

# ***550 EAST BROKAW ROAD AIR QUALITY AND GREENHOUSE GAS EMISSION ASSESSMENT***

***San José, California***

**November 9, 2020  
Revised August 10, 2021**

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## **INTRODUCTION**

The purpose of this report is to address air quality impacts and greenhouse gas (GHG) emissions associated with the proposed office development at 550 East Brokaw Road in San José, California. The air quality impacts from this project would be associated with the demolition of the existing land uses, construction of the new buildings and infrastructure, and operation of the project. Air pollutants and GHG emissions associated with construction and operation of the project were predicted using models. In addition, the potential project health risk impacts (includes construction and operation) from the project were addressed qualitatively since sensitive receptors are located over 1,000 feet away from the project site. The analysis was conducted following guidance provided by the Bay Area Air Quality Management District (BAAQMD).<sup>1</sup>

## **PROJECT DESCRIPTION**

The 19.7-acre project site is located at 550 East Brokaw Road (APN: 237-08-079) in the North San José Development Policy (NSJDP) area. The project site is bounded by East Brokaw Road to the northwest, Junction Avenue to the southwest, and by Interstate 880 (I-880) to the east.

The project site is currently occupied by a Fry's Electronics store (approximately 293,906 square feet) and a surface parking lot. Surrounding uses are predominantly commercial and industrial.

The project would demolish the existing Fry's Electronics building and surface parking lot, and construct seven new eight-story office towers in a campus design. The office towers would consist of approximately 1,924,110 square feet of office space.

The office campus layout would consist of one standalone tower ("Tower 2") and three pairs of towers joined at the podium level (Towers 1a and 1b as "Tower 1," Towers 3a and 3b as "Tower 3," and Towers 4a and 4b as "Tower 4"). The first two floors, and portions of floors three through eight, would be dedicated to these commercial and amenity spaces. Tower construction would also include an outdoor terrace on the seventh floor of each tower. The towers would be configured around a central pedestrian network to encourage campus connectivity.

The project would also include approximately 1,647,920 square feet of structured parking consisting of 5,386 parking spaces divided between one nine-story garage ("Garage 1") and one 10-story garage ("Garage 2"). The project would also provide 29 surface parking stalls in the southeast corner of the project site, for a total of 5,415 parking spaces.

Construction of the project would occur over four phases.

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<sup>1</sup> Bay Area Air Quality Management District, *CEQA Air Quality Guidelines*, May 2017.

## **AIR POLLUTANTS OF CONCERN**

High ozone (O<sub>3</sub>) levels are caused by the cumulative emissions of reactive organic gases (ROG) and nitrogen oxides (NO<sub>x</sub>). These precursor pollutants react under certain meteorological conditions to form high O<sub>3</sub> levels. Controlling the emissions of these precursor pollutants is the focus of the Bay Area's attempts to reduce O<sub>3</sub> levels. The highest O<sub>3</sub> levels in the Bay Area occur in the eastern and southern inland valleys that are downwind of air pollutant sources. High O<sub>3</sub> levels aggravate respiratory and cardiovascular diseases, reduced lung function, and increase coughing and chest discomfort.

Particulate matter is another problematic air pollutant of the Bay Area. Particulate matter is assessed and measured in terms of respirable particulate matter or particles that have a diameter of 10 micrometers or less (PM<sub>10</sub>) and fine particulate matter where particles have a diameter of 2.5 micrometers or less (PM<sub>2.5</sub>). Elevated concentrations of PM<sub>10</sub> and PM<sub>2.5</sub> are the result of both region-wide (or cumulative) emissions and localized emissions. High particulate matter levels aggravate respiratory and cardiovascular diseases, reduce lung function, increase mortality (e.g., lung cancer), and result in reduced lung function growth in children.

## **TOXIC AIR CONTAMINANTS**

Toxic Air Contaminants (TACs) are a broad class of compounds known to cause morbidity or mortality (usually because they cause cancer) and include, but are not limited to, the criteria air pollutants. TACs are found in ambient air, especially in urban areas, and are caused by industry, agriculture, fuel combustion, and commercial operations (e.g., dry cleaners). TACs are typically found in low concentrations, even near their source (e.g., diesel particulate matter [DPM] near a freeway). Because chronic exposure can result in adverse health effects, TACs are regulated at the regional, State, and federal level.

Diesel exhaust is the predominant TAC in urban air and is estimated to represent about three-quarters of the cancer risk from TACs (based on the Bay Area average). According to the California Air Resources Board (CARB), diesel exhaust is a complex mixture of gases, vapors, and fine particles. This complexity makes the evaluation of health effects of diesel exhaust a complex scientific issue. Some of the chemicals in diesel exhaust, such as benzene and formaldehyde, have been previously identified as TACs by the CARB, and are listed as carcinogens either under the State's Proposition 65 or under the Federal Hazardous Air Pollutants programs.

## **REGULATORY SETTING**

### Federal Regulations

The United States Environmental Protection Agency (EPA) sets nationwide emission standards for mobile sources, which include on-road (highway) motor vehicles such trucks, buses, and automobiles, and non-road (off-road) vehicles and equipment used in construction, agricultural, industrial, and mining activities (such as bulldozers and loaders). The EPA also sets nationwide

fuel standards. California also has the ability to set motor vehicle emission standards and standards for fuel used in California, as long as they are the same or more stringent than the federal standards.

In the past decade the EPA has established a number of emission standards for on- and non-road heavy-duty diesel engines used in trucks and other equipment. This was done in part because diesel engines are a significant source of NO<sub>x</sub> and particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>) and because the EPA has identified DPM as a probable carcinogen. Implementation of the heavy-duty diesel on-road vehicle standards and the non-road diesel engine standards are estimated to reduce particulate matter and NO<sub>x</sub> emissions from diesel engines up to 95 percent in 2030 when the heavy-duty vehicle fleet is completely replaced with newer heavy-duty vehicles that comply with these emission standards.<sup>2</sup>

In concert with the diesel engine emission standards, the EPA has also substantially reduced the amount of sulfur allowed in diesel fuels. The sulfur contained in diesel fuel is a significant contributor to the formation of particulate matter in diesel-fueled engine exhaust. The new standards reduced the amount of sulfur allowed by 97 percent for highway diesel fuel (from 500 parts per million by weight [ppmw] to 15 ppmw), and by 99 percent for off-highway diesel fuel (from about 3,000 ppmw to 15 ppmw). The low sulfur highway fuel (15 ppmw sulfur), also called ultra-low sulfur diesel (ULSD), is currently required for use by all vehicles in the U.S.

All of the above federal diesel engine and diesel fuel requirements have been adopted by California, in some cases with modifications making the requirements more stringent or the implementation dates sooner.

### State Regulations

To address the issue of diesel emissions in the state, CARB developed the Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles.<sup>3</sup> In addition to requiring more stringent emission standards for new on-road and off-road mobile sources and stationary diesel-fueled engines to reduce particulate matter emissions by 90 percent, a significant component of the plan involves application of emission control strategies to existing diesel vehicles and equipment. Many of the measures of the Diesel Risk Reduction Plan have been approved and adopted, including the federal on-road and non-road diesel engine emission standards for new engines, as well as adoption of regulations for low sulfur fuel in California.

CARB has adopted and implemented a number of regulations for stationary and mobile sources to reduce emissions of DPM. Several of these regulatory programs affect medium and heavy-duty diesel trucks that represent the bulk of DPM emissions from California highways. CARB regulations require on-road diesel trucks to be retrofitted with particulate matter controls or replaced to meet 2010 or later engine standards that have much lower DPM and PM<sub>2.5</sub> emissions. This regulation will substantially reduce these emissions between 2013 and 2023. While new trucks and buses will meet strict federal standards, this measure is intended to accelerate the rate

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<sup>2</sup> USEPA, 2000. *Regulatory Announcement, Heavy-Duty Engine and Vehicle Standards and Highway Diesel Fuel Sulfur Control Requirements*. EPA420-F-00-057. December.

<sup>3</sup> California Air Resources Board, 2000. *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles*. October.

at which the fleet either turns over so there are more cleaner vehicles on the road or is retrofitted to meet similar standards. With this regulation, older, more polluting trucks would be removed from the roads sooner.

CARB has also adopted and implemented regulations to reduce DPM and NO<sub>x</sub> emissions from in-use (existing) and new off-road heavy-duty diesel vehicles (e.g., loaders, tractors, bulldozers, backhoes, off-highway trucks, etc.). The regulations apply to diesel-powered off-road vehicles with engines 25 horsepower (hp) or greater. The regulations are intended to reduce particulate matter and NO<sub>x</sub> exhaust emissions by requiring owners to turn over their fleet (replace older equipment with newer equipment) or retrofit existing equipment in order to achieve specified fleet-averaged emission rates. Implementation of this regulation, in conjunction with stringent federal off-road equipment engine emission limits for new vehicles, will significantly reduce emissions of DPM and NO<sub>x</sub>.

