components such as windows, doors, roofs, and heating and cooling systems. Under this program, appliances that meet specification for maximum energy use established under the program are certified to display the Energy Star label. In 1996, the U.S. EPA joined with the U.S. DOE to expand the program, which now also includes qualifying commercial and industrial buildings, as well as homes (Energy Star 2019).

State

California Energy Plan

The CEC is responsible for preparing the California Energy Plan, which identifies emerging trends related to energy supply, demand, conservation, public health and safety, and the maintenance of a healthy economy. The 2008 California Energy Plan calls for the state to assist in the transformation of the transportation system to improve air quality, reduce congestion, and increase the efficient use of fuel supplies with the least environmental and energy costs. To further this policy, the plan identifies several strategies, including assistance to public agencies and fleet operators in implementing incentive programs for zero-emission vehicles and addressing their infrastructure

needs, as well as encouragement of urban designs that reduce vehicle miles traveled and accommodate pedestrian and bicycle access.

Reducing California's Petroleum Dependence (Assembly Bill 2076)

Pursuant to Assembly Bill (AB) 2076 (Chapter 936, Statutes of 2000), the CEC and CARB prepared and adopted a joint-agency report, *Reducing California's Petroleum Dependence,* in 2003. Included in this report are recommendations to increase the use of alternative fuels to 20 percent of on-road transportation fuel use by 2020 and 30 percent by 2030, significantly increase the efficiency of motor vehicles, and reduce per capita vehicle miles traveled. One of the performance-based goals of AB 2076 is to reduce petroleum demand to 15 percent below 2003 demand. Furthermore, in response to the CEC's 2003 and 2005 *Integrated Energy Policy Reports*, the Governor directed the CEC to take the lead in developing a long-term plan to increase alternative fuel use.

Integrated Energy Policy Report

Senate Bill 1389 (Chapter 568, Statutes of 2002) required the CEC to conduct assessments and forecasts of all aspects of energy industry supply, production, transportation, delivery and distribution, demand, and prices. The CEC uses these assessments and forecasts to develop energy policies that conserve resources, protect the environment, ensure energy reliability, enhance the state's economy, and protect public health and safety. The most recent assessment, the *2018 Integrated Energy Policy Report*, contains two volumes. Volume I highlights the implementation of California's innovative policies and the role they have played in establishing a clean energy economy. Volume II, adopted February 20, 2019, provides more detail on several key energy policies, including decarbonizing buildings, increasing energy efficiency savings, and integrating more renewable energy into the electricity system (CEC 2018 and 2019d).

California Renewable Portfolio Standard and Senate Bill 100

Established in 2002 under SB 1078, and accelerated by SB 107 (2006), SB X 1-2 (2011), and SB 100 (2018), California's Renewable Portfolio Standard (RPS) obligates investor-owned utilities, energy service providers, and community choice aggregators to procure 33 percent total retail sales of electricity from renewable energy sources by 2020, 60 percent by 2030, and 100 percent by 2045. SB 100 also states "that it is the policy of the state that eligible renewable energy resources and zero-carbon resources supply 100 percent of retail sales of electricity to California end-use customers and 100 percent of electricity procured to serve all state agencies by December 31, 2045." The California Public Utilities Commission and the CEC are jointly responsible for implementing the program.

Pavley Standards (Assembly Bill 1493)

AB 1493 (Chapter 200, Statutes of 2002), known as the Pavley bill, amended Health and Safety Code sections 42823 and 43018.5, thereby requiring CARB to develop and adopt regulations that achieve maximum feasible and cost-effective reduction of GHG emissions from passenger vehicles, light-duty trucks, and other vehicles used for noncommercial personal transportation in California.

Implementation of new regulations prescribed by AB 1493 required that the state apply for a waiver under the federal Clean Air Act. Although the U.S. EPA initially denied the waiver in 2008, the U.S. EPA approved a waiver in June 2009, and in September 2009, CARB approved amendments to its initially adopted regulations to apply the Pavley standards that reduce GHG emissions to new

passenger vehicles in model years 2009 through 2016. According to CARB, implementation of the Pavley regulations is expected to reduce fuel consumption while also reducing GHG emissions.

Energy Action Plan

In the October 2005, the CEC and California Public Utilities Commission updated their energy policy vision by adding some important dimensions to the policy areas included in the original Energy Action Plan, such as the emerging importance of climate change, transportation-related energy issues. and research and development activities. The CEC adopted an update to the Energy Action Plan II in February 2008 that supplements the earlier energy action plans and examines the state's ongoing actions in the context of global climate change.

