Appendix A

Air Quality Assessment

ETERNA TOWER
AIR QUALITY ASSESSMENT

San José, California

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Introduction

The purpose of this report is to address air quality and community health risk impacts associated with the proposed Eterna Tower project in downtown San José, California. The air quality impacts from this project would be associated with construction of the new buildings and infrastructure and operation of the project. Air pollutants associated with construction and operation of the project were predicted using appropriate computer models. In addition, the potential project health risk impacts (construction and operation) and the impacts of existing toxic air contaminant (TAC) sources affecting the nearby and proposed sensitive receptors were evaluated. The analysis was conducted following guidance provided by the Bay Area Air Quality Management District (BAAQMD).[1]

Project Description

The approximately 0.18-acre site is located at 17 and 29 E. Santa Clara Street in downtown San José. The site is currently developed with two commercial buildings. The project proposes to demolish the existing uses and construct a 27-story mixed-use building consisting of approximately 2,500-sf of ground-floor retail use and 200 residential units.[2] The project does not propose any parking. The project would include a basement level containing building utilities and one generator powered by a diesel engine. The project is within the San José Downtown Strategy 2040 Plan area.

Setting

The project is located in Santa Clara County, which is in the San Francisco Bay Area Air Basin. Ambient air quality standards have been established at both the State and federal level. The Bay Area meets all ambient air quality standards with the exception of ground-level ozone, respirable particulate matter (PM_{10}), and fine particulate matter ($PM_{2.5}$).

Air Pollutants of Concern

High ozone levels are caused by the cumulative emissions of reactive organic gases (ROG) and nitrogen oxides (NO_X). These precursor pollutants react under certain meteorological conditions to form high ozone levels. Controlling the emissions of these precursor pollutants is the focus of the Bay Area's attempts to reduce ozone levels. The highest ozone levels in the Bay Area occur in the eastern and southern inland valleys that are downwind of air pollutant sources. High ozone 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_{10}) and fine particulate matter where particles have a diameter of 2.5

[1] Bay Area Air Quality Management District, *CEQA Air Quality Guidelines*, May 2017.

[2] The project land uses have been updated since this analysis. The square footage of the retail use has increased to 5,217-sf, the number of residential units have decreased to 192, and a 5,238-sf BART/VTA station has been added on the basement level. These project modifications would result in similar or barely measurable increased emissions and risks, and would not change the project's impacts, as discussed further in the report.

micrometers or less ($PM_{2.5}$). Elevated concentrations of PM_{10} and $PM_{2.5}$ 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 (TAC) 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. The most recent Office of Environmental Health Hazard Assessment (OEHHA) risk assessment guidelines were published in February of 2015.[3] See *Attachment 1* for a detailed description of the community risk modeling methodology used in this assessment.

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, elementary schools, and parks. 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. The closest sensitive receptors to the project site are the future adjacent senior residents (19 N. 2nd Street Senior Housing) to the northeast of the project site. There are additional sensitive receptors at farther distances surrounding the site. The project would introduce new sensitive receptors (i.e., new residents) to the area.

[3] OEHHA, 2015. *Air Toxics Hot Spots Program Risk Assessment Guidelines, The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments*. Office of Environmental Health Hazard Assessment. February.

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_X and particulate matter (PM_{10} and $PM_{2.5}$) 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_X 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.[4]

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.[5] 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.

[4] USEPA, 2000. *Regulatory Announcement, Heavy-Duty Engine and Vehicle Standards and Highway Diesel Fuel Sulfur Control Requirements*. EPA420-F-00-057. December.
[5] California Air Resources Board, 2000. Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles. October.

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 $PM_{2.5}$ 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 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_X 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_X 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_X.

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.[6] 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

[6] See BAAQMD: https://www.baaqmd.gov/community-health/community-health-protection-program/community-air-risk-evaluation-care-program , accessed 2/18/2021.

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 in the center of the San José area.

The BAAQMD California Environmental Quality Act (*CEQA) Air Quality Guidelines*[7] 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. *Attachment 1* includes detailed community risk modeling methodology.

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.

[7] Bay Area Air Quality Management District, 2017. *CEQA Air Quality Guidelines*. May.

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.

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, NOx, SO_2, PM_{10}, 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 NOx 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 NOx 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 NOx 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 NOx 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 ATCM 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.

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 Bay Area Air Quality Management District (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-11.4 Encourage the installation of appropriate air filtration at existing schools, residences, and other sensitive receptor uses adversely affected by pollution sources.

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.

Applicable Goals – Construction Air Emissions

Goal MS-13 Minimize air pollutant emissions during demolition and construction activities

Applicable Policies – Construction Air Emissions

MS-13.1 Include dust, particulate matter, and construction equipment exhaust control measures as conditions of approval for subdivision maps, site development and planned development permits, grading permits, and demolition permits. At minimum, conditions shall conform to construction mitigation measures recommended in the current BAAQMD CEQA Guidelines for the relevant project size and type.

Applicable Actions – Construction Air Emissions

MS-13.4 Adopt and periodically update dust, particulate, and exhaust control standard measures for demolition and grading activities to include on project plans as conditions of approval based upon construction mitigation measures in the BAAQMD CEQA Guidelines.

Downtown Strategy 2040 Plan

The San José Downtown Strategy (DTS) 2040 Plan[8] is an urban design plan that guides development activities planned within the Downtown area. This strategy would increase the amount of new commercial office by an additional three million sf (approximately 10,000 jobs with the new total being 14.2 million sf of commercial by the year 2040. The residential capacity would be increased up to 4,360 units. The amount of new retail development (1.4 million sf) and hotel room (3,600 rooms) capacities of the DTS 2000 would be maintained. The integrated Final Environmental Impact Report was published December 2018.

The DTS identified less-than-significant construction period emissions if development projects are in conformance with 2017 BAAQMD CEQA Guidelines, GP Policy MS-13.1, and current City requirements that include various levels of construction emissions control measures. All projects are required to implement the following control measures:

City requirements, all projects will be required to implement the following control measures:

- All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.
- All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
- All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
- All vehicle speeds on unpaved roads shall be limited to 15 mph.
- All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible.
- Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.
- Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations). Clear signage shall be provided for construction workers at all access points.
- All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified visible emissions evaluator.

[8] City of San José, *Downtown Strategy 2040 FILE NO. PP15-102* , Web: https://www.sanjoseca.gov/your-government/departments/planning-building-code-enforcement/planning-division/environmental-planning/environmental-review/active-eirs/downtown-strategy-2040#:~:text=The%20proposed%20Downtown%20Strategy%202040,Plan%204%2DYear%20Review%20recommendations.

- 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.

Future projects developed under the DTS that incorporate these measures and are below the screening levels would not result in a significant impact related to construction emissions of regional criteria pollutants. Projects that exceed the screening levels would be required to complete additional project level analysis of construction-related emissions of criteria pollutants and may require additional measures to ensure that construction emissions would not exceed the threshold for average daily emissions.

Operational emissions of regional criteria air pollutants with measures included to reduce emissions under the DTS were identified as significant and unavoidable. To reduce operational emissions associated with vehicle travel, future development will be required to implement a transportation demand management (TDM) program, consistent with the Downtown Transportation Plan. The TDM programs may incorporate, but would not be limited to, the following Transportation Control Measures (TCMs):

- Rideshare Measures: Implement carpool/vanpool program (e.g., carpool ride matching for employees, assistance with vanpool formation, provision of vanpool vehicles, etc.)
- Transit Measures:
- Construct transit facilities such as bus turnouts/bus bulbs, benches, shelters, etc.
- Design and locate buildings to facilitate transit access (e.g., locate building entrances near transit stops, eliminate building setbacks, etc.)
- Services Measures:
- Provide on-site shops and services for employees, such as cafeteria, bank/ATM, dry cleaners, convenience market, etc.;
- Provide on-site childcare or contribute to off-site childcare within walking distance.
- Shuttle Measures:
- Establish mid-day shuttle service from work site to food service establishments/ commercial areas;
- Provide shuttle service to transit stations/multimodal centers
- Parking Measures:
- Provide preferential parking (e.g., near building entrance, sheltered area, etc.) for carpool and vanpool vehicles;
- Implement parking fees for single occupancy vehicle commuters;
- Implement parking cash-out program for employees (i.e., non-driving employees receive transportation allowance equivalent to value of subsidized parking);
- Bicycle and Pedestrian Measures:
- Provide secure, weather-protected bicycle parking for employees;
- Provide safe, direct access for bicyclists to adjacent bicycle routes;
- Provide showers and lockers for employees bicycling or walking to work;

- Provide secure short-term bicycle parking for retail customers or non-commute trips;
- Provide direct, safe, attractive pedestrian access from Planning Area to transit stops and adjacent development;
- Other Measures:
- Implement compressed work week schedule (e.g., 4 days/40 hours, 9 days/80 hours);
- Implement home-based telecommuting program.

During project-level supplemental review of future individual development projects, the measures will be evaluated for consistency with the DTS 2040 and General Plan policies. All feasible and applicable measures will be required as part of project design or as conditions of approval.

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. Impacts above these thresholds are considered potentially significant. Note that the DTS Plan Draft Environmental Impact Report (DEIR) evaluated emissions of criteria air pollutants (and their precursors) from planned development that includes the Proposed Project. Operational emissions from the Proposed Project are predicted in this assessment for informational purposes only.

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	*Evaluated in DTS Strategy DEIR*	
NO_x	54		
PM_{10}	82 (Exhaust)		
$PM_{2.5}$	54 (Exhaust)		
CO	Not Applicable		
Fugitive Dust	Construction Dust Ordinance or other Best Management Practices	Not Applicable	
Health Risks and Hazards	**Single Sources Within 1,000-foot Zone of Influence**	**Combined Sources (Cumulative from all sources within 1,000-foot zone of influence)**	
Excess Cancer Risk	10 per one million	100 per one million	
Hazard Index	1.0	10.0	
Incremental annual $PM_{2.5}$	0.3 $\mu g/m^3$	0.8 $\mu g/m^3$	
Note: ROG = reactive organic gases, NOx = nitrogen oxides, PM_{10} = course particulate matter or particulates with an aerodynamic diameter of 10 micrometers (µm) or less, $PM_{2.5}$ = fine particulate matter or particulates with an aerodynamic diameter of 2.5 µm or less.			

AIR QUALITY IMPACTS AND MITIGATION MEASURES

Impact AIR-1: Conflict with or obstruct implementation of the applicable air quality plan?

BAAQMD is the regional agency responsible for overseeing compliance with State and Federal laws, regulations, and programs within the San Francisco Bay Area Air Basin (SFBAAB). BAAQMD, with assistance from the Association of Bay Area Governments (ABAG) and Metropolitan Transportation Commission (MTC), prepares and implements specific plans to meet the applicable laws, regulations, and programs. The most recent and comprehensive of which is the *Bay Area 2017 Clean Air Plan*.[9] The primary goals of the Clean Air Plan are to attain air quality standards, reduce population exposure and protect public health, and reduce GHG emissions and protect the climate. The BAAQMD has also developed CEQA guidelines to assist lead agencies in evaluating the significance of air quality and GHG impacts. In formulating compliance strategies, BAAQMD relies on planned land uses established by local general plans. Land use planning affects vehicle travel, which, in turn, affects region-wide emissions of air pollutants and GHGs.

The 2017 Clean Air Plan, adopted by BAAQMD in April 2017, includes control measures that are intended to reduce air pollutant emissions in the Bay Area either directly or indirectly. Plans must show consistency with the control measures listed within the Clean Air Plan. At the project-level, there are no consistency measures or thresholds. The proposed project would not conflict with the latest Clean Air planning efforts since 1) the project is included in the adopted San José DTS 2040 Plan, 2) project would have construction and operational emissions below the BAAQMD thresholds (see Impact 2 below), 3) the project would be considered urban infill, 4) the project would be located near employment and service centers, 5) the project would be located near transit with regional connections.

Impact AIR-2: 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 ozone and $PM_{2.5}$ under both the Federal Clean Air Act and the California Clean Air Act. The area is also considered non-attainment for PM_{10} 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 ozone and PM_{10}, the BAAQMD has established thresholds of significance for these air pollutants and their precursors. These thresholds are for ozone precursor pollutants (ROG and NO_X), PM_{10}, and $PM_{2.5}$ 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 on-site construction activity, construction vehicle trips, and evaporative emissions. The project land use types and size, and anticipated construction schedule were input to

[9] Bay Area Air Quality Management District (BAAQMD), 2017. *Final 2017 Clean Air Plan.*

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.[10] The CalEEMod model output along with construction inputs are included in *Attachment 2* and EMFAC2021 vehicle emissions modeling outputs are included in *Attachment 3*.

CalEEMod Inputs

Land Use Inputs

The proposed project land uses[11] were entered into CalEEMod as described in Table 2.

Table 2. Summary of Project Construction Land Use Inputs

Project Land Uses	Size	Units	Square Feet	Acreage
Apartments High Rise	200	Dwelling Units	184,960	0.18
Strip Mall	2.49	1,000 Square Feet	2,491	

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 model includes evaporative emissions from application of coatings (e.g., painting) and any paving.

The CalEEMod model generates a default set of construction assumptions for "typical construction site scenarios"; however, these are not appropriate for a project like this that involves demolition, excavation, and extensive vertical construction on a relatively small site.[12] For this project, the construction build-out schedule was provided by the project applicant and equipment information were based on CalEEMod defaults for a project of this type and size. The project construction equipment worksheet provided by the applicant included the schedule for each phase. Within each phase, the quantity of equipment to be used along with the average hours per day and total number of workdays were based on CalEEMod defaults that were then verified by the applicant. 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. The construction schedule assumed that the earliest possible start date would be May 2028 and the project would be built out over a period of approximately 28 months or 604 construction workdays. The earliest year of operation was assumed to be 2031.