### Bay Area Air Quality Management District (BAAQMD)

BAAQMD has jurisdiction over an approximately 5,600-square mile area, commonly referred to as the San Francisco Bay Area (Bay Area). The District's boundary encompasses the nine San Francisco Bay Area counties, including Alameda County, Contra Costa County, Marin County, San Francisco County, San Mateo County, Santa Clara County, Napa County, southwestern Solano County, and southern Sonoma County.

BAAQMD is the lead agency in developing plans to address attainment and maintenance of the National Ambient Air Quality Standards and California Ambient Air Quality Standards. The District also has permit authority over most types of stationary equipment utilized for the proposed project. The BAAQMD is responsible for permitting and inspection of stationary sources; enforcement of regulations, including setting fees, levying fines, and enforcement actions; and ensuring that public nuisances are minimized.

BAAQMD's Community Air Risk Evaluation (CARE) program was initiated in 2004 to evaluate and reduce health risks associated with exposures to outdoor TACs in the Bay Area.<sup>4</sup> The program examines TAC emissions from point sources, area sources, and on-road and off-road mobile sources with an emphasis on diesel exhaust, which is a major contributor to airborne health risk in California. The CARE program is an on-going program that encourages community involvement and input. The technical analysis portion of the CARE program is being implemented in three phases that includes an assessment of the sources of TAC emissions, modeling and measurement programs to estimate concentrations of TAC, and an assessment of exposures and health risks. Throughout the program, information derived from the technical analyses will be used to focus emission reduction measures in areas with high TAC exposures and high density of sensitive populations. Risk reduction activities associated with the CARE program are focused on the most at-risk communities in the Bay Area. The BAAQMD has identified six communities as impacted: Concord, Richmond/San Pablo, Western Alameda County, San José, Redwood City/East Palo Alto, and Eastern San Francisco. The project site is within the San José CARE area.

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<sup>4</sup> See BAAQMD: <https://www.baaqmd.gov/community-health/community-health-protection-program/community-air-risk-evaluation-care-program>, accessed 2/18/2021.

The BAAQMD California Environmental Quality Act (CEQA) *Air Quality Guidelines*<sup>5</sup> 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 including thresholds of significance, mitigation measures, and background air quality information. They also include assessment methodologies for air toxics, odors, and greenhouse gas emissions.

### BAAQMD Rules and Regulations

Combustion equipment associated with the proposed project that includes new diesel engines to power generators and possibly new natural gas-fired boilers would establish new sources of particulate matter and gaseous emissions. Emissions would primarily result from the testing of the emergency backup generators, operation of the boilers for space and water heating and some minor emissions from cooling towers. Certain emission sources would be subject to BAAQMD Regulations and Rules. The District's rules and regulations that may apply to the project include:

- Regulation 2 – Permits
  - Rule 2-1: General Requirements
  - Rule 2-2: New Source Review
- Regulation 6 – Particulate Matter and Visible Emissions
  - Rule 6-3: Wood-Burning Devices
- Regulation 9 – Inorganic Gaseous Pollutants
  - Rule 9-1: Sulfur Dioxide
  - Rule 9-7: Nitrogen Oxides and Carbon Monoxide from Industrial, Institutional, and Commercial Boilers, Steam Generators, And Process Heaters
  - Rule 9-8: Nitrogen Oxides and Carbon Monoxide from Stationary Internal Combustion Engines

#### *Permits*

Rule 2-1-301 requires that any person installing, modifying, or replacing any equipment, the use of which may reduce or control the emission of air contaminants, shall first obtain an Authority to Construct (ATC).

Rule 2-1-302 requires that written authorization from the BAAQMD in the form of a Permit to Operate (PTO) be secured before any such equipment is used or operated.

Rule 2-1 lists sources that are exempt from permitting. At the proposed facility, the diesel fuel storage tanks are expected to be exempt from permitting.

#### *New Source Review*

Rule 2-2, New Source Review (NSR), applies to all new and modified sources or facilities that are subject to the requirements of Rule 2-1-301. The purpose of the rule is to provide for review of such sources and to provide mechanisms by which no net increase in emissions will result.

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<sup>5</sup> Bay Area Air Quality Management District, 2017. *CEQA Air Quality Guidelines*. May.

Rule 2-2-301 requires that an applicant for an ATC or PTO apply Best Available Control Technology (BACT) to any new or modified source that results in an increase in emissions and has emissions of precursor organic compounds, non-precursor organic compounds, NO<sub>x</sub>, SO<sub>2</sub>, PM<sub>10</sub>, or CO of 10.0 pounds or more per highest day. Based on the estimated emissions from the proposed project, BACT will be required for NO<sub>x</sub> emissions from the diesel-fueled generator engines.

#### *Stationary Diesel Airborne Toxic Control Measure*

The BAAQMD administers the CARB's Airborne Toxic Control Measure (ACTM) for Stationary Diesel engines (section 93115, title 17 CA Code of Regulations). The project's stationary sources will be new stationary emergency stationary emergency standby diesel engines larger than 50 hp. These limits vary based on maximum engine power. All engines are limited to PM emission rates of 0.15 g/hp-hour, regardless of size. This ACTM limits engine operation 50 hours per year for routine testing and maintenance.

#### *Offsets*

Rule 2-2-302 require that offsets be provided for a new or modified source that emits more than 10 tons per year of NO<sub>x</sub> or precursor organic compounds. It is not expected that emissions of any pollutant will exceed the offset thresholds. Thus, is not expected that offsets for the proposed project would be required.

#### *Prohibitory Rules*

Regulation 6 pertains to particulate matter and visible emissions. Although the engines will be fueled with diesel, they will be modern, low emission engines. Thus, the engines are expected to comply with Regulation 6.

Rule 6-3 applies to emissions from wood-burning devices. Effective November 1, 2016, no person or builder shall install a wood-burning device in a new building construction. Project plans do not depict fireplaces.

Rule 9-1 applies to sulfur dioxide. The engines will use ultra-low sulfur diesel fuel (less than 15 ppm sulfur) and will not be a significant source of sulfur dioxide emissions and are expected to comply with the requirements of Rule 9-1.

Rule 9-7 limits the emissions of NO<sub>x</sub> CO from industrial, institutional and commercial boilers, steam generators and process heaters. This regulation typically applies to boilers with a heat rating of 2 million British Thermal Units (BTU) per hour

Rule 9-8 prescribes NO<sub>x</sub> and CO emission limits for stationary internal combustion engines. Since the proposed engines will be used with emergency standby generators, Regulation 9-8-110 exempts the engines from the requirements of this Rule, except for the recordkeeping requirements (9-8-530) and limitations on hours of operation for reliability-related operation (maintenance and

testing). The engines will not operate more than 50 hours per year, which will satisfy the requirements of 9-8-111.

### *BACT for Diesel Generator Engines*

Since the generators will be used exclusively for emergency use during involuntary loss of power, the BACT levels listed for IC compression engines in the BAAQMD BACT Guidelines would apply. These are provided for two separate size ranges of diesel engines:

I.C. Engine – Compression Ignition >50hp and <1,000hp: BAAQMD applies BACT 2 emission limits based on the ACTM for stationary emergency standby diesel engines larger than 50 brake-horsepower (BHP). NOx emission factor limit is subject to the CARB ACTM that ranges from 3.0 to 3.5 grams per horsepower hour (g/hp-hr). The PM (PM10 or PM2.5) limit is 0.15 g/hp-hr per CARB's ACTM.

I.C. Engine – Compression Ignition <999hp: BAAQMD applies specific BACT emission limits for stationary emergency standby diesel engines equal or larger than 1,000 brake-horsepower (BHP). NOx emission factor limit is subject to the CARB ACTM that ranges from 0.5 g/hp-hr. The PM (PM10 or PM2.5) limit is 0.02 g/hp-hr. POC (i.e., ROG) limits are 0.14 g/hp-hr.

## **CITY OF SAN JOSÉ**

### San José Envision 2040 General Plan

The San José Envision 2040 General Plan includes goals, policies, and actions to reduce exposure of the City's sensitive population to exposure of air pollution and toxic air contaminants or TACs. The following goals, policies, and actions are applicable to the proposed project and this assessment:

#### *Applicable Goals – Air Pollutant Emission Reduction*

Goal MS-10 Minimize emissions from new development.

#### *Applicable Policies – Air Pollutant Emission Reduction*

- MS-10.1 Assess projected air emissions from new development in conformance with the BAAQMD CEQA Guidelines and relative to state and federal standards. Identify and implement feasible air emission reduction measures.
- MS-10.2 Consider the cumulative air quality impacts from proposed developments for proposed land use designation changes and new development, consistent with the region's Clean Air Plan and state law.
- MS-10.3 Promote the expansion and improvement of public transportation services and facilities, where appropriate, to both encourage energy conservation and reduce air pollution.