State Alternative Fuels Plan (Assembly Bill 1007)

AB 1007 (Chapter 371, Statutes of 2005) required the CEC to prepare a plan to increase the use of alternative fuels in California. The CEC prepared the State Alternative Fuels Plan in partnership with CARB and in consultation with other federal, state, and local agencies. The Alternative Fuels Plan presents strategies and actions California must take to increase the use of alternative non-petroleum fuels in a manner that minimizes costs to California and maximizes the economic benefits of in-state production. The Alternative Fuels Plan assessed various alternative fuels and developed fuel portfolios to meet California's goals to reduce petroleum consumption, increase alternative fuels use, reduce GHG emissions, and increase in-state production of biofuels without causing a significant degradation of public health and environmental quality.

Bioenergy Action Plan (Executive Order S-06-06)

Executive Order (EO) S-06-06 establishes targets for the use and production of biofuels and biopower and directs state agencies to work together to advance biomass programs in California while providing environmental protection and mitigation. The EO establishes the following targets to increase the production and use of bioenergy, including ethanol and biodiesel fuels made from renewable resources: produce a minimum of 20 percent of its biofuels in California by 2010, 40 percent by 2020, and 75 percent by 2050. EO S-06-06 also calls for the state to meet a target for use of biomass electricity. The 2011 Bioenergy Action Plan identifies those barriers and recommends actions to address them so that the state can meet its clean energy, waste reduction, and climate protection goals. The 2012 Bioenergy Action Plan updated the 2011 Plan and provided a more detailed action plan to achieve the following goals:

- Increase environmentally and economically sustainable energy production from organic waste
- Encourage development of diverse bioenergy technologies that increase local electricity generation, combined heat and power facilities, renewable natural gas, and renewable liquid fuels for transportation and fuel cell applications
- Create jobs and stimulate economic development, especially in rural regions of the state
- Reduce fire danger, improve air and water quality, and reduce waste

Title 24, California Code of Regulations

The California Code of Regulations (CCR), Title 24, is referred to as the California Building Code, or CBC. It consists of a compilation of several distinct standards and codes related to building construction including plumbing, electrical, interior acoustics, energy efficiency, handicap

accessibility, and so on. The CBC's energy efficiency and green building standards are outlined below.

PART 6 – BUILDING ENERGY EFFICIENCY STANDARDS/ENERGY CODE

CCR Title 24, Part 6 is the Building Energy Efficiency Standards or California Energy Code. This code, originally enacted in 1978, establishes energy-efficiency standards for residential and non-residential buildings in order to reduce California's energy demand. New construction and major renovations must demonstrate their compliance with the current Energy Code through submittal and approval of a Title 24 Compliance Report to the local building permit review authority and the California Energy Commission (CEC).

PART 11 – CALIFORNIA GREEN BUILDING STANDARDS

The California Green Building Standards Code, referred to as CALGreen, was added to Title 24 as Part 11, first in 2009 as a voluntary code, which then became mandatory effective on January 1, 2011 (as part of the 2010 California Building Standards Code). The 2022 CALGreen includes mandatory minimum environmental performance standards for all ground-up new construction of residential and non-residential structures. It also includes voluntary tiers with stricter environmental performance standards for these same categories of residential and non-residential buildings. Local jurisdictions must enforce the minimum mandatory CALGreen standards and may adopt additional amendments for stricter requirements.

The mandatory standards applicable to energy require:

- Minimum 20 percent reduction in indoor water use relative to specified baseline levels;2
- Waste Reduction:
  - Minimum 65 percent non-hazardous construction/demolition waste diverted from landfills;
  - Non-residential and Multifamily dwellings with 5 or more units shall provide readily accessible areas identified for the depositing, storage and collection of nonhazardous materials for recycling including (at a minimum) paper, corrugated cardboard, glass, plastic, organic waste, and metals;
  - Nonresidential: 100 percent of trees, stumps, rocks and associated vegetation soils resulting from primary land clearing shall be reused or recycled.
- Inspections of energy systems to ensure optimal working efficiency;
- Low-pollutant emitting exterior and interior finish materials such as paints, carpets, vinyl flooring, and particleboards; and
- Electric Vehicle (EV) Charging for New Construction[3]:
  - One- and two-family dwellings and town-houses with attached private garages: Dedicated circuitry to facilitate installation of electric vehicle (EV) charging ;

[2] Similar to the compliance reporting procedure for demonstrating Energy Code compliance in new buildings and major renovations, compliance with the CALGreen water reduction requirements must be demonstrated through completion of water use reporting forms. Buildings must demonstrate a 20 percent reduction in indoor water use by either showing a 20 percent reduction in the overall baseline water use as identified in CALGreen or a reduced per-plumbing-fixture water use rate.

[3] EV Capable = a vehicle space with electrical panel space and load capacity to support a branch circuit and necessary raceways to support EV charging. EV Ready = a vehicle space which is provided with a branch circuit and any necessary raceways to accommodate EV charging stations including a receptacle for future installation of a charger. See 2022 California Green Building Standard Code, Title 24 Part 11 for full explanation of mandatory measures including exceptions.