[10] See CARB's EMFAC2021 Emissions Inventory at https://arb.ca.gov/emfac/emissions-inventory

[11] The project land uses have been updated since this analysis. The square footage of the retail use has increased to 5,217-sf, the number of residential units have decreased to 192, and a 5,238-sf BART/VTA station has been added on the basement level. However, construction activities (i.e., schedule, equipment quantities, hours used) would not change with the new project land uses. While emissions (i.e., ROG, Energy) would increase slightly from these land uses changes, the project's criteria pollutant and GHG emissions and the community risk impacts are far below the thresholds that any minor increase should not cause the emissions and impacts to exceed the thresholds.

[12] SCAQMD. 2005. S*ample Construction Scenarios for Projects Less than Five Acres in Size* February. Note that this is the supporting report used to develop CalEEMod default construction inputs (see Appendix E – Technical Source Documentation of the CalEEMod User's Guide).

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 trip rate by the number of days in that phase. Haul trips for demolition and grading were estimated from the provided demolition and grading volumes by assuming each truck could carry 10 tons per load. The number of concrete and asphalt total round haul trips were provided for the project and converted to total one-way trips, assuming two trips per delivery.

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. The construction traffic information was combined with EMFAC2021 motor vehicle emissions factors. EMFAC2021 provides aggregate emission rates in grams per mile for each vehicle type. The vehicle mix for this study was based on CalEEMod defaults, 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 trips, 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 (demolition material export and soil import/export). Since CalEEMod does not address cement or asphalt trucks, these were treated as vendor travel distances. Each trip was assumed to include an idle time of 5 minutes. Emissions associated with vehicle starts were also included. On-road emission rates from the years 2028-2030 for Santa Clara County were used. 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[1]	Total Vendor[1]	Total Haul[2]	
Vehicle mix[1]	67% LDA 4% LDT1 29% LDT2	32% MHDT 68% HHDT	100% HDDT	
Trip Length (miles)	10.8	7.3	20.0 (Demo/Soil) 7.3 (Cement/Asphalt)	CalEEMod default distance with 5-min truck idle time.
Demolition	900	-	35	7,762-sf existing building demolition. Default worker trips.
Site Preparation	720	-	-	CalEEMod default worker trips.
Grading	1,048	-	850	6,800-cy of export soil volumes. CalEEMod default worker trips.
Trenching	600	-	-	CalEEMod default worker trips.
Building Construction	46,400	7,040	64	32 cement truck round trips. CalEEMod default worker and vendor trips.
Architectural Coating	6,931	-	-	CalEEMod default worker trips.

Notes: [1] Based on 2028-2030 EMFAC2021 light-duty vehicle fleet mix for Santa Clara County.
[2] Includes demolition and grading trips estimated by CalEEMod based on amount of material to be removed. Cement and asphalt trips estimated based on data provided by the applicant.

Summary of Computed Construction Period Emissions

Average daily emissions were annualized for each year of construction by dividing the annual construction emissions by the number of active workdays during that year. Table 4 shows the annualized average daily construction emissions of ROG, NO_X, PM_{10} exhaust, and $PM_{2.5}$ exhaust during construction of the project. As indicated in Table 4, predicted annualized project construction emissions would not exceed the BAAQMD significance thresholds during any year of construction. Additionally, the DTS control measures requires to implement best management practices to control dust and exhaust during construction. Therefore, air pollutant emissions from the project would be further reduced.

Table 4. Construction Period Emissions

Year	ROG	NOx	PM_{10} Exhaust	$PM_{2.5}$ Exhaust
Construction Emissions Per Year (Tons)				
2028	0.06	0.43	0.02	0.02
2029	0.93	0.66	0.03	0.03
2030	0.54	0.31	0.01	0.01
Average Daily Construction Emissions Per Year (pounds/day)				
2028 (175 construction workdays)	0.71	4.93	0.25	0.19
2029 (261 construction workdays)	7.14	5.03	0.25	0.20
2030 (167 construction workdays)	6.49	3.69	0.14	0.10
BAAQMD Thresholds (pounds per day)	*54* lbs./day	*54* lbs./day	*82* lbs./day	*54* lbs./day
Exceed Threshold?	No	No	No	No

Operational Period Emissions

The impact of operational emissions was addressed in the DTS DEIR and found to be significant and unavoidable for the entire plan. Emissions from the project were computed for informational purposes. Operational air emissions from the project would be generated primarily from the project generator and autos driven by future residents, 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.

CalEEMod Inputs

Land Uses

The project land uses were entered into CalEEMod as described above for the construction period modeling.

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. The earliest full year of operation would be 2031 if construction begins in 2028. Emissions associated with build-out later than 2031 would be lower.

Traffic Information

Project traffic data was not available at the time of this study because the project is not anticipated to generate substantial traffic and on-site parking would not be available. Therefore, the default trip generation rates, 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 EMFAC2014, 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.[13,14] 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

[13] 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

[14] California Air Resource Board, 2020. *EMFAC Off-Model Adjustment Factors for Carbon Dioxide (CO_20 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

adjustment factors. On road emission rates from 2028-2030 Santa Clara County were used (See *Attachment 3*). More details about the updates in emissions calculation methodologies and data are available in the EMFAC2021 Technical Support Document.[15]

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 José Clean Energy (SJCE) will provide 100-percent carbon-free base power by 2021.
- One gigawatt of solar power will be installed in San José 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 the minimum Building Energy Efficiency requirements.[16] 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_2 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

[15] See CARB 2021: https://ww2.arb.ca.gov/our-work/programs/mobile-source-emissions-inventory/road-documentation/msei-modeling-tools-emfac

[16] City of San José Transportation and Environmental Committee, *Building Reach Code for New Construction Memorandum,* August 2019.

electricity that would be 100-percent carbon free by 2021 before the project becomes operational.[17] 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.

Project Generator

The project proposes to include one stand-by emergency diesel generator along the southern border of the basement level near E. Santa Clara Street. The generator specifications were not known at the time of the study, so it was estimated to be a 500-kilowatts (kW) generator powered by a 670 horsepower (HP) diesel engine. The generator would be tested periodically and power the buildings in the event of a power failure. For modeling purposes, it was assumed that the generator would be operated primarily for testing and maintenance purposes. CARB and BAAQMD requirements limit these engine operations to 50 hours each per year of non-emergency operation. During testing periods, the engine would typically be run for less than one hour. The engine would be required to meet CARB and EPA emission standards and consume commercially available California low-sulfur diesel fuel. Generator emissions were modeled using CalEEMod.

Wood-Burning Devices

CalEEMod default inputs assume new residential construction would include woodburning fireplaces and stoves. The project would not include wood-burning devices, as these devices are prohibited by BAAQMD Regulation 6, Rule 3.[18] Therefore, the number of woodstoves and woodburning fireplaces in CalEEMod were set to zero and assigned as natural gas. Additionally, the City of San José passed an ordinance in December 2020 that prohibits the use of natural gas infrastructure in new buildings.[19] 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.

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.

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 operational emissions of ROG, NO_X, total PM_{10}, and total $PM_{2.5}$ during operation of the project. The operational period emissions would not exceed the BAAQMD significance thresholds.

[17] 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

[18] Bay Area Air Quality Management District, https://www.baaqmd.gov/~/media/dotgov/files/rules/regulation-6-rule-3/documents/20191120_r0603_final-pdf.pdf?la=en

[19] City of San Jose, 2020. "Expand Natural Gas Ban", December. Web: https://www.sanjoseca.gov/Home/Components/News/News/2210/4699

Table 5. Operational Period Emissions

Scenario	ROG	NOx	PM_{10}	$PM_{2.5}$
2031 Annual Project Operational Emissions (*tons/year*)	1.34	0.44	0.75	0.20
BAAQMD Thresholds (tons /year)	*10 tons*	*10 tons*	*15 tons*	*10 tons*
Exceed Threshold?	*No*	*No*	*No*	*No*
2031 Daily Project Operational Emissions (*pounds/day*)[1]	7.36	2.42	4.13	1.10
BAAQMD Thresholds (pounds/day)	*54* lbs.	*54* lbs.	*82* lbs.	*54* lbs.
Exceed Threshold?	*No*	*No*	*No*	*No*
Notes: [1]Assumes 365-day operation.				

Impact AIR-3: 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., stationary and mobile sources).

Project construction activity would generate dust and equipment exhaust that would affect nearby sensitive receptors. The project would also include the installation of a stand-by generator powered by a diesel engine and would generate some traffic consisting of mostly light-duty vehicles, which would produce TAC and air pollutant emissions.

Project impacts to existing sensitive receptors were addressed for temporary construction activities and long-term operational conditions. There are also several sources of existing TACs and localized air pollutants in the vicinity of the project. The impact of the existing sources of TAC was also assessed in terms of the cumulative risk which includes the project contribution, as well as the risk on the new sensitive receptors introduced by the project.

Community Risk Methodology for Construction and Operation

Community risk impacts were addressed by predicting increased cancer risk, the increase in annual $PM_{2.5}$ concentrations and computing the Hazard Index (HI) for non-cancer health risks. The risk impacts from the project are the combination of risks from construction and operation sources. These sources include on-site construction activity, construction truck hauling, project generators, and increased traffic from the project. To evaluate the increased cancer risks from the project, a 30-year exposure period was used, per BAAQMD guidance,[20] with the sensitive receptors being exposed to both project construction and operation emissions during this timeframe.

The project increased cancer risk is computed by summing the project construction cancer risk and operation cancer risk contributions. Unlike, the increased maximum cancer risk, the annual $PM_{2.5}$ concentration and HI values are not additive but based on the annual maximum risk for the entirety of the project. The project maximally exposed individual (MEI) is identified as the sensitive receptor that is most impacted by the project's construction and operation.

[20] BAAQMD, 2016. *BAAQMD Air Toxics NSR Program Health Risk Assessment (HRA) Guidelines*. December 2016.

The methodology for computing community risks impacts is contained in *Attachment 1*. This involved the calculation of TAC and $PM_{2.5}$ emissions, dispersion modeling of these emissions, and computations of cancer risk and non-cancer health effects.

Modeled Sensitive Receptors

Receptors for this assessment included locations where sensitive populations would be present for extended periods of time (i.e., chronic exposures). This includes the future senior residences to the northeast and the existing residences surrounding the project site, as shown in Figure 1. Residential receptors are assumed to include all receptor groups (i.e., third trimester, infants, children, and adults) with almost continuous exposure to project emissions. Community risks were also computed for seniors at the future 19 N. 2nd Street Affordable Senior Housing (adults only).

Community Risks from Project Construction

Construction equipment and associated heavy-duty truck traffic generates diesel exhaust, which is a known TAC. These exhaust air pollutant emissions would not be considered to contribute substantially to existing or projected air quality violations. Construction exhaust emissions may still pose health risks for sensitive receptors such as surrounding residents. The primary community risk impact issue associated with construction emissions are cancer risk and exposure to $PM_{2.5}$. Diesel exhaust poses both a potential health and nuisance impact to nearby receptors. A health risk assessment of the project construction activities was conducted that evaluated potential health effects to nearby sensitive receptors from construction emissions of DPM and $PM_{2.5}$.[21] This assessment included dispersion modeling to predict the offsite and onsite concentrations resulting from project construction, so that increased cancer risks and non-cancer health effects could be evaluated.

Construction Emissions

The CalEEMod and EMFAC2021 models provided total annual PM_{10} exhaust emissions (assumed to be DPM) for the off-road construction equipment and for exhaust emissions from on-road vehicles, with total emissions from all construction stages of 0.05 tons (94 pounds). The on-road emissions are a result of haul truck travel during demolition and grading activities, worker travel, and vendor deliveries during construction. A trip length of half a mile was used to represent vehicle travel while at or near the construction site. Fugitive $PM_{2.5}$ dust emissions were calculated by CalEEMod as 0.05 tons (109 pounds) for the overall construction period.

Dispersion Modeling

The U.S. EPA AERMOD dispersion model was used to predict DPM and $PM_{2.5}$ concentrations at sensitive receptors (residences, senior housing) in the vicinity of the project construction area. The AERMOD dispersion model is a BAAQMD-recommended model for use in modeling analysis of

[21] DPM is identified by California as a toxic air contaminant due to the potential to cause cancer.

these types of emission activities for CEQA projects.[22] Emission sources for the construction site were grouped into two categories: exhaust emissions of DPM and fugitive $PM_{2.5}$ dust emissions.

Construction Sources

Combustion equipment DPM exhaust emissions were modeled as a series of point sources with a nine-foot release height (construction equipment exhaust stack height) placed at 20 feet (6 meter) intervals throughout the construction site. This resulted in 23 individual point sources being used to represent mobile equipment DPM exhaust emissions in the construction area, with DPM emissions occurring throughout the project construction site. In addition, the following stack parameters were used: a vertical release, a stack diameter of 2.5 inches, an exhaust temperature of 918˚F, and an exit velocity of 309 feet per second. Since these are point sources, plume rise is calculated by the AERMOD dispersion model. Emissions from vehicle travel on- and off-site were also distributed among the point sources throughout the site. The locations of the point sources used for the modeling are identified in Figure 1.

For modeling fugitive $PM_{2.5}$ emissions, a near-ground level release height of 7 feet (2 meters) was used for the area source. Fugitive dust emissions at construction sites come from a variety of sources, including truck and equipment travel, grading activities, truck loading (with loaders) and unloading (rear or bottom dumping), loaders and excavators moving and transferring soil and other materials, etc. All of these activities result in fugitive dust emissions at various heights at the point(s) of generation. Once generated, the dust plume will tend to rise as it moves downwind across the site and exit the site at a higher elevation than when it was generated. For all these reasons, a 7-foot release height was used as the average release height across the construction site. Emissions from the construction equipment and on-road vehicle travel were distributed throughout the modeled area sources.