*Applicable Goals – Toxic Air Contaminants*

Goal MS-11 Minimize exposure of people to air pollution and toxic air contaminants such as ozone, carbon monoxide, lead, and particulate matter.

*Applicable Policies – Toxic Air Contaminants*

MS-11.2 For projects that emit toxic air contaminants, require project proponents to prepare health risk assessments in accordance with BAAQMD-recommended procedures as part of environmental review and employ effective mitigation to reduce possible health risks to a less than significant level. Alternatively, require new projects (such as, but not limited to, industrial, manufacturing, and processing facilities) that are sources of TACs to be located an adequate distance from residential areas and other sensitive receptors.

MS-11.5 Encourage the use of pollution absorbing trees and vegetation in buffer areas between substantial sources of TACs and sensitive land uses.

*Actions – Toxic Air Contaminants*

MS-11.7 Consult with BAAQMD to identify stationary and mobile TAC sources and determine the need for and requirements of a health risk assessment for proposed developments.

MS-11.8 For new projects that generate truck traffic, require signage which reminds drivers that the state truck idling law limits truck idling to five minutes.

**SENSITIVE RECEPTORS**

There are groups of people more affected by air pollution than others. CARB has identified the following persons who are most likely to be affected by air pollution: children under 16, the elderly over 65, athletes, and people with cardiovascular and chronic respiratory diseases. These groups are classified as sensitive receptors. Locations that may contain a high concentration of these sensitive population groups include residential areas, hospitals, daycare facilities, elder care facilities, and elementary schools. For cancer risk assessments, children are the most sensitive receptors, since they are more susceptible to cancer causing TACs. Residential locations are assumed to include infants and small children.

There are no sensitive receptors near the project site. The closest sensitive receptors to the project site are residences to the east of the project site, approximately 1,700 feet away. Per BAAQMD guidance only sensitive receptors within 1,000 feet need to be evaluated.<sup>6</sup> Therefore, a quantitative health risk assessment for nearby sensitive receptors was not included in this analysis.

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<sup>6</sup> BAAQMD, 2012. *Recommended Methods for Screening and Modeling Local Risks and Hazards Version 3.0*. May. Web: <https://www.baaqmd.gov/~media/files/planning-and-research/ceqa/risk-modeling-approach-may-2012.pdf?la=en>

## SIGNIFICANCE THRESHOLDS

In June 2010, BAAQMD adopted thresholds of significance to assist in the review of projects under CEQA and these significance thresholds were contained in the District’s 2011 CEQA Air Quality Guidelines. These thresholds were designed to establish the level at which BAAQMD believed air pollution emissions would cause significant environmental impacts under CEQA. The thresholds were challenged through a series of court challenges and were mostly upheld. BAAQMD updated the CEQA Air Quality Guidelines in 2017 to include the latest significance thresholds, which were used in this analysis and are summarized in Table 1.

**Table 1. BAAQMD CEQA Significance Thresholds**

Criteria Air Pollutant	Construction Thresholds	Operational Thresholds	
	Average Daily Emissions (lbs./day)	Average Daily Emissions (lbs./day)	Annual Average Emissions (tons/year)
ROG	54	54	10
NO <sub>x</sub>	54	54	10
PM <sub>10</sub>	82 (Exhaust)	82	15
PM <sub>2.5</sub>	54 (Exhaust)	54	10
CO	Not Applicable	9.0 ppm (8-hour average) or 20.0 ppm (1-hour average)	
Fugitive Dust	Construction Dust Ordinance or other Best Management Practices	Not Applicable	
<b>Health Risks and Hazards</b>	<b>Single Sources Within 1,000-foot Zone of Influence</b>	<b>Combined Sources (Cumulative from all sources within 1,000-foot zone of influence)</b>	
Excess Cancer Risk	10 per one million	100 per one million	
Hazard Index	1.0	10.0	
Incremental annual PM <sub>2.5</sub>	0.3 µg/m <sup>3</sup>	0.8 µg/m <sup>3</sup>	
<b>Greenhouse Gas Emissions</b>			
Land Use Projects – direct and indirect GHG emissions	Compliance with a Qualified GHG Reduction Strategy OR 1,100 metric tons annually (for 2020)* OR 4.6 metric tons per service population per year (for 2020)*		
Note: ROG = reactive organic gases, NO <sub>x</sub> = nitrogen oxides, PM <sub>10</sub> = coarse particulate matter or particulates with an aerodynamic diameter of 10 micrometers (µm) or less, PM <sub>2.5</sub> = fine particulate matter or particulates with an aerodynamic diameter of 2.5µm or less. GHG = greenhouse gases. *BAAQMD does not have a recommended post-2020 GHG threshold.			

Source: Bay Area Air Quality Management District, 2017

## AIR QUALITY IMPACTS AND MITIGATION MEASURES

**Impact AIR-1: 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?**

The Bay Area is considered a non-attainment area for ground-level O<sub>3</sub> and PM<sub>2.5</sub> under both the Federal Clean Air Act and the California Clean Air Act. The area is also considered non-attainment for PM<sub>10</sub> under the California Clean Air Act, but not the federal act. The area has attained both State and federal ambient air quality standards for carbon monoxide. As part of an effort to attain and maintain ambient air quality standards for O<sub>3</sub> and PM<sub>10</sub>, the BAAQMD has established thresholds of significance for these air pollutants and their precursors. These thresholds are for O<sub>3</sub> precursor pollutants (ROG and NO<sub>x</sub>), PM<sub>10</sub>, and PM<sub>2.5</sub> and apply to both construction period and operational period impacts.

### Construction Period Emissions

The California Emissions Estimator Model (CalEEMod) Version 2020.4.0 was used to estimate emissions from construction and operation of the site assuming full build-out of the project. The project land use types and size, and anticipated construction schedule were input to CalEEMod. The CARB Emission FACTors 2021 (EMFAC2021) model was used to predict emissions from construction traffic, which includes worker travel, vendor trucks, and haul trucks.<sup>7</sup> The model output from CalEEMod along with construction inputs are included as *Attachment 1* and EMFAC2017 vehicle emissions modeling outputs are included in *Attachment 2*.

### *Land Use Inputs*

The proposed project would be constructed in four phases. Land uses were separated by phases and then totaled<sup>8</sup> for the full build-out as shown in

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<sup>7</sup> See CARB's EMFAC2021 Emissions Inventory at <https://arb.ca.gov/emfac/emissions-inventory>

<sup>8</sup> The project's total office square footage has decreased from 2,049,425 sf to 1,924,110 sf since this analysis was conducted. However, construction activities (i.e., schedule, equipment quantities, hours used) and the project footprint (i.e., acreage) would not change with the updated project land uses. The modeling results of the larger sized project in this analysis now represents conservative emission and impact results with the decrease in square footage would result in slightly lower emission and risk impacts. The project's criteria pollutant and GHG emissions and the community risk impacts are well below the significance thresholds and would continue to be with the decrease in total office square footage.

Table 2.

**Table 2. Summary of Project Land Use CalEEMod Inputs**

Phase	Project Land Uses	Size	Units	Square Feet	Acres
Phase 1	General Office Building	576.19	1,000 sf	576,190	19.70
	Parking Lot	1,307	Parking Space	522,800	
Phase 2	General Office Building	576.19	1,000 sf	576,190	11.70
	Enclosed Parking with Elevator	3,067	1,000 sf	934,180	
Phase 3	General Office Building	320,855	1,000 sf	320,855	10.20
	Enclosed Parking with Elevator	1,623	1,000 sf	499,618	
Phase 4	General Office Building	576.19	1,000 sf	576,190	4.03
	Enclosed Parking with Elevator	696	Parking Space	214,122	
<b>Total Buildout</b>	General Office Building	2,049.43	1,000 sf	2,049,425	19.70
	Enclosed Parking with Elevator	5,386	Parking Space	1,647,920	
	Parking Lot	29	Parking Space	11,600	

### *Construction Inputs*

CalEEMod computes annual emissions for construction that are based on the project type, size and acreage. The model provides emission estimates for both on-site and off-site construction activities. On-site activities are primarily made up of construction equipment emissions, while off-site activity includes worker, hauling, and vendor traffic. The construction build-out scenario, including equipment list and schedule, were based on information provided by the project applicant and CalEEMod default information.

The project applicant provided an approximate schedule for each of the four phases with Phase 1 starting in October 2023, Phase 2 starting in October 2025, Phase 3 starting in October 2027, and Phase 4 starting in October 2029. All four phases are predicted to last 23 months.