- Multifamily dwellings, hotels/motels with less than 20 units/rooms: Designation of at least 10 percent of the total number of parking spaces shall be EV capable and at least 25 percent of the total number of parking spaces shall be EV Ready.
- Multifamily dwellings, hotels/motels with greater than 20 units/rooms: Designation of at least 10 percent of the total number of parking spaces shall be EV capable, at least 25 percent of the total number of parking spaces shall be EV Ready, and at least 5 percent of the total number of parking spaces shall be equipped with a Level 2 Charging Station.
- Non-residential land uses shall comply with the following EV charging requirements based on the number of passenger vehicle parking spaces:
  - 0-9: no EV capable spaces or charging stations required;
  - 10 – 25: 4 EV capable spaces but no charging stations required;
  - 26 – 50: 8 EV capable spaces of which 2 must be equipped with charging stations;
  - 51 – 75: 13 EV capable spaces of which 3 must be equipped with charging stations;
  - 76 – 100: 17 EV capable spaces of which 4 must be equipped with charging stations;
  - 101 – 150: 25 EV capable spaces of which 6 must be equipped with charging stations;
  - 151 – 200: 35 EV capable spaces of which 9 must be equipped with charging stations;
  - >200: 20 percent of the total available parking spaces of which 25 percent must be equipped with charging stations;
- Non-residential land uses shall comply with the following EV charging requirements for medium-duty and heavy-duty vehicles: Warehouses, grocery stores, and retail stores with planned off-street loading spaces shall install EV supply and distribution equipment, spare raceway(s) or busway(s) and adequate capacity for transformer(s), service panel(s), or subpanel(s) at the time of construction based on the number of off-street loading spaces as indicated in Table 5.106.5.4.1 of the California Green Building Standards

- Bicycle Parking:
  - Non-residential short term bicycle parking for projects anticipated to generate visitor traffic: permanently anchored bicycle racks within 200 feet of visitor entrance for 5 percent of new visitor motorized vehicle parking spaces with a minimum of one two-bike capacity rack.
  - Non-residential buildings with tenant spaces of 10 or more employees/tenant-occupants: Secure bicycle parking for 5 percent of the employee/tenant-occupant vehicle parking spaces with a minimum of one bicycle parking facility.
- Shade Trees (Non-Residential):
  - Surface parking: Minimum No.10 container size or equal shall be installed to provide shade over 50 percent of the parking within 15 years (unless parking area covered by appropriate shade structures and/or solar);
  - Landscape areas: Minimum No. 10 container size or equal shall be installed to provide shade of 20 percent of the landscape area within 15 years;
  - Hardscape areas: Minimum No. 10 container size or equal shall be installed to provide shade of 20 percent of the landscape area within 15 years (unless covered by applicable shade structures and/or solar or the marked area is for organized sports activities);

The voluntary standards:

- Deconstruct existing buildings and reuse applicable salvaged materials;

- Residential- Cool Roofs: Have a thermal mass over the roof membrane including green roofs weighing a minimum of 25 pounds per square foot or roof areas covered by solar photovoltaic panels and building integrated solar thermal panels.
- Residential – Reduce nonroof heat island for 50 percent of sidewalks, patios, driveways or other paved areas.
- One and two-family dwelling units and townhouses with attached garages: Install a dedicated 208/250-vold branch circuit for EV charging.
- Residential Bicycle Parking:
  - Multifamily/hotel/motel short-term parking: Provide permanently anchored bicycle racks within 100 feet of visitor's entrance for 5 percent of visitor motorized vehicle parking capacity (minimum 1 two-bile capacity rack);
  - Multifamily buildings long-term parking: Provide acceptable on-site bicycle parking for at least one bicycle per every two dwelling units;
  - Hotel/Motel long-term parking: Provide one acceptable on-site bicycle parking space for every 25,000 square feet but not less than two spaces;
- Tier I:
  - Stricter energy efficiency requirements;
  - Stricter water conservation requirements for specific fixtures;
  - minimum 65 percent reduction in construction waste with third-party verification, Minimum 10 percent recycled content for building materials;
  - Minimum 20 percent permeable paving;
  - Minimum 20 percent cement reduction;
  - Multifamily developments/hotels/motels: Minimum 35 percent of total parking spaces shall be EV ready and for projects with 20 or more dwelling units/rooms a minimum of 10 percent of the total number of parking spaces shall be equipped with EV charging stations;
- Tier II:
  - Stricter energy efficiency requirements,
  - Stricter water conservation requirements for specific fixtures;
  - Minimum 75 percent reduction in construction waste with third-party verification,
  - Minimum 15 percent recycled content for building materials;
  - Minimum 30 percent permeable paving;
  - Minimum 25 percent cement reduction;
  - Multifamily developments/hotels/motels: Minimum 40 percent of total parking spaces shall be EV ready and for projects with 20 or more dwelling units/rooms a minimum of 15 percent of the total number of parking spaces shall be equipped with EV charging stations.