AERMOD Inputs and Meteorological Data

Since there are a number of tall buildings adjacent to or in close proximity to the project construction site, the effects of building downwash on the construction equipment exhaust plumes were included in the modeling analysis. The locations of the point sources used for the modeling and the buildings that were evaluated for potential downwash effects are identified in Figure 1.

The modeling used a five-year meteorological data set (2013-2017) from the San José Airport prepared for use with the AERMOD model by the BAAQMD. Construction emissions were modeled as occurring daily between 8:00 a.m. to 5:00 p.m. Monday through Friday per the project applicant's construction schedule. Annual DPM and $PM_{2.5}$ concentrations from construction activities during the 2028-2030 period were computed by the model. DPM and $PM_{2.5}$ concentrations were computed at nearby sensitive receptor locations. Receptor heights of 20 feet (6.1 meters) and 30 feet (9.1 meters) were used to represent the breathing heights of residents in nearby residential units on the second and third floors, respectively.[23]

[22] Bay Area Air Quality Management District (BAAQMD), 2012, *Recommended Methods for Screening and Modeling Local Risks and Hazards, Version 3.0.* May.

[23] Bay Area Air Quality Management District, 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

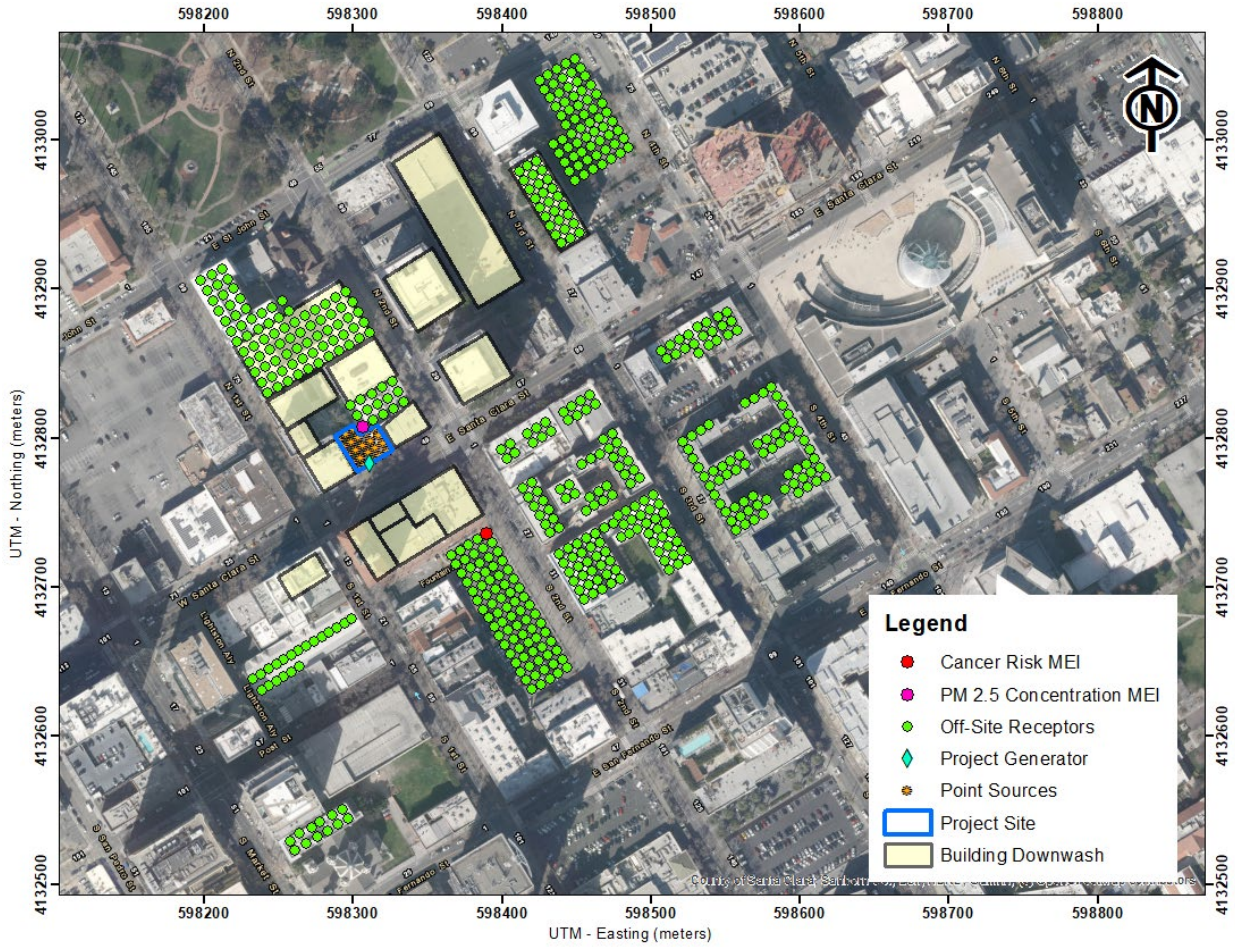
Summary of Construction Community Risk Impacts

The increased cancer risk calculations were based on applying the BAAQMD recommended age sensitivity factors to the TAC concentrations, as described in *Attachment 1*. Age-sensitivity factors reflect the greater sensitivity of infants and small children to cancer causing TACs. Third trimester, infant, child, and adult exposures were assumed to occur at all residences during the entire construction period. Sensitive receptors at the affordable senior housing building were assumed to be senior adults only. The adult (ages 16 and older) cancer risk parameters were used to calculate the increased cancer risk for the senior sensitive receptors.

The maximum modeled annual $PM_{2.5}$ concentration was calculated based on combined exhaust and fugitive concentrations. The maximum computed HI values was based on the ratio of the maximum DPM concentration modeled and the chronic inhalation reference exposure level of 5 $\mu g/m^3$.

The maximum modeled annual DPM and $PM_{2.5}$ concentrations, which includes both the DPM and fugitive $PM_{2.5}$ concentrations, were identified at nearby sensitive receptors to find the MEI. Results of this assessment indicated that the construction MEIs were located in two places. The cancer risk MEI was located at a residence on the second floor (20 feet above ground) in the northeast corner of the future Fountain Alley project to the south of the project site opposite E. Santa Clara Street. The $PM_{2.5}$ concentration MEI was located at the adjacent senior residence on the second floor (20 feet above ground) in the southwest corner of the future 19 N. 2nd Street Affordable Senior Housing project to the northeast of the project site. The location of the MEIs and nearby sensitive receptors are shown in Figure 1. Table 6 lists the community risks from construction at the location of the construction MEIs. *Attachment 4* to this report includes the emission calculations used for the construction modeling and the cancer risk calculations.

Figure 1. Locations of Project Construction Site, Modeled DPM Point Sources, Project Generator, Buildings Evaluated for Downwash Effects, and Maximum TAC Locations (MEIs)



Community Risks from Project Operation – Traffic and Generators

Operation of the project would have long-term emissions from mobile sources (i.e., traffic) and stationary sources (i.e., generators). While these emissions would not be as intensive at or near the site as construction activity, they would contribute to long-term effects to sensitive receptors.

Project Traffic

Diesel powered vehicles are the primary concern with local traffic-generated TAC impacts. Per BAAQMD recommended risks and methodology, a road with less than 10,000 total vehicle per day is considered a low-impact source of TACs and not considered in the CEQA analysis.[24] Project traffic data was not available at the time of this study because the project is not anticipated to generate substantial traffic and on-site parking would not be available. Any project trips would

[24] Bay Area Air Quality Management District, 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

mostly be from light-duty gasoline-powered vehicles (i.e., passenger cars). Therefore, emissions from project-generated traffic are considered negligible and not included in this analysis.

Project Stand-By Diesel Generators

The project proposes to include one stand-by emergency diesel generator along the southern border of the basement level near E. Santa Clara Street. It was assumed that the generator's emissions would be released along the boundary of the building's generator room (see Figure 1). The generator was estimated to be 500-kW powered by a 670-HP diesel engine.

Operation of a diesel generator would be a source of TAC emissions. The generator would be operated for testing and maintenance purposes, with a maximum of 50 hours per year of non-emergency operation under normal conditions. During testing periods, the engine would typically be run for less than one hour under light engine loads. The generator engine would be required to meet EPA emission standards and consume commercially available low sulfur diesel fuel. The emissions from the operation of the generators were calculated using the CalEEMod model.

This diesel engines would be subject to CARB's Stationary Diesel Airborne Toxics Control Measure (ATCM) and require permits from the BAAQMD, since it will be equipped with an engine larger than 50-HP. BACT requirements would apply to the generator that would limit DPM emissions. As part of the BAAQMD permit requirements for toxics screening analysis, the engine emissions will have to meet Best Available Control Technology for Toxics (BACT) and pass the toxic risk screening level of less than ten in a million. The risk assessment would be prepared by BAAQMD. Depending on results, BAAQMD would set limits for DPM emissions (e.g., more restricted engine operation periods). Sources of air pollutant emissions complying with all applicable BAAQMD regulations generally will not be considered to have a significant air quality community risk impact.

To obtain an estimate of potential cancer risks and $PM_{2.5}$ impacts from operation of the emergency generator the U.S. EPA AERMOD dispersion model was used to calculate the maximum annual DPM concentration at off-site sensitive receptor locations (nearby residences). The same receptors, breathing heights, and BAAQMD San José Airport meteorological data used in the construction dispersion modeling were used for the generator models. Stack parameters (stack height, exhaust flow rate, and exhaust gas temperature) for modeling the generators was based on BAAQMD default parameters for emergency generators.[25] Annual average DPM and $PM_{2.5}$ concentrations were modeled assuming that generator testing could occur at any time of the day (24 hours per day, 365 days per year).

To calculate the increased cancer risk from the generator at the MEIs, the cancer risks were also adjusted for exposure duration to account for the MEI being exposed to construction for the first 3 years of the 30-year period. The exposure duration was adjusted for 27 years of exposure. Table 6 lists the community risks from stand-by diesel generator at the location of residential MEIs. The emissions and health risk calculations for the proposed generator are included in *Attachment 4*.

[25] The San Francisco Community Risk Reduction Plan: Technical Support Document, BAAQMD, San Francisco Dept. of Public Health, and San Francisco Planning Dept., December 2012

Cumulative Community Risks of all TAC Sources at Project MEI

The cumulative risk impacts from a project are the combination of construction and operation sources. These sources include on-site construction activity, project generator, and increased traffic from the project. The project impact is computed by adding the construction cancer risk for an infant/child to the increased cancer risk for the project operational conditions for the generator at the MEIs over a 30-year period. The project MEIs are identified as the sensitive receptors that are most impacted by the project's construction and operation.

For this project, the sensitive receptors identified in Figure 1 as the construction MEIs are also the project MEIs. At these locations, the MEIs would be exposed to 3 years of construction cancer risks and 27 years of operational (includes stand-by generator) cancer risks. The cancer risks from construction and operation of the project were summed together. Unlike, the increased maximum cancer risk, the annual $PM_{2.5}$ concentration and HI risks are not additive but based on an annual maximum risk for the entirety of the project.

Project risk impacts are shown in Table 6. The unmitigated maximum cancer risks and from construction activities at the residential project MEI locations would exceed the single-source significance threshold. However, with the incorporation of the DTS best management practices to control dust and exhaust during construction and *Mitigation Measure AQ-1*, the mitigated risk and hazard values would no longer exceed the BAAQMD single-source significance thresholds. The unmitigated annual $PM_{2.5}$ concentration and non-cancer hazards at the MEI, and health risk impacts at the maximum school receptor, from project construction and operation activities would be below the single-source significance thresholds.

Table 6. Construction and Operation Risk Impacts at the Off-Site Project MEI

Source		Cancer Risk* (per million)	Annual $PM_{2.5}$* ($\mu g/m^3$)	Hazard Index
Project Construction (Years 0-3)	Unmitigated	**15.85 (infant)**	0.32***	0.01
	Mitigated*	2.90 (infant)	0.09	<0.01
Project Generator, One 500-kW, 670-HP (Years 3-30)		1.34	0.01	<0.01
Total/Maximum Project Impact (Years 0-30)	Unmitigated	**17.19 (infant)**	0.32***	0.01
	Mitigated*	4.24 (infant)	0.09	<0.01
BAAQMD Single-Source Threshold		***10***	***0.3***	***1.0***
Exceed Threshold?	Unmitigated	***Yes***	*No*	*No*
	Mitigated*	*No*	*No*	*No*

* Maximum cancer risk and maximum $PM_{2.5}$ concentration occur at different receptors.
** Construction equipment with Tier 4 interim engines and BMPs as Mitigation.
*** As the threshold is presented with only one significant figure after the decimal, the project $PM_{2.5}$ concentration when rounded does not exceed the threshold.

Cumulative Community Risks of all TAC Sources at the Offsite Project MEI

Community health risk assessments typically look at all substantial sources of TACs that can affect sensitive receptors that are located within 1,000 feet of a project site (i.e., influence area). These sources include rail lines, freeways or highways, busy surface streets, and stationary sources identified by BAAQMD.