In addition, a construction schedule that included total workdays for each construction subphase (e.g. demolition, site preparation, etc.) was provided for Phase 1. The approximate total workdays from the Phase 1 construction worksheet was used for all four phases since a similar construction effort would be done for all four phases. It is more appropriate to use project-specific information over CalEEMod defaults. Note that the schedule for Phase 1 is slightly accelerated and assumes a 21-month schedule instead of a 23-month schedule. Also Phase 4 would not have a demolition phase so the schedule was modified to remove that subphase.

Based on the project applicant’s start dates and construction schedule, construction of this project would start in October 2023 and end in April 2031 with some overlapping phases. This schedule totals to approximately nine years of construction activity.

Within the Phase 1 construction worksheet, the quantity of equipment to be used along with the average hours per day for each construction phase was also provided. Since different equipment would have different estimates of the working days per phase, the hours per day for each phase was computed by dividing the total number of hours that the equipment would be used by the total number of days in that phase. This specific equipment list and usage was used only for Phase 1. CalEEMod default equipment and usage were assumed for Phases 2 through 4, which is a conservative approach since CalEEMod defaults typically assume longer equipment hours.

### Construction Traffic Emissions

Construction would produce traffic in the form of worker trips and truck traffic. The traffic-related emissions are based on worker and vendor trip estimates produced by CalEEMod and haul trips that were computed based on the estimate of demolition material to be exported, soil material imported and/or exported to the site, and the estimate of cement and asphalt truck trips. CalEEMod provides daily estimates of worker and vendor trips for each applicable phase. The total trips for those were computed by multiplying the daily rate by the number of days in that phase. The traffic information was combined with EMFAC2021 motor vehicle emissions factors.

The latest version of the CalEEMod model is based on the older version of the CARB EMFAC2017 motor vehicle emission factor model. This model has been superseded by the EMFAC2021 model; however, CalEEMod has not been updated to include EMFAC2021. EMFAC2021 provides aggregate emission rates in grams per mile for each vehicle type. The vehicle mix for this study was based on CalEEMod default assumptions, where worker trips are assumed to be comprised of light-duty autos (EMFAC category LDA) and light duty trucks (EMFAC category LDT1 and LDT2). Vendor trips are comprised of delivery and large trucks (EMFAC category MHDT and HHDT) and haul trucks, including cement trucks, are comprised of large trucks (EMFAC category HHDT). Travel distances are based on CalEEMod default lengths, which are 10.8 miles for worker travel, 7.3 miles for vendor trips and 20 miles for hauling. Since CalEEMod does not directly address cement or asphalt trucks, these were treated as vendor travel distances (7.3 miles).<sup>9</sup> Each trip was assumed to include an idle time of 5 minutes. Emissions associated with vehicle starts were also included. On road emissions in Santa Clara County for 2022 through 2031 were used in these calculations.

Table 3 provides the traffic inputs that were combined with the EMFAC2021 emission database to compute vehicle emissions.

**Table 3. Construction Traffic Data Used for EMFAC2021 Model Runs**

CalEEMod Run/Land Uses and Construction Phase	Trips by Trip Type			Notes
	Total Worker Trips <sup>1</sup>	Total Vendor Trips <sup>1</sup>	Total Haul Trips	
Vehicle mix <sup>1</sup>	50% LDA 25% LDT1 25% LDT2	50% MHDT 50% HHDT	100% HDDT	
Trip Length (miles)	10.8	7.3	20.0 Haul 7.3 cement/asphalt	Truck Idle Time = 5 minutes
<b>Phase 1</b>				
Demolition	600	-	1,337	293,906 sf of existing building. CalEEMod Defaults.
Site Preparation	60	-	-	CalEEMod Defaults
Grading	320	-	-	CalEEMod Defaults
Trenching	200	-	-	CalEEMod Defaults
Building Construction	80,800	36,000	150	75 cement round trips. CalEEMod Defaults
Architectural Coating	12,960	-	-	CalEEMod Default

<sup>9</sup> Note that vendor construction traffic surveys used to develop CalEEMod default assumptions likely included cement truck trips.

Paving	520	-	225	1,800 cy of asphalt. CalEEMod Defaults
<b>Phase 2</b>				
Demolition <sup>2</sup>	900	-	1,037	228,000 sf of pavement. CalEEMod Defaults.
Site Preparation	360	-	-	CalEEMod Defaults
Grading	800	-	-	CalEEMod Defaults
Trenching	200	-	-	CalEEMod Defaults
Building Construction	115,400	49,600	150	75 cement round trips. CalEEMod Defaults
Architectural Coating	18,400	-	-	CalEEMod Default
Paving	600	-	225	1,800 cy of asphalt. CalEEMod Defaults
<b>Phase 3</b>				
Demolition <sup>2</sup>	900	-	1,037	283,200 sf of pavement. CalEEMod Defaults.
Site Preparation	360	-	-	CalEEMod Defaults
Grading	800	-	-	CalEEMod Defaults
Trenching	200	-	-	CalEEMod Defaults
Building Construction	115,400	49,600	150	75 cement round trips. CalEEMod Defaults
Architectural Coating	18,400	-	-	CalEEMod Default
Paving	600	-	225	1,800 cy of asphalt. CalEEMod Defaults
<b>Phase 4 (No Demolition)</b>				
Site Preparation	360	0	0	CalEEMod Defaults
Grading	600	0	0	CalEEMod Defaults
Trenching	200	0	0	CalEEMod Defaults
Building Construction	54,800	26,000	150	75 cement round trips. CalEEMod Defaults
Architectural Coating	8,800	0	0	CalEEMod Default
Paving	800	0	225	1,800 cy of asphalt. CalEEMod Defaults
Notes:				
<sup>1</sup> Based on 2023 through 2031 EMFAC2021 VMT-based fleet mix for Santa Clara County.				
<sup>2</sup> Included demolition trips for the removal of the surface parking lot spaces.				
Square feet = sf, Cubic yards = cy				

*Summary of Computed Construction Period Emissions*

Average daily emissions were annualized for each year of construction by dividing the annual construction emissions and dividing those emissions by the number of active workdays during that year. A five day a week schedule was assumed. Table 4 shows the annualized average daily construction emissions of ROG, NO<sub>x</sub>, PM<sub>10</sub> exhaust, and PM<sub>2.5</sub> exhaust during construction of the project. None of the construction criteria pollutant emissions would exceed the BAAQMD significant thresholds.

Construction activities, particularly during site preparation and grading, would temporarily generate fugitive dust in the form of PM<sub>10</sub> and PM<sub>2.5</sub>. Sources of fugitive dust would include disturbed soils at the construction site and trucks carrying uncovered loads of soils. The BAAQMD CEQA Air Quality Guidelines consider these impacts to be less-than-significant if best

management practices are implemented to reduce these emissions. *Mitigation Measure AQ-1 would implement BAAQMD-recommended best management practices.*

**Table 4. Project Construction Period Emissions**

Year	ROG	NOx	PM <sub>10</sub> Exhaust	PM <sub>2.5</sub> Exhaust
<i>Construction Emissions Per Year (Tons)</i>				
2023	0.04	0.27	0.02	0.01
2024	1.26	0.83	0.05	0.03
2025	2.18	1.13	0.06	0.04
2026	1.47	2.39	0.12	0.09
2027	2.28	1.49	0.08	0.06
2028	0.94	2.33	0.12	0.09
2029	1.34	1.32	0.07	0.05
2030	2.46	1.12	0.04	0.03
2031	0.84	0.22	0.01	0.01
<i>Annualized Daily Construction Emissions (pounds/day)</i>				
2023 (65 construction workdays)	1.36	8.37	0.46	0.30
2024 (262 construction workdays)	9.60	6.31	0.36	0.21
2025 (261 construction workdays)	16.68	8.64	0.46	0.32
2026 (261 construction workdays)	11.29	18.29	0.91	0.68
2027 (261 construction workdays)	17.48	11.42	0.62	0.45
2028 (260 construction workdays)	7.26	17.93	0.91	0.68
2029 (261 construction workdays)	10.28	10.13	0.55	0.39
2030 (261 construction workdays)	18.82	8.56	0.30	0.19
2031 (82 construction workdays)	20.60	5.27	0.30	0.20
<i>BAAQMD Thresholds</i>	<i>54 lbs./day</i>	<i>54 lbs./day</i>	<i>82 lbs./day</i>	<i>54 lbs./day</i>
<i>Exceed Threshold?</i>	<i>No</i>	<i>No</i>	<i>No</i>	<i>No</i>

**Mitigation Measure AQ-1: Implement BAAQMD-Recommended Measures to Control Particulate Matter Emissions during Construction.**

During any construction period ground disturbance, the applicant shall ensure that the project contractor implement measures to control dust and exhaust. Implementation of the measures recommended by BAAQMD and listed below would reduce the air quality impacts associated with grading and new construction to a less-than-significant level. Additional measures are identified to reduce construction equipment exhaust emissions. The contractor shall implement the following best management practices that are required of all projects:

1. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.
2. All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
3. 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.
4. All vehicle speeds on unpaved roads shall be limited to 15 miles per hour (mph).