Local

Envision San José 2040 General Plan

The Envision San José 2040 General Plan outlines goals and policies to guide planning and development practices within the City. Several Subsections within the General Plan outline the City's energy goals and policies as they pertain to the sustainable utilization of energy resources within the City. Those included (below) are applicable to the project (City of San José 2011a).

Policy MS-1.2: Continually increase the number and proportion of buildings within San José that make use of green building practices by incorporating those practices into both new construction and retrofit of existing structures.

Goal MS-2: Energy Conservation and Renewable Energy Use. Maximize the use of green building practices in new and existing development to maximize energy efficiency and conservation and to maximize the use of renewable energy sources.

Policy MS-2.2: Encourage maximized use of on-site generation of renewable energy for all new and existing buildings.

Policy MS-2.3: Utilize solar orientation (i.e., building placement), landscaping, design, and construction techniques for new construction to minimize energy consumption.

Policy MS-2.4: Promote energy efficient construction industry practices.

Policy MS-2.11: Require new development to incorporate green building practices, including those required by the Green Building Ordinance. Specifically, target reduced energy use through construction techniques (e.g., design of building envelopes and systems to maximize energy performance), through architectural design (e.g., design to maximize cross ventilation and interior daylight) and through site design techniques (e.g., orienting buildings on sites to maximize the effectiveness of passive solar design).

Policy MS-3.2: Promote use of green building technology or techniques that can help reduce the depletion of the City's potable water supply, as building codes permit. For example, promote the use of captured rainwater, graywater, or recycled water as the preferred source for non-potable water needs such as irrigation and building cooling, consistent with Building Codes or other regulations.

Policy MS-3.3: Promote the use of drought tolerant plants and landscaping materials for nonresidential and residential uses.

Goal MS-14: Reduce Consumption and Increase Efficiency. Reduce per capita energy consumption by at least 50% compared to 2008 levels by 2022 and maintain or reduce net aggregate energy consumption levels equivalent to the 2022 (Green Vision) level through 2040.

Policy MS-14.3: Consistent with the California Public Utilities Commission's California Long Term Energy Efficiency Strategic Plan, as revised, and when technological advances make it feasible, require all new residential and commercial construction to be designed for zero net energy use.

Policy MS-14.4: Implement the City's Green Building Policies (see Green Building Section) so that new construction and rehabilitation of existing buildings fully implements industry best practices, including the use of optimized energy systems, selection of materials and resources, water efficiency, sustainable site selection, passive solar building design, and planting of trees and other landscape materials to reduce energy consumption.

Policy MS-15.5: Showcase and apply innovative technologies within San José, including developments that achieve maximum energy efficiency or net zero energy, and renewable energy systems that generate energy equal to or greater than that consumed on site.

Policy CD-5.6: Design lighting locations and levels to enhance the public realm, promote safety and comfort, and create engaging public spaces. Seek to balance minimum energy use of outdoor lighting with goal of providing safe and pleasing well-lit spaces. Consider the City's outdoor lighting policies in development review processes.

Climate Smart San José

Climate Smart San José is a plan to reduce air pollution, save water, and create a stronger and healthier community while continuing to foster the City's projected growth (City of San José 2018). The City adopted the Climate Smart San José, the City's Climate Action Plan, in 2018. The plan includes three "pillars" or goals:

Create a sustainable and climate smart city by:

- Transitioning to renewable energy
- Embracing the Californian climate

Create a vibrant city of connected and focused growth by:

- Densifying the City to accommodate growth
- Making homes more efficient and affordable for families
- Creating clean, personalized mobility choices
- Developing integrated, accessible public transportation infrastructure

Create an economically inclusive city of opportunity by:

- Creating local jobs to reduce VMT
- Improving commercial building stock
- Making commercial goods movement clean and efficient

City of San José Municipal Code

The City's Municipal Code includes the following regulations designed to reduce energy impacts from future development:

- Green Building Ordinance (Chapter 17.84)
- Prohibition of Natural Gas Infrastructure in Newly Constructed Buildings (Chapter 17.845)
- Water Efficient Landscape Standards for New and Rehabilitated Landscaping (Chapter 15.10)
- Construction and Demolition Diversion Deposit Program (Chapter 9.10)
- Wood Burning Ordinance (Chapter 9.10)

City of San José Private Sector Green Building Policy (6-32)

In October 2008, the City adopted the Private Sector Green Building Policy (6-32) that establishes baseline green building standards for private sector new construction and provides a framework for the implementation of these standards. This policy requires that applicable projects achieve minimum green building performance levels using the Council adopted standards. The green building standards required by this policy are intended to advance GHG reduction by reducing per capita energy use, providing energy from renewable sources, diverting waste from landfills, using less water, and encouraging the use of recycled wastewater.