A review of the project area indicated that traffic on E. Santa Clara Street would exceed 10,000 vehicles per day. Other nearby streets are assumed to have less than 10,000 vehicles per day. A review of BAAQMD's stationary source map website identified eight stationary sources with the potential to affect the project MEIs. In addition, there are several development projects whose construction would contribute to the cumulative risk. The risk impacts from these developments are included within the analysis. Figure 2 shows the location of the sources affecting the MEIs. Community risk impacts from these sources upon the MEIs reported in Table 7. Details of the modeling and community risk calculations are included in *Attachment 5.*

Figure 2. Project Site and Nearby TAC and $PM_{2.5}$ Sources

Local Roadways – E. Santa Clara Street

A refined analysis of potential health impacts from vehicle traffic on the E. Santa Clara Street was conducted since the roadway was estimated to have average daily traffic (ADT) exceeding 10,000 vehicles. The refined analysis involved predicting emissions for the traffic volume and mix of vehicle types on the roadway near the project site and using an atmospheric dispersion model to predict exposure to TACs. The associated cancer risks are then computed based on the modeled exposures. *Attachment 1* includes a description of how community risk impacts, including cancer risk are computed.

Traffic Emissions Modeling

This analysis involved the development of DPM, organic TACs, and $PM_{2.5}$ emissions for traffic on E. Santa Clara Street using the Caltrans version of the CARB EMFAC2017 emissions model, known as CT-EMFAC2017. CT-EMFAC2017 provides emission factors for mobile source criteria pollutants and TACs, including DPM. Emission processes modeled include running exhaust for DPM, $PM_{2.5}$ and total organic compounds (TOG), running evaporative losses for TOG, and tire and brake wear and fugitive road dust for $PM_{2.5}$. All $PM_{2.5}$ emissions from all vehicles were used, rather than just the $PM_{2.5}$ fraction from diesel powered vehicles, because all vehicle types (i.e., gasoline and diesel powered) produce $PM_{2.5}$. Additionally, $PM_{2.5}$ emissions from vehicle tire and brake wear and from re-entrained roadway dust were included in these emissions. DPM emissions are projected to decrease in the future and are reflected in the CT-EMFAC2017 emissions data. Inputs to the model include region (Santa Clara County), type of road (major/collector), truck percentage for non-state highways in Santa Clara County (3.51 percent),[26] traffic mix assigned by CT-EMFAC2017 for the county, year of analysis (2028 – construction start year), and season (annual).

To estimate TAC and $PM_{2.5}$ emissions over the 30-year exposure period used for calculating the increased cancer risks for sensitive receptors at the MEI and project site, the CT-EMFAC2017 model was used to develop vehicle emission factors for the year 2028 (project construction 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 CT-EMFAC2017. Year 2028 emissions were conservatively assumed as being representative of future conditions over the time period that cancer risks are evaluated since, as discussed above, overall vehicle emissions, and in particular diesel truck emissions, will decrease in the future.

The ADT on E. Santa Clara Street was based on traffic data from another nearby development project. Assuming a 1 percent per year increase, the predicted ADT on E. Santa Clara Street would be 17,810 vehicles. Average hourly traffic distributions for Santa Clara County roadways were developed using the EMFAC model,[27] which were then applied to the ADT volumes to obtain estimated hourly traffic volumes and emissions for the roadway. For all hours of the day, an

[26] Bay Area Air Quality Management District, 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

[27] The Burden output from EMFAC2007, a previous version of CARB's EMFAC model, was used for this since the current web-based version of EMFAC2014 does not include Burden type output with hour by hour traffic volume information.

average speed of 20 mph on E. Santa Clara Street was assumed for all vehicles based on posted speed limit signs on the roadway and assuming 5 mph below to account for downtown traffic

Dispersion Modeling

Dispersion modeling of TAC and $PM_{2.5}$ emissions was conducted using the U.S. EPA AERMOD dispersion model, which is recommended by the BAAQMD for this type of analysis.[28] TAC and $PM_{2.5}$ emissions from traffic on E. Santa Clara Street within about 1,000 feet of the project site was evaluated with the model. Emissions from vehicle traffic were modeled in AERMOD using a series of volume sources along a line (line volume sources), with line segments used to represent the eastbound and westbound travel lanes on E. Santa Clara Street. The same meteorological data and off-site sensitive receptors used in the previous construction dispersion modeling were used in the roadway modeling. Other inputs to the model included road geometry, hourly traffic emissions, and receptor locations and heights. Annual TAC and $PM_{2.5}$ concentrations for 2028 from traffic on E. Santa Clara Street were calculated using the model. Concentrations were calculated at the project MEIs with receptor heights of 20 feet (6.1 meters) to represent the breathing heights on the second floor of the nearby residence.

Computed Cancer and Non-Cancer Health Impacts

The cancer risk, $PM_{2.5}$ concentration, and HI impacts from E. Santa Clara Street on the project MEI are shown in Table 7. Figure 2 shows the roadway links used for the modeling and receptor locations where concentrations were calculated. Details of the emission calculations, dispersion modeling and cancer risk calculations for the receptors with the maximum cancer risk from Santa Clara Street traffic are provided in *Attachment 5.*

<u>BAAQMD Permitted Stationary Sources</u>

Permitted stationary sources of air pollution near the project site were identified using BAAQMD's *Permitted Stationary Sources 2018* GIS website,[29] which identifies the location of nearby stationary sources and their estimated risk and hazard impacts, including emissions and adjustments to account for new OEHHA guidance. Eight sources were identified using this tool with seven sources being diesel generators and one being a gas dispensing facility. The BAAQMD GIS website provided screening risks and hazards for this source, so a stationary source information request was not required to be submitted to BAAQMD.

The screening level risks and hazards provided by BAAQMD for the remaining stationary sources were adjusted for distance using BAAQMD's *Distance Adjustment Multiplier Tool for Diesel Internal Combustion Engines and Gas Dispensing Facilities*. Community risk impacts from the stationary sources upon the MEI are reported in Table 7.

[28] BAAQMD. *Recommended Methods for Screening and Modeling Local Risks and Hazards*. May 2012
[29] BAAQMD, https://baaqmd.maps.arcgis.com/apps/webappviewer/index.html?id=2387ae674013413f987b1071715daa65

Construction Risk Impacts from Nearby Developments

From the City's website,[30] the following planned or approved projects are located within 1,000 feet of the proposed project:

- **19 N. 2nd Street** – this project is adjacent to the northeast of the project site. This mixed-use project would include 220 residential units and 37,240-sf of commercial space. This project is currently in the planning review phase. However, the construction schedule for this project shows completion by June 2025, which would three years prior to the start of the proposed project. Cumulative construction is therefore not assumed.

- **Fountain Alley Mixed-Use** – this project is located at 35 South 2nd Street, approximately 265 feet south of the project site. The project would include a 21-story mixed-use building with 194 residential units and 405,000 square feet of office space and 31,959 square feet of ground-level retail. This project is currently in the planning review phase. However, Fountain Alley is expected to be completed prior to the start of the proposed project. Cumulative construction is therefore not assumed.

- **Fountain Alley Office** – this project is located at 26 S. 1st Street and is approximately 260 feet south of the project site. This project is approved but not yet constructed. This project includes a six-story building with 91,992-sf of commercial office and retail space. Fountain Alley Office is expected to be completed prior to the start of the proposed project. Cumulative construction is therefore not assumed.

- **27 West** – this project is located at 27 S. 1st Street, which is about 310 feet southwest of the project site. This project has been approved and consists of a 22-story mixed-use building with 374 residential units and 35,712-sf of retail space. Construction for this project has begun and would be completed prior to the proposed project. Cumulative construction is therefore not assumed.

- **Miro (SJSC Towers)** – this project is located at 39 North 5th Street, which is located 850 feet east of the project site. This project is currently under construction and near completion. Construction of this project should be completed prior to construction of the project. This would not result in a cumulative construction impact.

- **Hotel Clariana** – this project is located at 27 S. 4th Street, which is about 575 feet southeast of the project site. This project is currently under review and would consist of a five-story hotel and seven-story condominium building. Construction dates for this project have not been confirmed but would be expected to be completed prior to construction of the proposed project. Cumulative construction is therefore not assumed.

- **BDG Mixed-Use** – this project site is located at 148 to 150 E. Santa Clara Street, 17 S. 4th Street, and 130 to 134 E. Santa Clara Street. This project is more than 500 feet southeast of the project site. This project is in the planning review phase and would consist of a would

[30] City of San Jose, Private / Key Economic Development Projects Map, Web: https://gis.sanjoseca.gov/maps/devprojects/

consist of a six-story mixed-use building with ground-level retail/restaurant uses and office space on the upper floors. However, BDG Mixed-Use is expected to be completed prior to the start of the proposed project. Cumulative construction is therefore not assumed.

- **Icon-Echo** – this project is located at 147 E. Santa Clara Street and would include the construction of two towers: a residential tower with 415 units and an office tower with 525,000-sf of office space. This project is currently in the planning review phase and not expected to start before January 2023. However, construction of Icon-Echo is expected to be completed prior to the start of the proposed project. Cumulative construction is therefore not assumed.

All the listed nearby developments would complete construction by the time the proposed project begins construction in 2028. Therefore, there would be no construction health risks associated with the nearby developments that would overlap the proposed project. No nearby development health risks were included in this assessment.

Summary of Cumulative Risks at the Project MEI

Table 7 reports both the project and cumulative community risk impacts at the sensitive receptors most affected by project construction and operation (i.e., the project MEIs). The project would have an exceedance with respect to community risk caused by project construction and operation activities, since the maximum unmitigated cancer risk exceeds the BAAQMD single-source threshold. With the implementation of the DTS best management practices to control dust and exhaust during construction and *Mitigation Measure AQ-1*, the project's cancer risk would be lowered to a level below the single-source thresholds. The cancer risk, annual $PM_{2.5}$ concentration, and HI, unmitigated and mitigated, does not exceed the cumulative thresholds.

Table 7. Cumulative Community Risk Impacts at the Location of the Project MEIs

Source		Maximum Cancer Risk (per million)	$PM_{2.5}$ Concentration ($\mu g/m^3$)	Hazard Index
Project Impacts				
Total/Maximum Project Impact	Unmitigated	**17.19 (infant)**	0.32	0.01
	Mitigated	4.24 (infant)	0.09	<0.01
BAAQMD Single-Source Threshold		***10***	***0.3***	***1.0***
Exceed Threshold?	Unmitigated	***Yes***	*No*	*No*
	Mitigated	*No*	*No*	*No*
Cumulative Sources				
E. Santa Clara Street, ADT 17,810		0.88	0.07	<0.01
Verizon Business - SBEZCA (Facility ID #12969, Generator), MEI at 875 feet		2.31	<0.01	<0.01
60 SOMA Fee Owner CA,LLC c/o Harvest Properties (Facility ID #19758, Generator), MEI at 650 feet		0.51	<0.01	-
Judicial Council of California, JCC 43-B2 (Facility ID #20324, Generator), MEI at 1,000 feet		4.99	0.01	0.01
CoreSite (Facility ID #20903, Generator), MEI at 875 feet		3.75	0.01	<0.01
Essex OSM Reit LLC (Facility ID #22415, Generator), MEI at 850 feet		0.18	-	-
Digital Realty (Facility ID #22612, Generator), MEI at 735 ft		0.10	-	-
SV Towers Investments LLC, C/O Harvest Properties (Facility ID #23479, Generator), MEI at 300 feet		0.68	-	-
Chevron #4259 (Facility ID #23479, Gas Station), MEI at 650 feet		0.39	-	<0.01
Combined Sources	Unmitigated	30.98	<0.43	<0.06
	Mitigated	18.03	<0.20	<0.06
BAAQMD Cumulative Source Threshold		***100***	***0.8***	***10.0***
Exceed Threshold?	Unmitigated	*No*	*No*	*No*
	Mitigated	*No*	*No*	*No*

Mitigation Measure AQ-1: Use construction equipment that has low diesel particulate matter exhaust emissions.

A feasible plan to reduce emissions such that increased cancer risk and annual $PM_{2.5}$ concentrations from construction would be reduced below significance levels is as follows:

1. All construction equipment larger than 25 horsepower used at the site for more than two continuous days or 20 hours total shall meet U.S. EPA Tier 4 emission standards for particulate matter (PM_{10} and $PM_{2.5}$), if feasible, otherwise,

    a. If use of Tier 4 equipment is not available, alternatively use equipment that meets U.S. EPA emission standards for Tier 3 engines and include particulate matter emissions control equivalent to CARB Level 3 verifiable diesel emission control devices that altogether achieve a minimum of 50 percent reduction in particulate matter exhaust in comparison to uncontrolled equipment.

    b. Use of alternatively fueled or electric equipment.

Alternatively, the applicant could develop a separate feasible plan that reduces on- and near-site construction diesel particulate matter emissions by a minimum of 50 percent or greater. Such a plan would have to be reviewed and approved by the City.

Effectiveness of the DTS Best Management Practices and Mitigation Measure AQ-1

CalEEMod was used to compute emissions associated with this mitigation measure assuming that all equipment met U.S. EPA Tier 4 interim engines standards and the DTS best management practices for construction were included. With these implemented, the project's construction cancer risk levels (assuming infant exposure) would be reduced by 82 percent to 2.90 chances per million. Once the construction risk is combined with the operational generator cancer risk, the project's total mitigated cancer risk level would be 4.24 chances per million. The project's annual $PM_{2.5}$ concentrations would be reduced by 71 percent to 0.09 $\mu g/m^3$. The project's risk impacts would no longer exceed the BAAQMD single-source significance thresholds.