5. 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.
6. 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, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.
7. 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.
8. Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's phone number shall also be visible to ensure compliance with applicable regulations.

#### *Effectiveness of Mitigation Measure AQ-1*

The measures above are consistent with BAAQMD-recommended basic control measures for reducing fugitive particulate matter that are contained in the BAAQMD CEQA Air Quality Guidelines.

#### Operational Period Emissions

Operational air emissions from the project would be generated primarily from autos driven by future employees and customers. Evaporative emissions from architectural coatings and maintenance products (classified as consumer products) are typical emissions from these types of uses. CalEEMod was used to estimate emissions from operation of the proposed project assuming full build-out.

#### *Model Year*

Emissions associated with vehicle travel depend on the year of analysis because emission control technology requirements are phased-in over time. Therefore, the earlier the year analyzed in the model, the higher the emission rates utilized by CalEEMod. This analysis assumed that the project would be fully built out and operating in the year 2032.

#### *Operational Trip Generation Rates*

CalEEMod allows the user to enter specific vehicle trip generation rates. Therefore, the project-specific daily trip generation rate provided by the traffic consultant was entered into the model. The weekday trip generation rates were adjusted using the traffic daily rates. The Saturday and Sunday trip rates were adjusted by multiplying the ratio of the CalEEMod default rates for Saturday and Sunday trips to the default weekday rate with the project-specific daily weekday trip

rate.<sup>10</sup> The default trip lengths and trip types specified by CalEEMod were used.

### *EMFAC2021 Adjustment*

The vehicle emission factors and fleet mix used in CalEEMod are based on EMFAC2017, which is an older CARB emission inventory for on road and off road mobile sources. Since the release of CalEEMod Version 2020.4.0, new emission factors have been produced by CARB. EMFAC2021 became available for use in January 2021. It includes the latest data on California’s car and truck fleets and travel activity. Additionally, CARB has recently released EMFAC off-model adjustment factors to account for the Safer Affordable Efficient (SAFE) Vehicle Rule Part one.<sup>11,12</sup> The CalEEMod vehicle emission factors and fleet mix were updated with the emission rates and fleet mix from EMFAC2021, which were adjusted with the CARB EMFAC off-model adjustment factors. On road emission rates from 2032 Santa Clara County were used (See *Attachment 2*). More details about the updates in emissions calculation methodologies and data are available in the EMFAC2021 Technical Support Document.<sup>13</sup>

### *Climate Smart San José*

Climate Smart San José is a plan to reduce air pollution, save water, and create a stronger and healthier community. The City approved goals and milestones in February 2018 to ensure the City can substantially reduce GHG emissions through reaching the following goals and milestones:

- All new residential buildings will be Zero Net Carbon Emissions (ZNE) by 2020 and all new commercial buildings will be ZNE by 2030 (Note that ZNE buildings would be all electric with a carbon-free electricity source).
- San Jose Clean Energy (SJCE) will provide 100-percent carbon-free base power by 2021.
- One gigawatt of solar power will be installed in San Jose by 2040.
- 61 percent of passenger vehicles will be powered by electricity by 2030.

The California Energy Commission (CEC) updates the California Building Energy Efficiency Standards every three years, in alignment with the California Code of regulations. Title 24 Parts 6 and 11 of the California Building Energy Efficiency Standards and the California Green Building Standards Code (CALGreen) address the need for regulations to improve energy efficiency and combat climate change. The 2019 CAL Green standards include substantial changes intended to increase the energy efficiency of buildings. For example, the code encourages the installation of solar and heat pump water heaters in low-rise residential buildings. The 2019 California Code went before City Council in October 2019 for approval, with an effective date of January 1, 2020. As part of this action, the City adopted a “reach code” that requires development projects to exceed

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<sup>10</sup> Hexagon Transportation Consultants, Inc. 2020. *550 East Brokaw Road Project Trip Generation Estimates*. September.

<sup>11</sup> California Air Resource Board, 2019. *EMFAC Off-Model Adjustment Factors to Account for the SAFE Vehicle Rule Part One*. November. Web: [https://ww3.arb.ca.gov/msei/emfac\\_off\\_model\\_adjustment\\_factors\\_final\\_draft.pdf](https://ww3.arb.ca.gov/msei/emfac_off_model_adjustment_factors_final_draft.pdf)

<sup>12</sup> California Air Resource Board, 2020. *EMFAC Off-Model Adjustment Factors for Carbon Dioxide (CO<sub>2</sub>) Emissions to Accounts for the SAFE Vehicles Rule Part One and the Final SAFE Rule*. June. Web: [https://ww3.arb.ca.gov/msei/emfac\\_off\\_model\\_co2\\_adjustment\\_factors\\_06262020-final.pdf?utm\\_medium=email&utm\\_source=govdelivery](https://ww3.arb.ca.gov/msei/emfac_off_model_co2_adjustment_factors_06262020-final.pdf?utm_medium=email&utm_source=govdelivery)

<sup>13</sup> See CARB 2021: <https://ww2.arb.ca.gov/our-work/programs/mobile-source-emissions-inventory/road-documentation/msei-modeling-tools-emfac>

the minimum Building Energy Efficiency requirements.<sup>14</sup> The City's reach code applies only to new residential and non-residential construction in San José. It incentivizes all-electric construction, requires increased energy efficiency and electrification-readiness for those choosing to maintain the presence of natural gas. The code requires that non-residential construction include solar readiness. It also requires additional EV charging readiness and/or electric vehicle service equipment (EVSE) installation for all development types.

### *Energy*

CalEEMod defaults for energy use were used, which include the 2019 Title 24 Building Standards. GHG emissions modeling includes those indirect emissions from electricity consumption. The electricity produced emission rate was modified in CalEEMod. CalEEMod has a default emission factor of 807.98 pounds of CO<sub>2</sub> per megawatt of electricity produced, which is based on San José Clean Energy (SJCE)'s 2021 emissions rate. This intensity factor was used in the model along with the assumption that the project would use electricity supplied by SJCE. SJCE would provide electricity that would be 100-percent carbon free by 2021 before the project becomes operational.<sup>15,16</sup> Electricity was assumed to be 100-percent carbon free in the model since this project would be operational post-2021. Electricity emissions only affect indirect emission of GHG.

### *Natural Gas*

The City of San José passed a reach code ordinance in December 2020 that prohibits the use of natural gas infrastructure in new buildings.<sup>17</sup> This ordinance applies to any new construction starting August 1, 2021. All project natural gas use was set to zero and assigned to electricity use.

### *Stationary Sources*

The project would include seven emergency generators for backup power, one per building. These generators are assumed to be powered by diesel engines. Preliminary plans propose one generator for each building. The emergency generators would be rated 500 kilowatts and be powered by 755-horsepower diesel engines.

### *Other Inputs*

Default model assumptions for emissions associated with solid waste generation and water/wastewater use were applied to the project. Water/wastewater use was changed to 100% aerobic conditions to represent wastewater treatment plant conditions. The project site would not send wastewater to septic tanks or facultative lagoons.

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<sup>14</sup> City of San Jose Transportation and Environmental Committee, *Building Reach Code for New Construction Memorandum*, August 2019.

<sup>15</sup> Kerrie Romanow and Rosalynn Hughey, City of San José, 2019. *Building reach Code for New Construction Memorandum*. August. Web: <https://sanjose.legistar.com/LegislationDetail.aspx?ID=4090015&GUID=278596A7-1A2B-4248-B794-7A34E2279E85>

<sup>16</sup> See: <https://www.sanjoseca.gov/your-government/departments-offices/environmental-services/climate-smart-san-jos/2019-reach-code-initiative>

<sup>17</sup> City of San Jose, 2020. "Expand Natural Gas Ban", December. Web: <https://www.sanjoseca.gov/Home/Components/News/News/2210/4699>



## Existing Land Use

The existing uses at the site consistent of general office buildings and an electronic superstore. Inputs for the existing modeling scenario included 124,230-sf entered as “General Office Building” and 169,676-sf entered as “Electronic Superstore” on 19.7-acres. These land uses were modeled in the year 2020 and project-specific traffic trip generation rates provided by the traffic consultant were used.

## Summary of Computed Operational Emissions

Annual emissions were predicted using CalEEMod and daily emissions were estimating assuming 365 days of operation. Table 5 shows net average daily construction emissions of ROG, NO<sub>x</sub>, total PM<sub>10</sub>, and total PM<sub>2.5</sub> during operation of the project. The operational period emissions would not exceed the BAAQMD significance thresholds.