3 Impact Analysis

3.1 Methodology

Energy consumption is analyzed herein in terms of construction and operational energy use. Construction energy demand accounts for anticipated energy consumption during project construction, such as fuel consumed by construction equipment and construction workers' vehicles traveling to and from the project site. Operational energy demand accounts for the anticipated energy consumption during project operation, such as electricity consumed for operation of residential buildings including, but not limited to lighting, water conveyance, and air conditioning, as well as fuel consumed by passenger vehicles.

Construction

Construction-related energy demand was estimated using the California Emissions Estimator Model (CalEEMod) version 2022.1.1.5 based on project data provided by the applicant, locally-appropriate industry-standard assumptions, and CalEEMod default values for projects in Santa Clara County. Modeling was completed as part of the Air Quality and Greenhouse Gas Study prepared for the project by Rincon in February 2023 (Rincon 2023). See Appendix A for energy calculation sheet.

Project construction would also use building materials that contain embodied energy (i.e., energy used during the manufacturing and/or procurement of that material); however, as Section 15126.2(b) of the *CEQA Guidelines* states, "This [energy] analysis is subject to the rule of reason and shall focus on energy use that is caused by the project." In addition, it is reasonable to assume that manufacturers of building materials such as concrete, steel, and lumber would employ energy conservation practices in the interest of minimizing the cost of doing business. It also is reasonable to assume that non-custom building materials, such as drywall and standard-shaped structural elements, would have been manufactured regardless of the proposed project and, if not used for the project, would be used in a different project. Therefore, energy consumption required for the manufacturing and/or procurement of each building and construction material is not considered within the scope of this analysis.

Operation

Operational energy demand was estimated primarily based on project land use, including the anticipated maximum load, equipment specifications, and number of residents. Energy demand for the treatment and transport of water and wastewater was calculated using the estimated water demand from the CalEEMod output files contained in the Air Quality and Greenhouse Gas Study (Rincon 2023).

Electricity used to treat and convey water and wastewater for the proposed project was calculated in accordance with the methodology used for the air pollutant and GHG emission modeling in CalEEMod (California Air Pollution Control Officers Association [CAPCOA] 2021). The estimated amount of water consumed annually by the proposed project was multiplied by the number of pounds in one gallon of water (8.34 pounds = 1 gallon of water) to determine the total annual amount of Btu consumed for water and wastewater treatment. Btu is the amount of energy that is required to raise the temperature of one pound of water by 1 degree Fahrenheit. It is conservatively assumed that all water consumed would be discharged to the wastewater treatment system.

Fuel consumption by vehicle trips to and from the project site was estimated using the vehicle miles traveled and vehicle fleet mix provided in the CalEEMod output files contained in the Air Quality and Greenhouse Gas Study (Rincon 2023). See Appendix A for energy calculation sheet.

3.2 Significance Thresholds

To determine whether a project would have a significant energy impact, Appendix G to the *CEQA Guidelines* requires consideration of whether a project would:

1. Result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation; or
2. Conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

Wasteful, Inefficient, and Unnecessary Consumption of Energy

There are no formally adopted criteria signifying the relative efficiency of a project during its construction phase. Therefore, this analysis takes into consideration the equipment and processes employed during project construction to qualitatively determine whether energy consumed during construction would be wasteful, inefficient, or unnecessary.

The analysis of operational energy demand uses both quantitative and qualitative approaches to determine whether energy consumed during operation would be wasteful, inefficient, or unnecessary.

Furthermore, the analysis qualitatively considers the potential for inefficient, wasteful, or unnecessary energy consumption by the treatment and conveyance of water and wastewater and vehicle trips associated with project operation.

Consistency with Renewable Energy and Energy Efficiency Plans

The project's consistency with state and local plans for renewable energy and energy efficiency is evaluated qualitatively. A project is considered consistent with the provisions of these documents if it meets the general intent in advancing energy efficiency and increasing renewable energy in order to facilitate the achievement of City- and state-adopted goals and does not impede attainment of those goals. A given project need not be in perfect conformity with each and every planning policy or goals to be consistent. A project would be consistent if it would further the objectives and not obstruct their attainment. The following plans for renewable energy and energy efficiency would be applicable to the proposed project:

- Senate Bill (SB) 100, which mandates 100 percent renewable energy for California by 2045.
- Title 24 California Code of Regulations, which contains the state's Building Energy Efficiency Standards and CALGreen requirements.
- San José 2040 General Plan, which includes goals and policies relevant to maximizing the use of renewable resources and implementing energy conservation measures.
- Climate Smart San José, a Climate Action Plan which includes pillars and strategies related to renewable energy and energy efficiency.

3.3 Impact Analysis

Issue 1: Would the proposed project result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

Construction

Project construction would require energy resources primarily in the form of fuel consumption to operate heavy equipment, light-duty vehicles, machinery, and generators. Temporary power may also be provided for construction trailers and electric construction equipment.