Non-CEQA: On-Site Community Risk Assessment for TAC Sources - New Project Residences

In addition to evaluating health impact from project construction, a health risk assessment was completed to assess the impact existing TAC sources would have on the new proposed sensitive receptors (residents) that that project would introduce. The same TAC sources identified above were used in this health risk assessment.[31]

Local Roadways – E. Santa Clara Street

The roadway analysis for the project residents was conducted in the same manner as described above for the off-site MEIs. The project set of receptors were placed across the project area and were spaced every 20 feet (6 meters). Project residences in the project site would be located on the second floor and higher of the proposed tower. Roadway impacts were modeled at receptor heights of 20 feet (6.1 meters) and 30 feet (9.1 meters) representing sensitive receptors on the second and third floors. Project sensitive receptors higher than the third floor would have roadway impacts less than those on the third floor. The portions of E. Santa Clara Street included in the modeling are shown in Figure 3 along with the project site and receptor locations where impacts were modeled.

Maximum increased cancer risks were calculated for the residents at the project site using the maximum modeled TAC concentrations. A 30-year exposure period was used in calculating cancer risks assuming the residents would include third trimester pregnancy and infants/children and were assumed to be in the new building area for 24 hours per day for 350 days per year. The highest impacts from E. Santa Clara Street occurred at second-floor receptors of the unit in the southeast corner of the project's tower closest to the roadway. Cancer risks associated with E. Santa Clara

[31] We note that to the extent this analysis considers *existing* air quality issues in relation to the impact on *future residents* of the Project, it does so for informational purposes only pursuant to the judicial decisions in *CBIA v. BAAQMD* (2015) 62 Cal.4th 369, 386 and *Ballona Wetlands Land Trust v. City of Los Angeles* (2011) 201 Cal.App.4th 455, 473, which confirm that the impacts of the existing environment on a project are excluded from CEQA.

Street are greatest closest to the roadway and decrease with distance from the road. The roadway's community risk impacts at the project site are shown in Table 8. Details of the emission calculations, dispersion modeling, and cancer risk calculations are contained in *Attachment 5.*

Stationary Sources

The stationary source screening analysis for the new project sensitive receptors was conducted in the same manner as described above for the project MEIs. Table 8 shows the health risk assessment results from the stationary sources.

Figure 3. Project Site, On-Site Residential Receptors, Roadway Segments Evaluated, and Locations of Maximum Roadway TAC Impacts

Cumulative Community Health Risk at Project Site

Community risk impacts from the existing TAC sources upon the project site are reported in Table 8. The risks from the singular TAC sources are compared against the BAAQMD single-source threshold. The risks from all the sources are then combined and compared against the BAAQMD cumulative-source threshold. As shown, none of the sources exceed the cancer risk, annual $PM_{2.5}$ concentration, or HI single-source or cumulative-source thresholds.

Table 8. Impacts from Combined Sources to Project Site Receptors

Source	Cancer Risk (per million)	Annual $PM_{2.5}$ ($\mu g/m^3$)	Hazard Index
E. Santa Clara Street, ADT 17,810	1.07	0.08	<0.01
Verizon Business - SBEZCA (Facility ID #12969, Generator), MEI at 875 feet	2.31	<0.01	<0.01
60 SOMA Fee Owner CA,LLC c/o Harvest Properties (Facility ID #19758, Generator), MEI at 650 feet	0.51	<0.01	-
Judicial Council of California, JCC 43-B2 (Facility ID #20324, Generator), MEI at 1,000 feet	6.24	0.01	0.01
CoreSite (Facility ID #20903, Generator), MEI at 875 feet	3.75	0.01	<0.01
Essex OSM Reit LLC (Facility ID #22415, Generator), MEI at 850 feet	0.25	-	-
Digital Realty (Facility ID #22612, Generator), MEI at 735 ft	0.06	-	-
SV Towers Investments LLC, C/O Harvest Properties (Facility ID #23479, Generator), MEI at 300 feet	1.37	-	-
Chevron #4259 (Facility ID #23479, Gas Station), MEI at 650 feet	0.42	-	<0.01
BAAQMD Single-Source Threshold	***10***	***0.3***	***1.0***
Exceed Threshold?	*No*	*No*	*No*
Cumulative Total	15.98	<0.12	<0.05
BAAQMD Cumulative Source Threshold	***100***	***0.8***	***10.0***
Exceed Threshold?	*No*	*No*	*No*

Supporting Documentation

Attachment 1 is the methodology used to compute community risk impacts, including the methods to compute increased cancer risk from exposure to project emissions.

Attachment 2 includes the CalEEMod output for project construction and operational criteria air pollutant. Also included are any modeling assumptions.

Attachment 3 includes the EMFAC2021 emissions modeling. The input files for these calculations are voluminous and are available upon request in digital format.

Attachment 4 is the health risk assessment. This includes the summary of the dispersion modeling and the cancer risk calculations for construction and operation. The AERMOD dispersion modeling files for this assessment, which are quite voluminous, are available upon request and would be provided in digital format.

Attachment 5 includes the cumulative community risk calculations, modeling results, and health risk calculations from sources affecting the construction MEIs and project sensitive receptors.

Attachment 1: Health Risk Calculation Methodology

Health Risk Calculation Methodology

A health risk assessment (HRA) for exposure to Toxic Air Contaminates (TACs) requires the application of a risk characterization model to the results from the air dispersion model to estimate potential health risk at each sensitive receptor location. The State of California Office of Environmental Health Hazard Assessment (OEHHA) and California Air Resources Board (CARB) develop recommended methods for conducting health risk assessments. The most recent OEHHA risk assessment guidelines were published in February of 2015.[32] These guidelines incorporate substantial changes designed to provide for enhanced protection of children, as required by State law, compared to previous published risk assessment guidelines. CARB has provided additional guidance on implementing OEHHA's recommended methods.[33] This HRA used the 2015 OEHHA risk assessment guidelines and CARB guidance. The BAAQMD has adopted recommended procedures for applying the newest OEHHA guidelines as part of Regulation 2, Rule 5: New Source Review of Toxic Air Contaminants.[34] Exposure parameters from the OEHHA guidelines and the recent BAAQMD HRA Guidelines were used in this evaluation.

Cancer Risk

Potential increased cancer risk from inhalation of TACs is calculated based on the TAC concentration over the period of exposure, inhalation dose, the TAC cancer potency factor, and an age sensitivity factor to reflect the greater sensitivity of infants and children to cancer causing TACs. The inhalation dose depends on a person's breathing rate, exposure time and frequency and duration of exposure. These parameters vary depending on the age, or age range, of the persons being exposed and whether the exposure is considered to occur at a residential location or other sensitive receptor location.

The current OEHHA guidance recommends that cancer risk be calculated by age groups to account for different breathing rates and sensitivity to TACs. Specifically, they recommend evaluating risks for the third trimester of pregnancy to age zero, ages zero to less than two (infant exposure), ages two to less than 16 (child exposure), and ages 16 to 70 (adult exposure). Age sensitivity factors (ASFs) associated with the different types of exposure are an ASF of 10 for the third trimester and infant exposures, an ASF of 3 for a child exposure, and an ASF of 1 for an adult exposure. Also associated with each exposure type are different breathing rates, expressed as liters per kilogram of body weight per day (L/kg-day) or liters per kilogram of body weight per 8-hour period for the case of worker or school child exposures. As recommended by the BAAQMD for residential exposures, 95th percentile breathing rates are used for the third trimester and infant exposures, and 80th percentile breathing rates for child and adult exposures. For children at schools and daycare facilities, BAAQMD recommends using the 95th percentile 8-hour breathing rates.

[32] OEHHA, 2015. *Air Toxics Hot Spots Program Risk Assessment Guidelines, The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments*. Office of Environmental Health Hazard Assessment. February.
[33] CARB, 2015. *Risk Management Guidance for Stationary Sources of Air Toxics*. July 23.
[34] BAAQMD, 2016. *BAAQMD Air Toxics NSR Program Health Risk Assessment (HRA) Guidelines*. December 2016.

Additionally, CARB and the BAAQMD recommend the use of a residential exposure duration of 30 years for sources with long-term emissions (e.g., roadways). For workers, assumed to be adults, a 25-year exposure period is recommended by the BAAQMD. For school children a 9-year exposure period is recommended by the BAAQMD.

Under previous OEHHA and BAAQMD HRA guidance, residential receptors are assumed to be at their home 24 hours a day, or 100 percent of the time. In the 2015 Risk Assessment Guidance, OEHHA includes adjustments to exposure duration to account for the fraction of time at home (FAH), which can be less than 100 percent of the time, based on updated population and activity statistics. The FAH factors are age-specific and are: 0.85 for third trimester of pregnancy to less than 2 years old, 0.72 for ages 2 to less than 16 years, and 0.73 for ages 16 to 70 years. Use of the FAH factors is allowed by the BAAQMD if there are no schools in the project vicinity have a cancer risk of one in a million or greater assuming 100 percent exposure (FAH = 1.0).

Functionally, cancer risk is calculated using the following parameters and formulas:

Cancer Risk (per million) = $CPF \times Inhalation\ Dose \times ASF \times ED/AT \times FAH \times 10^6$

Where:

CPF = Cancer potency factor $(mg/kg\text{-}day)^{-1}$
ASF = Age sensitivity factor for specified age group
ED = Exposure duration (years)
AT = Averaging time for lifetime cancer risk (years)
FAH = Fraction of time spent at home (unitless)

Inhalation Dose = $C_{air} \times DBR^* \times A \times (EF/365) \times 10^{-6}$

Where:

C_{air} = concentration in air ($\mu g/m^3$)
DBR = daily breathing rate (L/kg body weight-day)
8HrBR = 8-hour breathing rate (L/kg body weight-8 hours)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
10^{-6} = Conversion factor

* An 8-hour breathing rate (8HrBR) is used for worker and school child exposures.

The health risk parameters used in this evaluation are summarized as follows:

Parameter	*Exposure Type* →	Infant		Child	Adult
	Age Range →	3rd Trimester	0<2	2 < 16	16 - 30
DPM Cancer Potency Factor (mg/kg-day)$^{-1}$		1.10E+00	1.10E+00	1.10E+00	1.10E+00
Daily Breathing Rate (L/kg-day) 80th Percentile Rate		273	758	572	261
Daily Breathing Rate (L/kg-day) 95th Percentile Rate		361	1,090	745	335
8-hour Breathing Rate (L/kg-8 hours) 95th Percentile Rate		-	1,200	520	240
Inhalation Absorption Factor		1	1	1	1
Averaging Time (years)		70	70	70	70
Exposure Duration (years)		0.25	2	14	14*
Exposure Frequency (days/year)		350	350	350	350*
Age Sensitivity Factor		10	10	3	1
Fraction of Time at Home (FAH)		0.85-1.0	0.85-1.0	0.72-1.0	0.73*

* For worker exposures (adult) the exposure duration and frequency are 25 years 250 days/year and FAH is not applicable.

Non-Cancer Hazards

Non-cancer health risk is usually determined by comparing the predicted level of exposure to a chemical to the level of exposure that is not expected to cause any adverse effects (reference exposure level), even to the most susceptible people. Potential non-cancer health hazards from TAC exposure are expressed in terms of a hazard index (HI), which is the ratio of the TAC concentration to a reference exposure level (REL). OEHHA has defined acceptable concentration levels for contaminants that pose non-cancer health hazards. TAC concentrations below the REL are not expected to cause adverse health impacts, even for sensitive individuals. The total HI is calculated as the sum of the HIs for each TAC evaluated and the total HI is compared to the BAAQMD significance thresholds to determine whether a significant non-cancer health impact from a project would occur.

Typically, for residential projects located near roadways with substantial TAC emissions, the primary TAC of concern with non-cancer health effects is diesel particulate matter (DPM). For DPM, the chronic inhalation REL is 5 micrograms per cubic meter ($\mu g/m^3$).

Annual $PM_{2.5}$ Concentrations

While not a TAC, fine particulate matter ($PM_{2.5}$) has been identified by the BAAQMD as a pollutant with potential non-cancer health effects that should be included when evaluating potential community health impacts under the California Environmental Quality Act (CEQA). The thresholds of significance for $PM_{2.5}$ (project level and cumulative) are in terms of an increase in the annual average concentration. When considering $PM_{2.5}$ impacts, the contribution from all sources of $PM_{2.5}$ emissions should be included. For projects with potential impacts from nearby local roadways, the $PM_{2.5}$ impacts should include those from vehicle exhaust emissions, $PM_{2.5}$ generated from vehicle tire and brake wear, and fugitive emissions from re-suspended dust on the roads.