**Table 5. Operational Period Emissions for 2032**

Scenario	ROG	NO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Project (2032) Annual Emissions (tons/year)	12.76	5.37	10.26	2.63
Existing (2020) Annual Emissions (tons/year)	5.46	4.47	3.17	0.83
Net Annual Emissions (tons/year)	7.30	0.90	7.09	1.80
BAAQMD Thresholds (tons/year)	10 tons	10 tons	15 tons	10 tons
<b>Exceed Threshold?</b>	No	No	No	No
Net Average Daily Emissions (pounds/day) <sup>1</sup>	39.97	4.93	38.84	9.85
BAAQMD Thresholds (pounds/day)	54 lbs.	54 lbs.	82 lbs.	54 lbs.
<b>Exceed Threshold?</b>	No	No	No	No

Notes: <sup>1</sup> Assumes 365-day operation.

## Impact AIR-2: Expose sensitive receptors to substantial pollutant concentrations?

Project impacts related to increased community risk can occur either by introducing a new source of TACs with the potential to adversely affect existing sensitive receptors in the project vicinity or by significantly exacerbating existing cumulative TAC impacts. This project would introduce new sources of TACs during construction (i.e. on-site construction and truck hauling emissions) and operation (i.e. mobile and stationary sources). Project construction activity would generate dust and equipment exhaust that could affect nearby sensitive receptors. During project operation, the project would generate some traffic, consisting of mostly light-duty vehicles. In addition, the project proposes on-site stationary sources in the form of diesel-powered generators. To evaluate these sources, BAAQMD recommends that sensitive receptors within 1,000 feet of a project be considered.

The closest sensitive receptors to the project are located well beyond 1,000 feet at more than 1,700 feet east of the project site. Therefore, a health risk assessment of the project construction activities was not conducted since sensitive receptors are located beyond 1,000 feet. Figure 1 shows the project affected areas and the area within 1,000 feet of the site.

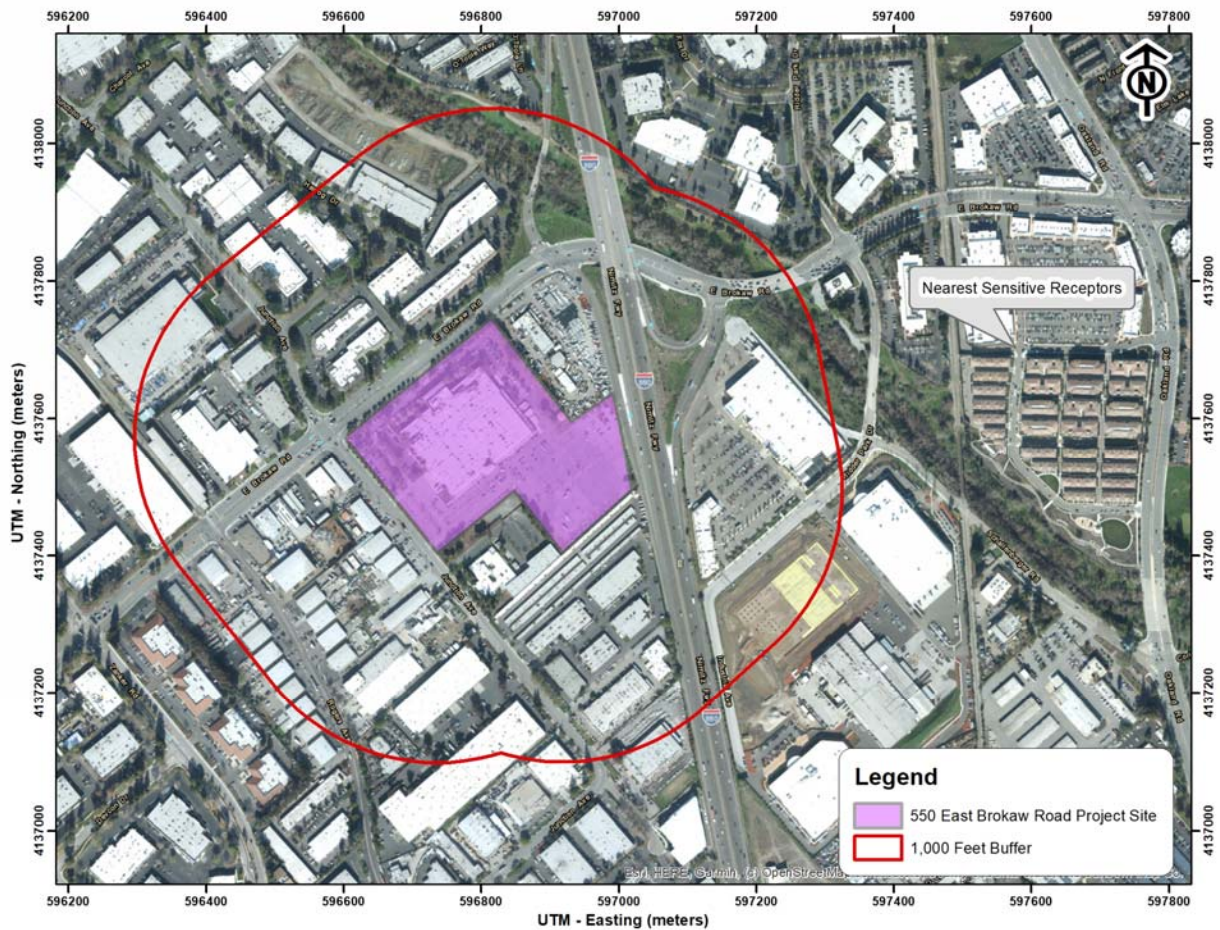
Given the large distance and temporary nature of this impact, community risk caused by construction are considered to be below the BAAQMD single-source thresholds for increased

cancer risk, annual PM<sub>2.5</sub> concentration, and hazard index value. It should be noted that *Mitigation Measures AQ-1* would reduce the emissions of TACs and PM<sub>2.5</sub> during construction.

Long-term operational emissions from the project would include traffic (i.e. passenger cars and delivery truck traffic), DPM emissions from routine testing and maintenance operation of diesel engines used to power the back-up emergency generators, and natural gas combustion from equipment used to provide space and water heating. Each of these sources would have minor emissions of TACs and PM<sub>2.5</sub>. The emissions from generator operation (limited to 50 hours per year for non-emergency conditions) and natural gas combustion would have negligible effects on the sensitive receptors. Traffic emissions would be spread out over a large area and also have a negligible effect on any singular sensitive receptor.

Therefore, the project in the short-term (i.e., during construction) or long-term (i.e., operation) would not cause cancer risk, non-cancer health effects or annual PM<sub>2.5</sub> concentrations to exceed the community risk thresholds.

**Figure 1. Project Site and Approximate 1,000-foot Area of Influence for Assessing TAC Impacts**





## GREENHOUSE GAS EMISSIONS

### Setting

Gases that trap heat in the atmosphere, GHGs, regulate the earth's temperature. This phenomenon, known as the greenhouse effect, is responsible for maintaining a habitable climate. The most common GHGs are carbon dioxide (CO<sub>2</sub>) and water vapor but there are also several others, most importantly methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF<sub>6</sub>). These are released into the earth's atmosphere through a variety of natural processes and human activities. Sources of GHGs are generally as follows:

- CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O are byproducts of fossil fuel combustion.
- N<sub>2</sub>O is associated with agricultural operations such as fertilization of crops.
- CH<sub>4</sub> is commonly created by off-gassing from agricultural practices (e.g., keeping livestock) and landfill operations.
- Chlorofluorocarbons (CFCs) were widely used as refrigerants, propellants, and cleaning solvents but their production has been stopped by international treaty.
- HFCs are now used as a substitute for CFCs in refrigeration and cooling.
- PFCs and sulfur hexafluoride emissions are commonly created by industries such as aluminum production and semi-conductor manufacturing.

Each GHG has its own potency and effect upon the earth's energy balance. This is expressed in terms of a global warming potential (GWP), with CO<sub>2</sub> being assigned a value of 1 and sulfur hexafluoride being several orders of magnitude stronger. In GHG emission inventories, the weight of each gas is multiplied by its GWP and is measured in units of CO<sub>2</sub> equivalents (CO<sub>2</sub>e).

An expanding body of scientific research supports the theory that global climate change is currently affecting changes in weather patterns, average sea level, ocean acidification, chemical reaction rates, and precipitation rates, and that it will increasingly do so in the future. The climate and several naturally occurring resources within California are adversely affected by the global warming trend. Increased precipitation and sea level rise will increase coastal flooding, saltwater intrusion, and degradation of wetlands. Mass migration and/or loss of plant and animal species could also occur. Potential effects of global climate change that could adversely affect human health include more extreme heat waves and heat-related stress; an increase in climate-sensitive diseases; more frequent and intense natural disasters such as flooding, hurricanes and drought; and increased levels of air pollution.