Energy use during construction would be temporary in nature for each individual project developed, and construction equipment used would be typical of similar-sized construction projects in the region. In addition, construction contractors would be required to comply with the provisions of California Code of Regulations Title 13 Sections 2449 and 2485, which prohibit diesel-fueled commercial motor vehicles and off-road diesel vehicles from idling for more than five minutes and would minimize unnecessary fuel consumption. Construction equipment would be subject to the U.S. EPA Construction Equipment Fuel Efficiency Standard (i.e., Tier 4 efficiency requirements, discussed in detail in Section 2.3), which would also minimize inefficient, wasteful, or unnecessary fuel consumption.

Electrical power would be consumed to construct the project, and the demand, to the extent required, would be supplied from existing electrical infrastructure in the area. Construction activities would require minimal electricity consumption and would not be expected to have any adverse impact on available electricity supplies or infrastructure. In addition, per applicable regulatory requirements such as the CALGreen standards, the project would comply with construction waste management practices to divert a minimum of 65 percent of construction and demolition debris. These practices would result in efficient use of energy necessary to construct the project. Furthermore, in the interest of cost-efficiency, construction contractors would not utilize fuel in a manner that is wasteful or unnecessary, such as scheduling unnecessary deliveries of materials or operating diesel-fueled equipment while not in use. Therefore, project construction would not result in potentially significant environmental effects due to the wasteful, inefficient, or unnecessary consumption of energy, and construction impacts would be less than significant.

Operation

Energy demand from project operation would include electricity consumed by residents and building operations as well as gasoline fuel consumed by passenger vehicles of residents. Energy consumption is analyzed by fuel type in the following subsections.

Electricity Consumption

The project would reallocate 3,095 residential units from the North San José and Rincon Urban Village growth area to other urban villages and growth areas The electricity consumption of the proposed project is assumed to be similar to regional residential land uses. The energy consumption of 3,095 residential units was quantified; the project is estimated to consume 18,544 MWh of electricity annually. This estimate of electricity usage includes, but is not limited to, electricity to power indoor appliances, lighting, water conveyance, and air conditioning. Table 9 summarizes estimated annual operational electricity consumption for the proposed project.

Table 9 Estimated Project Annual Operational Electrical Consumption

	Energy Consumption[1]	
Electricity	GWh	MMBtu
Proposed	18.54	63,261

MMBtu = million metric British thermal units; GWh = gigawatt-hours

[1] Energy consumption is converted to MMBtu

Numbers may not add up due to rounding.

See Appendix B for CalEEMod output results for electricity usage.

Electricity would be provided by PG&E or San José Clean Energy (SJCE). PG&E and has a renewable energy procurement portfolio of 48 percent for non-residential land uses, which would reduce the amount of nonrenewable fuels consumed to supply electricity development facilitated by the project (PG&E 2022). SJCE provides electricity using an approximately 60% renewable energy mix with an upgrade option to 100% renewable energy called TotalGreen for a nominal fee (SJCE 2023). Development facilitated by the project would comply with the 2022 California Building Energy Efficiency Standards for Residential Buildings and CALGreen (CCR Title 24, Parts 6 and 11) or later versions. The standards require the provision of electric vehicle charging equipment, recycling services, solar-ready development, and other energy efficiency measures that would reduce the potential for the inefficient use of energy.

Day-to-day project operation would consume electricity to treat and transport water and wastewater to and from the project site. The primary source of water consumption associated with the project are residential uses. According to the CalEEMod output files and project-specific water consumption detailed in the Air Quality and Greenhouse Gas Study (Rincon 2023), the project would require approximately 112 million gallons of water per year, which would consume approximately 275[4] MWh per year for treatment and transport to and from the project site. The proposed project would incorporate higher-efficiency plumbing fixtures in accordance with the latest Title 24 requirements, which would reduce the potential the inefficient or wasteful consumption of energy related to water and wastewater.

In addition, the project would encourage the development of modern residential buildings, which would consume less energy in the forms of electricity than existing, older buildings in the area. Given the aforementioned, project operations would not result in the wasteful, inefficient, or unnecessary consumption of electricity. Operation-related energy impacts from electricity consumption in the buildings themselves would be less than significant.

Natural Gas Consumption

Natural gas would not be used in buildout facilitated the project pursuant to Section 17.845.030 of the San José Municipal Code prohibiting installation of new natural gas infrastructure in newly constructed buildings. As such, project operations would not result in the wasteful, inefficient, or unnecessary consumption of natural gas. There would be no impact from natural gas consumption to operation-related energy impacts.