Attachment 2: CalEEMod Input Assumptions and Outputs

Air Quality/Noise Construction Information Data Request

Project Name: Eterna 17/29 E Santa Clara

See Equipment Type TAB for type, horsepower and load factor

Complete ALL Portions in Yellow

Project Size 200 Dwelling Units 0.105 total project acres disturbed

178,278 s.f. residential

2,491 s.f. retail

2,491 s.f. office/commercial

6,682 s.f. other, specify: Roof Terrace Area

None s.f. parking garage None spaces

None s.f. parking lot None spaces

Construction Hours 8 am to 5 pm

Pile Driving? Y/N? N

Project include OPERATIONAL GENERATOR OR FIRE PUMP on-site? Y/N? __Y__

IF YES (if BOTH separate values) -->

Kilowatts/Horsepower: ___TBD_____

Fuel Type: __Diesel Generator_____

Location in project (Plans Desired if Available): Basement

DO NOT MULTIPLY EQUIPMENT HOURS/DAY BY THE QUANTITY OF EQUIPMENT

Quantity	Description	HP	Load Factor	Hours/day	Total Work Days	Avg. Hours per day	HP Annual Hours	Comments
	Demolition	**Start Date:**	**5/1/2028**	**Total phase:**	**90**			**Overall Import/Export Volumes**
		End Date:	**9/1/2028**					
1	Concrete/Industrial Saws	81	0.73	8	10	0.9	4730	**Demolition Volume**
1	Excavators	158	0.38	8	10	0.9	4803	Square footage of buildings to be demolished
1	Rubber-Tired Dozers	247	0.4	8	10	0.9	7904	(*or* total tons to be hauled)
1	Tractors/Loaders/Backhoes	97	0.37	8	10	0.9	2871	7,762 square feet *or*
	Other Equipment?							_?_ Hauling volume (tons)
								Any pavement demolished and hauled? _0_ tons
	Site Preparation	**Start Date:**	**5/1/2028**	**Total phase:**	**90**			
		End Date:	**9/1/2028**					
1	Graders	187	0.41	8	30	2.7	18401	
1	Rubber Tired Dozers	247	0.4	8	30	2.7	23712	
1	Tractors/Loaders/Backhoes	97	0.37	8	30	2.7	8614	
	Other Equipment?							
	Grading / Excavation	**Start Date:**	**7/1/2028**	**Total phase:**	**131**			
		End Date:	**1/1/2029**					**Soil Hauling Volume**
1	Excavators	158	0.38	8	60	3.7	28819	Export volume = 6,800 cubic yards?
	Graders	187	0.41			0.0	0	Import volume = 0 cubic yards?
	Rubber Tired Dozers	247	0.4			0.0	0	
1	Concrete/Industrial Saws	81	0.73	8	60	3.7	28382	
1	Tractors/Loaders/Backhoes	97	0.37	8	60	3.7	17227	
	Other Equipment?							
	Trenching/Foundation	**Start Date:**	**1/1/2029**	**Total phase:**	**120**			
		End Date:	**6/15/2029**					
1	Tractor/Loader/Backhoe	97	0.37	8	60	4.0	17227	
1	Excavators	158	0.38	8	60	4.0	28819	
	Other Equipment?							
	Building - Exterior	**Start Date:**	**6/1/2029**	**Total phase:**	**320**			**Cement Trucks? _TBD_ Total Round-Trips**
		End Date:	**8/22/2030**					
1	Cranes	231	0.29	8	280	7.0	150058	Electric? (Y/N) _N__ Otherwise assumed diesel
1	Forklifts	89	0.2	8	120	3.0	17088	Liquid Propane (LPG)? (Y/N) _N__ Otherwise Assumed diesel
1	Generator Sets	84	0.74	8	200	5.0	99456	Or temporary line power? (Y/N) __N_
	Tractors/Loaders/Backhoes	97	0.37			0.0	0	
1	Welders	46	0.45	8	80	2.0	13248	
	Other Equipment?							
	Building - Interior/Architectural Coating	**Start Date:**	**6/1/2029**	**Total phase:**	**239**			
		End Date:	**5/1/2030**					
1	Air Compressors	78	0.48	8	200	6.7	59904	
1	Aerial Lift	62	0.31	8	180	6.0	27677	
	Other Equipment?							
	Paving	**Start Date:**	**N/A**	**Total phase:**				
		Start Date:	**N/A**					
	Cement and Mortar Mixers	9	0.56			#DIV/0!	0	
	Pavers	130	0.42			#DIV/0!	0	**Asphalt? _0__ cubic yards or ____ round trips?**
	Paving Equipment	132	0.36			#DIV/0!	0	
	Rollers	80	0.38			#DIV/0!	0	
	Tractors/Loaders/Backhoes	97	0.37			#DIV/0!	0	
	Other Equipment?							
	Additional Phases	**Start Date:**		**Total phase:**				
		Start Date:						
						#DIV/0!	0	
						#DIV/0!	0	
						#DIV/0!	0	
						#DIV/0!	0	
						#DIV/0!	0	

Equipment types listed in "Equipment Types" worksheet tab.

Equipment listed in this sheet is to provide an example of inputs

It is assumed that water trucks would be used during grading

Add or subtract phases and equipment, as appropriate

Modify horsepower or load factor, as appropriate

Complete one sheet for each project component

Construction Criteria Air Pollutants						
Unmitigated	ROG	NOX	PM10 Exhaust	PM2.5 Exhaust	**CO2e**	
Year	Tons				MT	
Construction Equipment						
2028	0.04	0.38	0.02	0.01	73.15	
2029	0.90	0.58	0.02	0.02	120.74	
2030	0.52	0.26	0.01	0.01	101.75	
EMFAC						
2028	0.02	0.05	0.01	0.002	80.31	
2029	0.03	0.08	0.01	0.003	117.64	
2030	0.02	0.05	0.01	0.002	74.15	
Total Construction Emissions by Year						
2028	0.06	0.43	0.02	0.02	153.46	
2029	0.93	0.66	0.03	0.03	238.37	
2030	0.54	0.31	0.01	0.01	175.89	
	Total Construction Emissions					
Tons	1.54	1.40	0.07	0.05	567.72	
Pounds/Workdays	*Average Daily Emissions*				Workdays	
2028	0.71	4.93	0.25	0.19		**175**
2029	7.14	5.03	0.25	0.20		**261**
2030	6.49	3.69	0.14	0.10		**167**
Threshold - lbs/day	**54.0**	**54.0**	**82.0**	**54.0**		
	Total Construction Emissions					
Pounds	14.34	13.65	0.64	0.49	0.00	
Average	5.09	4.63	0.22	0.17	0.00	603.00
Threshold - lbs/day	**54.0**	**54.0**	**82.0**	**54.0**		

Operational Criteria Air Pollutants						
Unmitigated	ROG	NOX	Total PM10	Total PM2.5		
Year	Tons					
Total	1.34	0.44	0.75	0.20		
	Existing Use Emissions					
Total						
	Net Annual Operational Emissions					
Tons/year	1.34	0.44	0.75	0.20		
Threshold - Tons/year	**10.0**	**10.0**	**15.0**	**10.0**		
	Average Daily Emissions					
Pounds Per Day	7.36	2.42	4.13	1.10		
Threshold - lbs/day	**54.0**	**54.0**	**82.0**	**54.0**		

Category	**CO2e**			
	Project	Existing	Project 2030	Existing
Area	10.52			
Energy	0.00			
Mobile	751.83			
Waste	47.58			
Water	45.09			
TOTAL	855.02	0.00	0.00	0.00
Net GHG Emissions		855.02		0.00
Service Population	628.00			
Per Capita Emissions		1.36		0.00

	200	units
CA DOF 2020=	3.14	pphh

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1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Apartments High Rise	200.00	Dwelling Unit	0.18	184,960.00	572
Strip Mall	2.49	1000sqft	0.00	2,491.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	58
Climate Zone	4			**Operational Year**	2031
Utility Company	San Jose Clean Energy				
CO2 Intensity (lb/MWhr)	807.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Provided land uses - construction worksheet and project plans

Construction Phase - Provided construction schedule

Off-road Equipment - Provided construction hours, assumed 1 equip per equip w/ hours

Off-road Equipment - Provided construction hours, assumed 1 equip per equip w/ hours

Off-road Equipment - Provided construction hours, assumed 1 equip per equip w/ hours

Off-road Equipment - Provided construction hours, assumed 1 equip per equip w/ hours

Off-road Equipment - Provided construction hours, assumed 1 equip per equip w/ hours

Off-road Equipment - Provided construction hours, assumed 1 equip per equip w/ hours

Grading - grading = 6,800-cy export

Demolition - existing building demo = 7,762-sf

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Trips and VMT - 0 Trips for EMFAC2021 post-calcs, estimated 32 cement truck round trips

Vehicle Trips - Default trip gen - no traffic data

Vehicle Emission Factors - EMFAC2021 Vehicle Emisisons Factors Santa Clara County 2031

Fleet Mix - EMFAC2021Fleet Mix Santa Clara County 2031

Woodstoves - No wood burning, all gas

Energy Use - San Jose Reach Code, no natural gas all electric

Water And Wastewater - Wastewater Treatment, 100% aerobic, no septic tanks or lagoons

Stationary Sources - Emergency Generators and Fire Pumps - Estimated - one 500-kW, 670-hp diesel generator in basement, 50 hr/yr

Energy Mitigation - SJCE 100% carbon free energy by 2021

Construction Off-road Equipment Mitigation - BMPs, Tier 4 interim mitigation

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim

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tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstructionPhase	NumDays	5.00	239.00
tblConstructionPhase	NumDays	100.00	320.00
tblConstructionPhase	NumDays	10.00	90.00
tblConstructionPhase	NumDays	2.00	131.00
tblConstructionPhase	NumDays	1.00	90.00
tblConstructionPhase	PhaseEndDate	10/18/2028	5/1/2030
tblConstructionPhase	PhaseEndDate	10/4/2028	8/22/2030
tblConstructionPhase	PhaseEndDate	5/12/2028	9/1/2028
tblConstructionPhase	PhaseEndDate	5/17/2028	1/1/2029
tblConstructionPhase	PhaseEndDate	5/15/2028	9/1/2028
tblConstructionPhase	PhaseStartDate	10/12/2028	6/1/2029
tblConstructionPhase	PhaseStartDate	5/18/2028	6/1/2029
tblConstructionPhase	PhaseStartDate	5/16/2028	7/1/2028
tblConstructionPhase	PhaseStartDate	5/13/2028	5/1/2028
tblEnergyUse	NT24E	3,054.10	3,055.00
tblEnergyUse	NT24NG	3,155.00	0.00
tblEnergyUse	T24E	70.89	72.42
tblEnergyUse	T24NG	5,226.68	0.00
tblEnergyUse	T24NG	2.34	0.00
tblFireplaces	FireplaceWoodMass	228.80	0.00
tblFireplaces	NumberGas	30.00	64.00
tblFireplaces	NumberWood	34.00	0.00
tblFleetMix	HHD	6.0640e-003	0.02

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tblFleetMix	HHD	6.0640e-003	0.02
tblFleetMix	LDA	0.58	0.53
tblFleetMix	LDA	0.58	0.53
tblFleetMix	LDT1	0.06	0.03
tblFleetMix	LDT1	0.06	0.03
tblFleetMix	LDT2	0.18	0.23
tblFleetMix	LDT2	0.18	0.23
tblFleetMix	LHD1	0.02	0.03
tblFleetMix	LHD1	0.02	0.03
tblFleetMix	LHD2	5.4420e-003	6.5200e-003
tblFleetMix	LHD2	5.4420e-003	6.5200e-003
tblFleetMix	MCY	0.02	3.4690e-003
tblFleetMix	MCY	0.02	3.4690e-003
tblFleetMix	MDV	0.12	0.13
tblFleetMix	MDV	0.12	0.13
tblFleetMix	MH	2.5090e-003	6.0900e-004
tblFleetMix	MH	2.5090e-003	6.0900e-004
tblFleetMix	MHD	8.1970e-003	0.01
tblFleetMix	MHD	8.1970e-003	0.01
tblFleetMix	OBUS	8.4400e-004	1.6650e-003
tblFleetMix	OBUS	8.4400e-004	1.6650e-003
tblFleetMix	SBUS	8.2400e-004	5.3600e-004
tblFleetMix	SBUS	8.2400e-004	5.3600e-004
tblFleetMix	UBUS	3.2900e-004	1.2180e-003
tblFleetMix	UBUS	3.2900e-004	1.2180e-003
tblGrading	MaterialExported	0.00	6,800.00
tblLandUse	LandUseSquareFeet	200,000.00	184,960.00
tblLandUse	LotAcreage	3.23	0.18
tblLandUse	LotAcreage	0.06	0.00

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tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.31	0.31
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Dozers
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Concrete/Industrial Saws
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Generator Sets
tblOffRoadEquipment	OffRoadEquipmentType		Welders
tblOffRoadEquipment	OffRoadEquipmentType		Aerial Lifts
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	UsageHours	6.00	6.70
tblOffRoadEquipment	UsageHours	8.00	0.90
tblOffRoadEquipment	UsageHours	4.00	7.00
tblOffRoadEquipment	UsageHours	6.00	3.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	8.00	2.70
tblOffRoadEquipment	UsageHours	1.00	0.90
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.90
tblOffRoadEquipment	UsageHours	7.00	3.70
tblOffRoadEquipment	UsageHours	8.00	2.70
tblStationaryGeneratorsPumpsEF	CH4_EF	0.07	0.07

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tblStationaryGeneratorsPumpsEF	ROG_EF	2.2480e-003	2.2477e-003
tblStationaryGeneratorsPumpsUse	HorsePowerValue	0.00	670.00
tblStationaryGeneratorsPumpsUse	HoursPerYear	0.00	50.00
tblStationaryGeneratorsPumpsUse	NumberOfEquipment	0.00	1.00
tblTripsAndVMT	HaulingTripNumber	35.00	0.00
tblTripsAndVMT	HaulingTripNumber	850.00	0.00
tblTripsAndVMT	VendorTripNumber	22.00	0.00
tblTripsAndVMT	WorkerTripNumber	10.00	0.00
tblTripsAndVMT	WorkerTripNumber	8.00	0.00
tblTripsAndVMT	WorkerTripNumber	8.00	0.00
tblTripsAndVMT	WorkerTripNumber	145.00	0.00
tblTripsAndVMT	WorkerTripNumber	5.00	0.00
tblTripsAndVMT	WorkerTripNumber	29.00	0.00
tblVehicleEF	HHD	0.02	0.19
tblVehicleEF	HHD	0.04	0.08
tblVehicleEF	HHD	6.29	4.95
tblVehicleEF	HHD	0.41	0.60
tblVehicleEF	HHD	6.9440e-003	8.9300e-004
tblVehicleEF	HHD	914.09	701.49
tblVehicleEF	HHD	1,200.04	1,353.64
tblVehicleEF	HHD	0.05	9.0240e-003
tblVehicleEF	HHD	0.14	0.11
tblVehicleEF	HHD	0.19	0.22
tblVehicleEF	HHD	2.0000e-006	3.0000e-006
tblVehicleEF	HHD	5.19	3.75
tblVehicleEF	HHD	2.51	1.39
tblVehicleEF	HHD	2.31	2.56
tblVehicleEF	HHD	2.0920e-003	1.6750e-003
tblVehicleEF	HHD	0.06	0.08