### Recent Regulatory Actions for GHG Emissions

#### *Executive Order S-3-05 – California GHG Reduction Targets*

Executive Order (EO) S-3-05 was signed by Governor Arnold Schwarzenegger in 2005 to set GHG emission reduction targets for California. The three targets established by this EO are as follows: (1) reduce California's GHG emissions to 2000 levels by 2010, (2) reduce California's GHG emissions to 1990 levels by 2020, and (3) reduce California's GHG emissions by 80 percent below 1990 levels by 2050.

*Assembly Bill 32 – California Global Warming Solutions Act (2006)*

Assembly Bill (AB) 32, the Global Warming Solutions Act of 2006, codified the State’s GHG emissions target by directing CARB to reduce the State’s global warming emissions to 1990 levels by 2020. AB 32 was signed and passed into law by Governor Schwarzenegger on September 27, 2006. Since that time, the CARB, CEC, California Public Utilities Commission (CPUC), and Building Standards Commission have all been developing regulations that will help meet the goals of AB 32 and Executive Order S-3-05, which has a target of reducing GHG emissions 80 percent below 1990 levels.

A Scoping Plan for AB 32 was adopted by CARB in December 2008. It contains the State’s main strategies to reduce GHGs from business-as-usual emissions projected in 2020 back down to 1990 levels. Business-as-usual (BAU) is the projected emissions in 2020, including increases in emissions caused by growth, without any GHG reduction measures. The Scoping Plan has a range of GHG reduction actions, including direct regulations, alternative compliance mechanisms, monetary and non-monetary incentives, voluntary actions, and market-based mechanisms such as a cap-and-trade system.

As directed by AB 32, CARB has also approved a statewide GHG emissions limit. On December 6, 2007, CARB staff resolved an amount of 427 million metric tons (MMT) of CO<sub>2</sub>e as the total statewide GHG 1990 emissions level and 2020 emissions limit. The limit is a cumulative statewide limit, not a sector- or facility-specific limit. CARB updated the future 2020 BAU annual emissions forecast, in light of the economic downturn, to 545 MMT of CO<sub>2</sub>e. Two GHG emissions reduction measures currently enacted that were not previously included in the 2008 Scoping Plan baseline inventory were included, further reducing the baseline inventory to 507 MMT of CO<sub>2</sub>e. Thus, an estimated reduction of 80 MMT of CO<sub>2</sub>e is necessary to reduce statewide emissions to meet the AB 32 target by 2020.

*Executive Order B-30-15 & Senate Bill 32 GHG Reduction Targets – 2030 GHG Reduction Target*

In April 2015, Governor Brown signed EO B-30-15, which extended the goals of AB 32, setting a greenhouse gas emissions target at 40 percent of 1990 levels by 2030. On September 8, 2016, Governor Brown signed Senate Bill (SB) 32, which legislatively established the GHG reduction target of 40 percent of 1990 levels by 2030. In November 2017, CARB issued *California’s 2017 Climate Change Scoping Plan*.<sup>18</sup> While the State is on track to exceed the AB 32 scoping plan 2020 targets, this plan is an update to reflect the enacted SB 32 reduction target.

SB 32 was passed in 2016, which codified a 2030 GHG emissions reduction target of 40 percent below 1990 levels. CARB is currently working on a second update to the Scoping Plan to reflect the 2030 target set by Executive Order B-30-15 and codified by SB 32. The proposed Scoping Plan Update was published on January 20, 2017 as directed by SB 32 companion legislation AB 197. The mid-term 2030 target is considered critical by CARB on the path to obtaining an even deeper GHG emissions target of 80 percent below 1990 levels by 2050, as directed in Executive

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<sup>18</sup> California Air Resource Board, 2017. *California’s 2017 Climate Change Scoping Plan: The Strategy for Achieving California’s 2030 Greenhouse Gas Targets*. November. Web: [https://ww2.arb.ca.gov/sites/default/files/classic/cc/scopingplan/scoping\\_plan\\_2017.pdf](https://ww2.arb.ca.gov/sites/default/files/classic/cc/scopingplan/scoping_plan_2017.pdf)



Order S-3-05. The Scoping Plan outlines the suite of policy measures, regulations, planning efforts, and investments in clean technologies and infrastructure, providing a blueprint to continue driving down GHG emissions and obtain the statewide goals.

The new Scoping Plan establishes a strategy that will reduce GHG emissions in California to meet the 2030 target (note that the AB 32 Scoping Plan only addressed 2020 targets and a long-term goal). Key features of this plan are:

- Cap and Trade program places a firm limit on 80 percent of the State’s emissions;
- Achieving a 50-percent Renewable Portfolio Standard by 2030 (currently at about 29 percent statewide);
- Increase energy efficiency in existing buildings;
- Develop fuels with an 18-percent reduction in carbon intensity;
- Develop more high-density, transit-oriented housing;
- Develop walkable and bikable communities;
- Greatly increase the number of electric vehicles on the road and reduce oil demand in half;
- Increase zero-emissions transit so that 100 percent of new buses are zero emissions;
- Reduce freight-related emissions by transitioning to zero emissions where feasible and near-zero emissions with renewable fuels everywhere else; and
- Reduce “super pollutants” by reducing methane and hydrofluorocarbons or HFCs by 40 percent.

In the updated Scoping Plan, CARB recommends statewide targets of no more than 6 metric tons (MT) CO<sub>2</sub>e per capita (statewide) by 2030 and no more than 2 metric tons CO<sub>2</sub>e per capita by 2050. The statewide per capita targets account for all emissions sectors in the State, statewide population forecasts, and the statewide reductions necessary to achieve the 2030 statewide target under SB 32 and the longer-term State emissions reduction goal of 80 percent below 1990 levels by 2050.

#### *Executive Order B-55-18 – Carbon Neutrality*

In 2018, a new statewide goal was established to achieve carbon neutrality as soon as possible, but no later than 2045, and to maintain net negative emissions thereafter. CARB and other relevant state agencies are tasked with establishing sequestration targets and create policies/programs that would meet this goal.

#### *Senate Bill 375 – California's Regional Transportation and Land Use Planning Efforts (2008)*

California enacted legislation (SB 375) to expand the efforts of AB 32 by controlling indirect GHG emissions caused by urban sprawl. SB 375 provides incentives for local governments and applicants to implement new conscientiously planned growth patterns. This includes incentives for creating attractive, walkable, and sustainable communities and revitalizing existing communities. The legislation also allows applicants to bypass certain environmental reviews under CEQA if they build projects consistent with the new sustainable community strategies. Development of more alternative transportation options that would reduce vehicle trips and miles traveled, along with traffic congestion, would be encouraged. SB 375 enhances CARB’s ability to reach the AB 32

goals by directing the agency in developing regional GHG emission reduction targets to be achieved from the transportation sector for 2020 and 2035. CARB works with the metropolitan planning organizations (e.g. Association of Bay Area Governments [ABAG] and Metropolitan Transportation Commission [MTC]) to align their regional transportation, housing, and land use plans to reduce vehicle miles traveled and demonstrate the region's ability to attain its GHG reduction targets. A similar process is used to reduce transportation emissions of ozone precursor pollutants in the Bay Area.

### *Senate Bill 350 - Renewable Portfolio Standards*

In September 2015, the California Legislature passed SB 350, which increases the states Renewables Portfolio Standard (RPS) for content of electrical generation from the 33 percent target for 2020 to a 50 percent renewables target by 2030.

### *Senate Bill 100 – Current Renewable Portfolio Standards*

In September 2018, SB 100 was signed by Governor Brown to revise California’s RPS program goals, furthering California’s focus on using renewable energy and carbon-free power sources for its energy needs. The bill would require all California utilities to supply a specific percentage of their retail sales from renewable resources by certain target years. By December 31, 2024, 44 percent of the retails sales would need to be from renewable energy sources, by December 31, 2026 the target would be 40 percent, by December 31, 2017 the target would be 52 percent, and by December 31, 2030 the target would be 60 percent. By December 31, 2045, all California utilities would be required to supply retail electricity that is 100 percent carbon-free and sourced from eligible renewable energy resource to all California end-use customers.

### *California Building Standards Code – Title 24 Part 11 & Part 6*

The California Green Building Standards Code (CALGreen Code) is part of the California Building Standards Code under Title 24, Part 11.<sup>19</sup> The CALGreen Code encourages sustainable construction standards that involve planning/design, energy efficiency, water efficiency resource efficiency, and environmental quality. These green building standard codes are mandatory statewide and are applicable to residential and non-residential developments. The most recent CALGreen Code (2019 California Building Standard Code) was effective as of January 1, 2020.