Gasoline and Diesel Fuel Consumption

Project operation would result in the consumption of gasoline and diesel fuels by residents' vehicle trips and diesel delivery trucks. Based on anticipated vehicle miles traveled and the anticipated fleet

[4] 112,244,508 gallons of water multiply by 8.33 pounds (Btu)/gallon water, divided by 3,400 Btu/1,000 MWh

mix in the CalEEMod output, operational vehicle trips would consume approximately 1,413,578 gallons of gasoline per year and approximately 225,003 gallons of diesel fuel annually (see Appendix A for energy calculation sheet). This analysis does not account for factors that would facilitate use of active or public transportation. Therefore, fuel consumption by passenger vehicle trips would not be wasteful, inefficient, or unnecessary.

Table 10 Estimated Project Annual Operational Fuel Consumption

	Energy Consumption[1]	
Transportation	**Gasoline (gallons)**	**Diesel (gallons)**
Proposed	1,413,578	225,003

See Appendix A for Energy Calculations and Rincon 2023 for CalEEMod output.

Overall Operational Energy Usage

As discussed in the preceding subsections, project operation would consume electricity as well as gasoline and diesel fuels. However, because of project design features that would maximize energy efficiency and conservation, and because of City regulations prohibiting the installation of natural gas infrastructure in new residences, overall project operation would not result in the wasteful, inefficient, or unnecessary consumption of energy resources. Therefore, operational energy impacts would be less than significant.

Issue 2:	Would the proposed project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

State Plans

As mentioned above, SB 100 mandates 100 percent clean electricity for California by 2045. Because development facilitated by the proposed project would be powered by the existing electricity grid, the project would eventually be powered by renewable energy mandated by SB 100 and would not conflict with this statewide plan. Furthermore, the project would comply with all applicable Title 24 requirements pertaining to energy efficiency and renewable energy. In addition, the San José Municipal Code already prohibits installation of new natural gas infrastructure in newly constructed buildings. As such, the project would not conflict with or obstruct implementation of state plans for renewable energy or energy efficiency.

Local Plans

As discussed in Section 2.3, the City's General Plan and Climate Action Plan include several goals and policies related to renewable energy and energy efficiency. The project's consistency with these goals and policies is evaluated in Table 11. As shown therein, the proposed project would be consistent with renewable energy and energy efficiency plans. Therefore, potential impacts associated with renewable energy and energy efficiency would be less than significant.

Table 11 Project Consistency with Plans for Renewable Energy and Energy Efficiency

Energy Efficiency Goal or Policy	Project Consistency
San José General Plan	
▪ **Policy MS-1.2.** Continually increase the number and proportion of buildings within San José that make use of green building practices by incorporating those practices into both new construction and retrofit of existing structures.	**Consistent.** The proposed project would be required to meet Title 24 standards, thereby increasing the energy conservation achieved by building design.
Goal MS-2: Energy Conservation and Renewable Energy Use. Maximize the use of green building practices in new and existing development to maximize energy efficiency and conservation and to maximize the use of renewable energy sources. ▪ **Policy MS-2.2:** Encourage maximized use of on-site generation of renewable energy for all new and existing buildings. ▪ **Policy MS-2.3:** Utilize solar orientation (i.e. building placement), landscaping, design, and construction techniques for new construction to minimize energy consumption. ▪ **Policy MS-2.4:** Promote energy efficient construction industry practices. ▪ **Policy MS-2.11:** Require new development to incorporate green building practices, including those required by the Green Building Ordinance. Specifically, target reduced energy use through construction techniques (e.g., design of building envelopes and systems to maximize energy performance), through architectural design (e.g., design to maximize cross ventilation and interior daylight) and through site design techniques (e.g. orienting buildings on sites to maximize the effectiveness of passive solar design). ▪ **Policy MS-3.2:** Promote use of green building technology or techniques that can help reduce the depletion of the City's potable water supply, as building codes permit. For example, promote the use of captured rainwater, graywater, or recycled water as the preferred source for non-potable water needs such as irrigation and building cooling, consistent with Building Codes or other regulations. ▪ **Policy MS-3.3:** Promote the use of drought tolerant plants and landscaping materials for nonresidential and residential uses.	**Consistent.** Future development would be required to comply with the most recent iteration of Title 24, and incorporate the most updated rooftop solar requirements at the time of construction. Future development would also be required to comply with Section 17.845.030 of the SJMC, which requires all-electric construction for newly constructed buildings. Electricity for future development would be supplied by SJCE or PG&E, which are required to generate electricity that would increase renewable energy resources to 60 percent by 2030 and 100 percent by 2045. As the City's main electricity provider, SJCE enrolls new customers in their GreenSource program, which consists of 60 percent renewable energy and up to 95 percent carbon-free power. Customers have the option to upgrade to SJCE's TotalGreen program, which consists of 100 percent renewable energy (SJCE 2023).
Goal MS-14. Reduce Consumption and Increase Efficiency. Reduce per capita energy consumption by at least 50% compared to 2008 levels by 2022 and maintain or reduce net aggregate energy consumption levels equivalent to the 2022 (Green Vision) level through 2040. ▪ **Policy MS-14.3.** Consistent with the California Public Utilities Commission's California Long Term Energy Efficiency Strategic Plan, as revised, and when technological advances make it feasible, require all new residential and commercial construction to be designed for zero net energy use.	**Consistent.** The proposed building would be required to meet Title 24 standards, increasing the energy conservation achieved by building design. Therefore, the project would be consistent with Goal MS-14 and Policies MS-14.3, 14.4, and CD-5.6.