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tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	0.02	0.02
tblVehicleEF	HHD	1.0000e-006	0.00
tblVehicleEF	HHD	2.0010e-003	1.5960e-003
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.9080e-003	8.7880e-003
tblVehicleEF	HHD	0.02	0.02
tblVehicleEF	HHD	1.0000e-006	0.00
tblVehicleEF	HHD	1.0000e-006	3.2000e-005
tblVehicleEF	HHD	5.6000e-005	1.0000e-005
tblVehicleEF	HHD	0.42	0.31
tblVehicleEF	HHD	1.0000e-006	3.2000e-005
tblVehicleEF	HHD	0.02	0.01
tblVehicleEF	HHD	2.4000e-005	9.0000e-005
tblVehicleEF	HHD	2.0000e-006	0.00
tblVehicleEF	HHD	8.5050e-003	6.0520e-003
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	1.0000e-006	0.00
tblVehicleEF	HHD	1.0000e-006	3.2000e-005
tblVehicleEF	HHD	5.6000e-005	1.0000e-005
tblVehicleEF	HHD	0.49	0.53
tblVehicleEF	HHD	1.0000e-006	3.2000e-005
tblVehicleEF	HHD	0.07	0.10
tblVehicleEF	HHD	2.4000e-005	9.0000e-005
tblVehicleEF	HHD	2.0000e-006	0.00
tblVehicleEF	LDA	8.9400e-004	1.1970e-003
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	0.40	0.48
tblVehicleEF	LDA	1.67	2.04

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tblVehicleEF	LDA	211.13	232.53
tblVehicleEF	LDA	44.48	59.30
tblVehicleEF	LDA	3.1240e-003	3.0930e-003
tblVehicleEF	LDA	0.02	0.02
tblVehicleEF	LDA	0.02	0.02
tblVehicleEF	LDA	0.12	0.17
tblVehicleEF	LDA	0.04	7.2130e-003
tblVehicleEF	LDA	8.7000e-004	8.0600e-004
tblVehicleEF	LDA	1.2220e-003	1.4010e-003
tblVehicleEF	LDA	0.02	2.5240e-003
tblVehicleEF	LDA	8.0100e-004	7.4200e-004
tblVehicleEF	LDA	1.1230e-003	1.2880e-003
tblVehicleEF	LDA	0.02	0.22
tblVehicleEF	LDA	0.06	0.06
tblVehicleEF	LDA	0.02	0.22
tblVehicleEF	LDA	2.9800e-003	4.1100e-003
tblVehicleEF	LDA	0.02	0.17
tblVehicleEF	LDA	0.11	0.19
tblVehicleEF	LDA	1.9400e-003	2.1340e-003
tblVehicleEF	LDA	4.0900e-004	5.4400e-004
tblVehicleEF	LDA	0.02	0.22
tblVehicleEF	LDA	0.06	0.06
tblVehicleEF	LDA	0.02	0.22
tblVehicleEF	LDA	4.3290e-003	5.9930e-003
tblVehicleEF	LDA	0.02	0.17
tblVehicleEF	LDA	0.12	0.20
tblVehicleEF	LDT1	1.4850e-003	2.9650e-003
tblVehicleEF	LDT1	0.03	0.07
tblVehicleEF	LDT1	0.51	0.86

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tblVehicleEF	LDT1	1.80	3.23
tblVehicleEF	LDT1	255.25	314.31
tblVehicleEF	LDT1	54.39	80.54
tblVehicleEF	LDT1	3.5750e-003	5.4470e-003
tblVehicleEF	LDT1	0.02	0.03
tblVehicleEF	LDT1	0.03	0.06
tblVehicleEF	LDT1	0.14	0.26
tblVehicleEF	LDT1	0.04	9.3130e-003
tblVehicleEF	LDT1	9.9500e-004	1.1960e-003
tblVehicleEF	LDT1	1.3920e-003	1.9450e-003
tblVehicleEF	LDT1	0.02	3.2600e-003
tblVehicleEF	LDT1	9.1500e-004	1.0990e-003
tblVehicleEF	LDT1	1.2790e-003	1.7880e-003
tblVehicleEF	LDT1	0.04	0.45
tblVehicleEF	LDT1	0.09	0.11
tblVehicleEF	LDT1	0.04	0.45
tblVehicleEF	LDT1	5.6580e-003	0.01
tblVehicleEF	LDT1	0.05	0.34
tblVehicleEF	LDT1	0.14	0.31
tblVehicleEF	LDT1	2.3450e-003	2.8850e-003
tblVehicleEF	LDT1	5.0000e-004	7.3900e-004
tblVehicleEF	LDT1	0.04	0.45
tblVehicleEF	LDT1	0.09	0.11
tblVehicleEF	LDT1	0.04	0.45
tblVehicleEF	LDT1	8.2550e-003	0.02
tblVehicleEF	LDT1	0.05	0.34
tblVehicleEF	LDT1	0.15	0.34
tblVehicleEF	LDT2	1.5990e-003	1.8080e-003
tblVehicleEF	LDT2	0.04	0.06

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tblVehicleEF	LDT2	0.54	0.64
tblVehicleEF	LDT2	2.24	2.68
tblVehicleEF	LDT2	262.50	324.35
tblVehicleEF	LDT2	56.43	81.79
tblVehicleEF	LDT2	3.8960e-003	4.3600e-003
tblVehicleEF	LDT2	0.02	0.03
tblVehicleEF	LDT2	0.03	0.04
tblVehicleEF	LDT2	0.16	0.24
tblVehicleEF	LDT2	0.04	9.0250e-003
tblVehicleEF	LDT2	9.6700e-004	9.5500e-004
tblVehicleEF	LDT2	1.2900e-003	1.5710e-003
tblVehicleEF	LDT2	0.02	3.1590e-003
tblVehicleEF	LDT2	8.9100e-004	8.7900e-004
tblVehicleEF	LDT2	1.1860e-003	1.4440e-003
tblVehicleEF	LDT2	0.05	0.25
tblVehicleEF	LDT2	0.08	0.06
tblVehicleEF	LDT2	0.05	0.25
tblVehicleEF	LDT2	6.0090e-003	6.5570e-003
tblVehicleEF	LDT2	0.05	0.18
tblVehicleEF	LDT2	0.17	0.25
tblVehicleEF	LDT2	2.4120e-003	2.9770e-003
tblVehicleEF	LDT2	5.1800e-004	7.5100e-004
tblVehicleEF	LDT2	0.05	0.25
tblVehicleEF	LDT2	0.08	0.06
tblVehicleEF	LDT2	0.05	0.25
tblVehicleEF	LDT2	8.7300e-003	9.5530e-003
tblVehicleEF	LDT2	0.05	0.18
tblVehicleEF	LDT2	0.19	0.28
tblVehicleEF	LHD1	4.0410e-003	4.1630e-003

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tblVehicleEF	LHD1	4.8800e-003	3.5720e-003
tblVehicleEF	LHD1	8.4490e-003	0.02
tblVehicleEF	LHD1	0.18	0.18
tblVehicleEF	LHD1	0.44	0.50
tblVehicleEF	LHD1	0.87	2.00
tblVehicleEF	LHD1	8.16	7.60
tblVehicleEF	LHD1	688.90	642.93
tblVehicleEF	LHD1	9.90	15.44
tblVehicleEF	LHD1	7.2500e-004	5.7400e-004
tblVehicleEF	LHD1	0.04	0.03
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	0.04	0.03
tblVehicleEF	LHD1	0.26	0.28
tblVehicleEF	LHD1	0.22	0.31
tblVehicleEF	LHD1	9.2300e-004	6.5400e-004
tblVehicleEF	LHD1	0.08	0.07
tblVehicleEF	LHD1	9.9140e-003	9.3110e-003
tblVehicleEF	LHD1	6.7160e-003	8.6070e-003
tblVehicleEF	LHD1	2.0500e-004	1.2200e-004
tblVehicleEF	LHD1	8.8300e-004	6.2600e-004
tblVehicleEF	LHD1	0.03	0.03
tblVehicleEF	LHD1	2.4780e-003	2.3280e-003
tblVehicleEF	LHD1	6.3820e-003	8.2050e-003
tblVehicleEF	LHD1	1.8900e-004	1.1200e-004
tblVehicleEF	LHD1	1.3340e-003	0.08
tblVehicleEF	LHD1	0.05	0.02
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	7.4400e-004	0.08
tblVehicleEF	LHD1	0.07	0.05

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tblVehicleEF	LHD1	0.16	0.12
tblVehicleEF	LHD1	0.04	0.07
tblVehicleEF	LHD1	7.9000e-005	7.4000e-005
tblVehicleEF	LHD1	6.7170e-003	6.2730e-003
tblVehicleEF	LHD1	9.8000e-005	1.5300e-004
tblVehicleEF	LHD1	1.3340e-003	0.08
tblVehicleEF	LHD1	0.05	0.02
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	7.4400e-004	0.08
tblVehicleEF	LHD1	0.08	0.06
tblVehicleEF	LHD1	0.16	0.12
tblVehicleEF	LHD1	0.04	0.08
tblVehicleEF	LHD2	2.4410e-003	2.4310e-003
tblVehicleEF	LHD2	5.2370e-003	4.1910e-003
tblVehicleEF	LHD2	4.4970e-003	8.3010e-003
tblVehicleEF	LHD2	0.13	0.13
tblVehicleEF	LHD2	0.48	0.36
tblVehicleEF	LHD2	0.47	1.10
tblVehicleEF	LHD2	12.87	13.32
tblVehicleEF	LHD2	671.11	689.54
tblVehicleEF	LHD2	6.31	8.39
tblVehicleEF	LHD2	1.6530e-003	1.6810e-003
tblVehicleEF	LHD2	0.06	0.07
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.07	0.07
tblVehicleEF	LHD2	0.35	0.45
tblVehicleEF	LHD2	0.12	0.17
tblVehicleEF	LHD2	1.5020e-003	1.4610e-003
tblVehicleEF	LHD2	0.09	0.09

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tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	1.0400e-004	5.2000e-005
tblVehicleEF	LHD2	1.4370e-003	1.3980e-003
tblVehicleEF	LHD2	0.04	0.03
tblVehicleEF	LHD2	2.7130e-003	2.6190e-003
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	9.6000e-005	4.8000e-005
tblVehicleEF	LHD2	6.1000e-004	0.05
tblVehicleEF	LHD2	0.02	0.01
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	3.6000e-004	0.05
tblVehicleEF	LHD2	0.10	0.08
tblVehicleEF	LHD2	0.05	0.06
tblVehicleEF	LHD2	0.02	0.04
tblVehicleEF	LHD2	1.2300e-004	1.2700e-004
tblVehicleEF	LHD2	6.4730e-003	6.6320e-003
tblVehicleEF	LHD2	6.2000e-005	8.3000e-005
tblVehicleEF	LHD2	6.1000e-004	0.05
tblVehicleEF	LHD2	0.02	0.01
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	3.6000e-004	0.05
tblVehicleEF	LHD2	0.11	0.09
tblVehicleEF	LHD2	0.05	0.06
tblVehicleEF	LHD2	0.02	0.04
tblVehicleEF	MCY	0.32	0.14
tblVehicleEF	MCY	0.25	0.15
tblVehicleEF	MCY	17.51	10.94
tblVehicleEF	MCY	9.22	7.81

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tblVehicleEF	MCY	209.72	185.71
tblVehicleEF	MCY	59.03	42.09
tblVehicleEF	MCY	0.07	0.04
tblVehicleEF	MCY	0.02	6.1180e-003
tblVehicleEF	MCY	1.14	0.50
tblVehicleEF	MCY	0.27	0.10
tblVehicleEF	MCY	0.01	0.01
tblVehicleEF	MCY	2.1500e-003	2.0260e-003
tblVehicleEF	MCY	2.8350e-003	3.3830e-003
tblVehicleEF	MCY	5.0400e-003	4.2000e-003
tblVehicleEF	MCY	2.0050e-003	1.8900e-003
tblVehicleEF	MCY	2.6500e-003	3.1630e-003
tblVehicleEF	MCY	0.89	3.60
tblVehicleEF	MCY	0.63	3.55
tblVehicleEF	MCY	0.47	3.60
tblVehicleEF	MCY	2.12	0.88
tblVehicleEF	MCY	0.45	3.78
tblVehicleEF	MCY	1.87	1.11
tblVehicleEF	MCY	2.0750e-003	1.8360e-003
tblVehicleEF	MCY	5.8400e-004	4.1600e-004
tblVehicleEF	MCY	0.89	0.08
tblVehicleEF	MCY	0.63	3.55
tblVehicleEF	MCY	0.47	0.08
tblVehicleEF	MCY	2.66	1.08
tblVehicleEF	MCY	0.45	3.78
tblVehicleEF	MCY	2.04	1.20
tblVehicleEF	MDV	1.6280e-003	1.9900e-003
tblVehicleEF	MDV	0.04	0.06
tblVehicleEF	MDV	0.53	0.66