The California Building Energy Efficiency Standards (California Energy Code) is under Title 24, Part 6 and is overseen by the California Energy Commission (CEC). This code includes design requirements to conserve energy in new residential and non-residential developments, while being cost effective for homeowners. This Energy Code is enforced and verified by cities during the planning and building permit process. The current energy efficiency standards (2019 Energy Code) replaced the 2016 Energy Code as of January 1,2020. Under the 2019 standards, single-family homes are predicted to be 53 percent more efficient than homes built under the 2016 standard due more stringent energy-efficiency standards and mandatory installation of solar photovoltaic

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<sup>19</sup> See: <https://www.dgs.ca.gov/BSC/Resources/Page-Content/Building-Standards-Commission-Resources-List-Folder/CALGreen#:~:text=CALGreen%20is%20the%20first%2Din,to%201990%20levels%20by%202020.>

systems. For nonresidential developments, it is predicted that these buildings will use 30 percent less energy due to lightening upgrades.<sup>20</sup>

### Federal and Statewide GHG Emissions

The U.S. EPA reported that in 2018, total gross nationwide GHG emissions were 6,676.6 million metric tons (MMT) carbon dioxide equivalent (CO<sub>2</sub>e).<sup>21</sup> These emissions were lower than peak levels of 7,416 MMT that were emitted in 2007. CARB updates the statewide GHG emission inventory on an annual basis where the latest inventory includes 2000 through 2017 emissions.<sup>22</sup> In 2017, GHG emissions from statewide emitting activities were 424 MMT. The 2017 emissions have decreased by 14 percent since peak levels in 2004 and are 7 MMT below the 1990 emissions level and the State's 2020 GHG limit. Per capita GHG emissions in California have dropped from a 2001 peak of 14.1 MT per person to 10.7 MT per person in 2017. The most recent Bay Area emission inventory was computed for the year 2011.<sup>23</sup> The Bay Area GHG emissions were 87 MMT. As a point of comparison, statewide emissions were about 444 MMT in 2011

### GHG Significance Thresholds

The BAAQMD's CEQA Air Quality Guidelines recommended a GHG threshold of 1,100 metric tons or 4.6 metric ton per service population. These thresholds were developed based on meeting the 2020 GHG targets set in the scoping plan that addressed AB 32. Development of the project would occur beyond 2020, so a threshold that addresses a future target is appropriate.

The full buildout of the 550 East Brokaw Road commercial project would occur in 2032, so a threshold that addresses a future target beyond the interim year of 2030 was predicted. This assessment will use an interpolated service population threshold based on the 2050 GHG reduction target (i.e. 80 percent below 1990 levels by 2050) as described in EO S-3-05 and a "Substantial Progress" efficiency metric of 2.6 MT CO<sub>2</sub>e/year/service population, which was calculated for 2030 based on the 1990 inventory and the projected 2030 statewide population and employment levels.<sup>24</sup> A 2050 service population threshold would be 0.9 metric tons per service population per year if the 2020 BAAQMD threshold was reduced by 80 percent. Based on both the 2030 and 2050 predicted service population efficiency metrics, *a 2032 linearly interpolated threshold would be 2.4 metric tons per service population per year*

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<sup>20</sup> See: [https://www.energy.ca.gov/sites/default/files/2020-03/Title\\_24\\_2019\\_Building\\_Standards\\_FAQ\\_ada.pdf](https://www.energy.ca.gov/sites/default/files/2020-03/Title_24_2019_Building_Standards_FAQ_ada.pdf)

<sup>21</sup> United States Environmental Protection Agency, 2020. *Inventory of U.S. Greenhouse Gas Emissions and Sinks 1990-2018*. April. Web: <https://www.epa.gov/sites/production/files/2020-04/documents/us-ghg-inventory-2020-main-text.pdf>

<sup>22</sup> CARB. 2019. *2019 Edition, California Greenhouse Gas Emission Inventory: 2000 – 2017*. Web: [https://ww3.arb.ca.gov/cc/inventory/pubs/reports/2000\\_2017/ghg\\_inventory\\_trends\\_00-17.pdf](https://ww3.arb.ca.gov/cc/inventory/pubs/reports/2000_2017/ghg_inventory_trends_00-17.pdf)

<sup>23</sup> BAAQMD. 2015. *Bay Area Emissions Inventory Summary Report: Greenhouse Gases Base Year 2011*. January. Web: [http://www.baaqmd.gov/~media/files/planning-and-research/emission-inventory/by2011\\_ghgsummary.pdf](http://www.baaqmd.gov/~media/files/planning-and-research/emission-inventory/by2011_ghgsummary.pdf) accessed Nov. 26, 2019.

<sup>24</sup> Association of Environmental Professionals, 2016. *Beyond 2020 and Newhall: A Field Guide to New CEQA Greenhouse Gas Thresholds and Climate Action Plan Targets for California*. April.

**Impact-GHG 1:      Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?**

GHG emissions associated with development of the proposed project would occur over the short-term from construction activities, consisting primarily of emissions from equipment exhaust and worker and vendor trips. There would also be long-term operational emissions associated with vehicular traffic within the project vicinity, the generator, energy and water usage, and solid waste disposal. Emissions for the proposed project are discussed below and were analyzed using the methodology recommended in the BAAQMD CEQA Air Quality Guidelines.

CalEEMod Modeling

CalEEMod was used to predict GHG emissions from operation of the site assuming full build-out of the project. The project land use types and size and other project-specific information were input to the model, as described above. CalEEMod output is included in *Attachment 2*.

Service Population

The project service population efficiency rate is based on the total number of employees and/or residents. For this project, there would only be employees. To estimate the employee population for the office, a rate of approximately one office worker per 300-sf of office space was used.<sup>25</sup> Based on the office square footage (1,924,110 sf), the total employee population and estimated service population would be 6,414 employees.

Construction GHG Emissions

GHG emissions associated with construction were computed to be 4,703 MT of CO<sub>2</sub>e for the total construction period. These are the emissions from on-site operation of construction equipment, vendor and hauling truck trips, and worker trips. Neither the City nor BAAQMD have an adopted threshold of significance for construction related GHG emissions, though BAAQMD recommends quantifying emissions and disclosing that GHG emissions would occur during construction. BAAQMD also encourages the incorporation of best management practices to reduce GHG emissions during construction where feasible and applicable.

Operational GHG Emissions

The CalEEMod model, along with the project vehicle trip generation rates, was used to estimate daily emissions associated with operation of the fully developed site under the proposed project. CalEEMod models were run for the for the project in 2032 and for the existing land uses in 2020. It was assumed that the project would have no natural gas and all electric appliances from the San Jose reach code and electricity from SJCE would be 100 percent carbon free.

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<sup>25</sup> Strategic Economics. 2016. *San José Market Overview and Employment Lands Analysis*. January 20.

*Summary of Operational GHG Emissions*

As shown in Table 6, annual emissions from the project are predicted to be 12,286 MT of CO<sub>2e</sub> and net annual emissions would be 6,388 MT of CO<sub>2e</sub>. The service population emissions would be 1.92 MT of CO<sub>2e</sub> per service population per year.

To be considered an exceedance in the City of San José, the project must exceed both the GHG significance threshold in metric tons per year and the service population significance threshold in the future year of 2030. For this analysis, the annual metric ton threshold was not used. The project would not exceed the interpolated threshold of 2.4 MT of CO<sub>2e</sub> per service population per year. Therefore, the project would not be in exceedance for GHG emissions.

**Table 6. Annual Project GHG Emissions (CO<sub>2e</sub>) in Metric Tons and by Service Population**

<b>Source Category</b>	<b>Existing Land Use in 2020</b>	<b>Proposed Project in 2032</b>
Area	0	0
Energy Consumption	1,561	0
Mobile	3,905	10,227
Solid Waste Generation	315	900
Water Usage	117	1,159
Metric Ton Total	5,898	12,286
<b>Net Metric Tons</b>		<b>6,388</b>
<b>Service Population Emissions<sup>1</sup></b>		1.92
<i>Service Population Significance Threshold</i>	-	<i>2.4 MT of CO<sub>2e</sub>/year/service population</i>
<b><i>Exceed Threshold?</i></b>		<b><i>No</i></b>
Note: <sup>1</sup> Based on a service population of 6,414 employees		

## **Supporting Documentation**

*Attachment 1* includes the CalEEMod outputs for construction and operation. Also included are any modeling assumptions.

*Attachment 2* includes the EMFAC2021 inputs and outputs for construction and operation.

**Attachment 1: Project Construction and Operation Modeling Information**

**Attachment 2: EMFAC2021 Emissions Factors**