Energy Efficiency Goal or Policy	Project Consistency
▪ **Policy MS-14.4.** Implement the City's Green Building Policies so that new construction and rehabilitation of existing buildings fully implements industry best practices, including the use of optimized energy systems, selection of materials and resources, water efficiency, sustainable site selection, passive solar building design, and planting of trees and other landscape materials to reduce energy consumption. ▪ **Policy CD-5.6.** Design lighting locations and levels to enhance the public realm, promote safety and comfort, and create engaging public spaces. Seek to balance minimum energy use of outdoor lighting with goal of providing safe and pleasing well-lit spaces. Consider the City's outdoor lighting policies in development review processes.	
San José Climate Smart Plan Strategies	
▪ **Strategy 1.1.** Transition to a renewable energy future.	**Consistent.** New buildings facilitated by the proposed project would be consistent with Title 24 standards and would be required to comply with Section 17.845.030 of the SJMC, which requires all-electric construction for newly constructed buildings. Electricity for future development would be supplied by SJCE or PG&E, which are required to generate electricity that would increase renewable energy resources to 60 percent by 2030 and 100 percent by 2045.
▪ **Strategy 2.1**: Densify our city to accommodate our future neighbors. ▪ **Strategy 2.2**: Make homes efficient & affordable for our residents. ▪ **Strategy 2.3**: Create clean, personalized mobility choices. ▪ **Strategy 2.4**: Develop integrated, accessible public transport infrastructure	**Consistent.** The proposed project would redistribute residential units from the North San José and Rincon Urban Village growth area to other urban villages and growth areas as well as expand TERO areas within the North San José and Rincon Urban Village growth area which would encourage denser and an increased number of multi-family housing units in proximity to transit such as the Berryessa/North San José BART Station, the Caltrain Diridon Station, the Santa Clara Transit Center, the Eastridge Transit Center, and bus stops. By allowing for the easier use of alternative modes of transportation through proximity to services, jobs, bus stops, BART and Caltrain stations, and bicycle routes, development facilitated by the project would promote bicycling and walking instead of using single-occupancy vehicles.

Sources: City of San José 2011 and 2018

As shown in Table 11, the project would be consistent with the General Plan Policies and the Climate Smart San José plan. Therefore, energy impacts would be less than significant.

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Appendix A

Project Assumptions and Calculations

City of San Jose 2023-2031 HE Update Energy Study

Operational Fuel Consumption

Last Updated: 2/21/2023

Populate one of the following tables (Leave the other blank):

Annual VMT	OR	Daily Vehicle Trips
Annual VMT: 32,239,685		Daily Vehicle Trips:
		Average Trip Distance:

Fleet Class	Fleet Mix
Light Duty Auto (LDA)	0.551902
Light Duty Truck 1 (LDT1)	0.058132
Light Duty Truck 2 (LDT2)	0.189202
Medium Duty Vehicle (MDV)	0.121798
Light Heavy Duty 1 (LHD1)	0.023507
Light Heavy Duty 2 (LHD2)	0.005520
Medium Heavy Duty (MHD)	0.010395
Heavy Heavy Duty (HHD)	0.007494
Other Bus (OBUS)	0.001030
Urban Bus (UBUS)	0.000592
Motorcycle (MCY)	0.026623
School Bus (SBUS)	0.000817
Motorhome (MH)	0.002988

Fuel Economy (MPG) [1]	
Passenger Vehicles	24.4
Light-Med Duty Trucks	17.9
Heavy Trucks/Other	7.5
Motorcycles	44

Fleet Mix

Vehicle Type	Percent	Fuel Type	Annual VMT: VMT	Vehicle Trips: VMT	Fuel Consumption (Gallons)
Passenger Vehicles	*55.19%*	*Gasoline*	17793147	0.00	729227.32
Light-Medium Duty Trucks	*36.91%*	*Gasoline*	11900699	0.00	664843.54
Heavy Trucks/Other	*5.23%*	*Diesel*	1687522	0.00	225002.91
Motorcycle	*2.66%*	*Gasoline*	858317	0.00	19507.21

Total Gasoline Consumption (gallons)	**1413578.07**
Total Diesel Consumption (gallons)	**225002.91**

Sources:

[1] United States Department of Transportation, Bureau of Transportation Statistics. 2019. National Transportation Statistics 2019. Available at: https://www.bts.gov/topics/national-transportation-statistics.