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tblVehicleEF	MDV	2.26	2.72
tblVehicleEF	MDV	316.03	386.75
tblVehicleEF	MDV	66.56	96.89
tblVehicleEF	MDV	5.0750e-003	5.1690e-003
tblVehicleEF	MDV	0.02	0.03
tblVehicleEF	MDV	0.03	0.04
tblVehicleEF	MDV	0.17	0.26
tblVehicleEF	MDV	0.04	9.0760e-003
tblVehicleEF	MDV	9.7300e-004	9.3700e-004
tblVehicleEF	MDV	1.2910e-003	1.5230e-003
tblVehicleEF	MDV	0.02	3.1770e-003
tblVehicleEF	MDV	8.9700e-004	8.6300e-004
tblVehicleEF	MDV	1.1870e-003	1.4000e-003
tblVehicleEF	MDV	0.06	0.27
tblVehicleEF	MDV	0.09	0.07
tblVehicleEF	MDV	0.06	0.27
tblVehicleEF	MDV	6.2570e-003	7.5970e-003
tblVehicleEF	MDV	0.05	0.20
tblVehicleEF	MDV	0.18	0.28
tblVehicleEF	MDV	2.9060e-003	3.5480e-003
tblVehicleEF	MDV	6.1200e-004	8.8900e-004
tblVehicleEF	MDV	0.06	0.27
tblVehicleEF	MDV	0.09	0.07
tblVehicleEF	MDV	0.06	0.27
tblVehicleEF	MDV	9.0660e-003	0.01
tblVehicleEF	MDV	0.05	0.20
tblVehicleEF	MDV	0.20	0.31
tblVehicleEF	MH	4.7680e-003	5.6970e-003
tblVehicleEF	MH	0.02	0.02

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tblVehicleEF	MH	0.29	0.34
tblVehicleEF	MH	1.60	1.86
tblVehicleEF	MH	1,332.83	1,653.04
tblVehicleEF	MH	15.24	19.85
tblVehicleEF	MH	0.05	0.07
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.04	1.25
tblVehicleEF	MH	0.24	0.30
tblVehicleEF	MH	0.13	0.04
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	2.0900e-004	2.2700e-004
tblVehicleEF	MH	0.06	0.02
tblVehicleEF	MH	3.2990e-003	3.3400e-003
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	1.9200e-004	2.0900e-004
tblVehicleEF	MH	0.32	18.86
tblVehicleEF	MH	0.03	4.45
tblVehicleEF	MH	0.13	18.86
tblVehicleEF	MH	0.04	0.05
tblVehicleEF	MH	4.9890e-003	0.11
tblVehicleEF	MH	0.07	0.09
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	1.5100e-004	1.9600e-004
tblVehicleEF	MH	0.32	18.86
tblVehicleEF	MH	0.03	4.45
tblVehicleEF	MH	0.13	18.86
tblVehicleEF	MH	0.05	0.06
tblVehicleEF	MH	4.9890e-003	0.11

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tblVehicleEF	MH	0.08	0.09
tblVehicleEF	MHD	3.8830e-003	0.02
tblVehicleEF	MHD	9.9100e-004	9.3460e-003
tblVehicleEF	MHD	8.4160e-003	6.2710e-003
tblVehicleEF	MHD	0.41	0.61
tblVehicleEF	MHD	0.15	0.14
tblVehicleEF	MHD	0.86	0.67
tblVehicleEF	MHD	64.07	138.50
tblVehicleEF	MHD	981.41	1,029.46
tblVehicleEF	MHD	8.54	6.48
tblVehicleEF	MHD	9.2100e-003	0.02
tblVehicleEF	MHD	0.12	0.13
tblVehicleEF	MHD	7.8740e-003	4.5510e-003
tblVehicleEF	MHD	0.33	0.70
tblVehicleEF	MHD	1.42	0.52
tblVehicleEF	MHD	1.68	1.16
tblVehicleEF	MHD	1.4200e-004	5.3800e-004
tblVehicleEF	MHD	0.13	0.04
tblVehicleEF	MHD	6.9790e-003	4.7230e-003
tblVehicleEF	MHD	1.1300e-004	7.9000e-005
tblVehicleEF	MHD	1.3600e-004	5.1400e-004
tblVehicleEF	MHD	0.06	0.01
tblVehicleEF	MHD	6.6700e-003	4.5110e-003
tblVehicleEF	MHD	1.0400e-004	7.3000e-005
tblVehicleEF	MHD	2.8600e-004	0.01
tblVehicleEF	MHD	0.01	3.1100e-003
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	1.6900e-004	0.01
tblVehicleEF	MHD	0.01	0.01

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tblVehicleEF	MHD	0.02	0.03
tblVehicleEF	MHD	0.04	0.03
tblVehicleEF	MHD	6.0800e-004	1.2730e-003
tblVehicleEF	MHD	9.3660e-003	9.7360e-003
tblVehicleEF	MHD	8.5000e-005	6.4000e-005
tblVehicleEF	MHD	2.8600e-004	0.01
tblVehicleEF	MHD	0.01	3.1100e-003
tblVehicleEF	MHD	0.03	0.04
tblVehicleEF	MHD	1.6900e-004	0.01
tblVehicleEF	MHD	0.01	0.02
tblVehicleEF	MHD	0.02	0.03
tblVehicleEF	MHD	0.05	0.04
tblVehicleEF	OBUS	7.1030e-003	7.4900e-003
tblVehicleEF	OBUS	2.0910e-003	0.01
tblVehicleEF	OBUS	0.02	0.01
tblVehicleEF	OBUS	0.65	0.55
tblVehicleEF	OBUS	0.25	0.27
tblVehicleEF	OBUS	1.56	1.41
tblVehicleEF	OBUS	96.78	89.40
tblVehicleEF	OBUS	1,197.98	1,222.16
tblVehicleEF	OBUS	13.32	11.54
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.12	0.15
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.43	0.32
tblVehicleEF	OBUS	1.46	0.80
tblVehicleEF	OBUS	1.13	0.91
tblVehicleEF	OBUS	1.4300e-004	2.9300e-004
tblVehicleEF	OBUS	0.13	0.05

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tblVehicleEF	OBUS	7.9760e-003	0.01
tblVehicleEF	OBUS	1.5900e-004	1.1400e-004
tblVehicleEF	OBUS	1.3700e-004	2.8000e-004
tblVehicleEF	OBUS	0.06	0.02
tblVehicleEF	OBUS	7.6160e-003	0.01
tblVehicleEF	OBUS	1.4600e-004	1.0500e-004
tblVehicleEF	OBUS	1.0700e-003	0.07
tblVehicleEF	OBUS	0.02	0.01
tblVehicleEF	OBUS	0.05	0.04
tblVehicleEF	OBUS	4.9200e-004	0.07
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.05	0.07
tblVehicleEF	OBUS	0.08	0.07
tblVehicleEF	OBUS	9.1900e-004	8.4200e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	1.3200e-004	1.1400e-004
tblVehicleEF	OBUS	1.0700e-003	0.07
tblVehicleEF	OBUS	0.02	0.01
tblVehicleEF	OBUS	0.06	0.05
tblVehicleEF	OBUS	4.9200e-004	0.07
tblVehicleEF	OBUS	0.02	0.04
tblVehicleEF	OBUS	0.05	0.07
tblVehicleEF	OBUS	0.08	0.07
tblVehicleEF	SBUS	0.07	0.08
tblVehicleEF	SBUS	4.1220e-003	0.09
tblVehicleEF	SBUS	6.6000e-003	5.2120e-003
tblVehicleEF	SBUS	3.05	1.83
tblVehicleEF	SBUS	0.36	0.67
tblVehicleEF	SBUS	0.89	0.66

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tblVehicleEF	SBUS	334.94	178.74
tblVehicleEF	SBUS	955.71	919.19
tblVehicleEF	SBUS	5.24	3.91
tblVehicleEF	SBUS	0.04	0.02
tblVehicleEF	SBUS	0.11	0.11
tblVehicleEF	SBUS	6.7700e-003	4.8890e-003
tblVehicleEF	SBUS	2.55	1.02
tblVehicleEF	SBUS	2.79	1.39
tblVehicleEF	SBUS	1.25	0.52
tblVehicleEF	SBUS	1.8040e-003	6.5600e-004
tblVehicleEF	SBUS	0.74	0.04
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.02	7.7560e-003
tblVehicleEF	SBUS	7.1000e-005	4.6000e-005
tblVehicleEF	SBUS	1.7260e-003	6.2600e-004
tblVehicleEF	SBUS	0.32	0.02
tblVehicleEF	SBUS	2.6600e-003	2.6050e-003
tblVehicleEF	SBUS	0.02	7.4040e-003
tblVehicleEF	SBUS	6.6000e-005	4.2000e-005
tblVehicleEF	SBUS	9.4600e-004	0.05
tblVehicleEF	SBUS	8.9890e-003	0.01
tblVehicleEF	SBUS	0.34	0.20
tblVehicleEF	SBUS	4.5200e-004	0.05
tblVehicleEF	SBUS	0.06	0.04
tblVehicleEF	SBUS	0.02	0.03
tblVehicleEF	SBUS	0.04	0.03
tblVehicleEF	SBUS	3.1960e-003	1.6090e-003
tblVehicleEF	SBUS	9.1510e-003	8.5260e-003
tblVehicleEF	SBUS	5.2000e-005	3.9000e-005

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tblVehicleEF	SBUS	9.4600e-004	0.05
tblVehicleEF	SBUS	8.9890e-003	0.01
tblVehicleEF	SBUS	0.48	0.32
tblVehicleEF	SBUS	4.5200e-004	0.05
tblVehicleEF	SBUS	0.07	0.13
tblVehicleEF	SBUS	0.02	0.03
tblVehicleEF	SBUS	0.04	0.03
tblVehicleEF	UBUS	1.86	0.63
tblVehicleEF	UBUS	2.2810e-003	2.4280e-003
tblVehicleEF	UBUS	14.11	7.35
tblVehicleEF	UBUS	0.14	0.51
tblVehicleEF	UBUS	1,668.58	854.61
tblVehicleEF	UBUS	1.40	2.99
tblVehicleEF	UBUS	0.28	0.13
tblVehicleEF	UBUS	1.2840e-003	4.3750e-003
tblVehicleEF	UBUS	0.71	0.21
tblVehicleEF	UBUS	0.02	0.02
tblVehicleEF	UBUS	0.07	0.18
tblVehicleEF	UBUS	0.03	0.08
tblVehicleEF	UBUS	5.1160e-003	3.9660e-003
tblVehicleEF	UBUS	1.5000e-005	1.3000e-005
tblVehicleEF	UBUS	0.03	0.06
tblVehicleEF	UBUS	8.3320e-003	0.02
tblVehicleEF	UBUS	4.8930e-003	3.7910e-003
tblVehicleEF	UBUS	1.4000e-005	1.2000e-005
tblVehicleEF	UBUS	7.5000e-005	7.1100e-003
tblVehicleEF	UBUS	1.0470e-003	2.2020e-003
tblVehicleEF	UBUS	4.5000e-005	7.1100e-003
tblVehicleEF	UBUS	0.03	0.05

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tblVehicleEF	UBUS	2.4500e-004	7.8800e-003
tblVehicleEF	UBUS	9.6900e-003	8.0720e-003
tblVehicleEF	UBUS	0.01	6.3010e-003
tblVehicleEF	UBUS	1.4000e-005	3.0000e-005
tblVehicleEF	UBUS	7.5000e-005	7.1100e-003
tblVehicleEF	UBUS	1.0470e-003	2.2020e-003
tblVehicleEF	UBUS	4.5000e-005	7.1100e-003
tblVehicleEF	UBUS	1.90	0.68
tblVehicleEF	UBUS	2.4500e-004	7.8800e-003
tblVehicleEF	UBUS	0.01	8.8370e-003
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWoodstoves	WoodstoveWoodMass	582.40	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2028	0.0408	0.3768	0.4401	8.3000e-004	0.1118	0.0157	0.1274	0.0527	0.0147	0.0673	0.0000	72.6961	72.6961	0.0182	0.0000	73.152

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2029	0.902	0.5778	0.7351	1.3900e-003	3.8000e-004	0.0239	0.0242	6.0000e-005	0.0227	0.0228	0.0000	120.1232	120.1232	0.0245	0.0000	120.7352
2030	0.5231	0.2602	0.4864	1.1900e-003	0.0000	5.98E-03	5.9800e-003	0.0000	5.98E-03	5.9800e-003	0.0000	101.6575	101.6575	3.5900e-003	0.0000	101.7472
Maximum	**0.9020**	**0.5778**	**0.7351**	**1.3900e-003**	**0.1118**	**0.0239**	**0.1274**	**0.0527**	**0.0227**	**0.0673**	**0.0000**	**120.1232**	**120.1232**	**0.0245**	**0.0000**	**120.7352**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2028	0.0142	0.2989	0.5367	8.3000e-004	0.0503	1.2900e-003	0.0516	0.0237	1.2900e-003	0.0250	0.0000	72.6960	72.6960	0.0182	0.0000	73.1519
2029	0.8612	0.5172	0.8764	1.3900e-003	1.7000e-004	4.9400e-003	5.1100e-003	3.0000e-005	4.9400e-003	4.9600e-003	0.0000	120.1230	120.1230	0.0245	0.0000	120.7351
2030	0.4980	0.3733	0.6371	1.1900e-003	0.0000	3.6600e-003	3.6600e-003	0.0000	3.6600e-003	3.6600e-003	0.0000	101.6574	101.6574	3.5900e-003	0.0000	101.7471
Maximum	**0.8612**	**0.5172**	**0.8764**	**1.3900e-003**	**0.0503**	**4.9400e-003**	**0.0516**	**0.0237**	**4.9400e-003**	**0.0250**	**0.0000**	**120.1230**	**120.1230**	**0.0245**	**0.0000**	**120.7351**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**6.31**	**2.09**	**-23.38**	**0.00**	**55.00**	**78.26**	**61.71**	**55.00**	**77.20**	**65.02**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	5-1-2028	7-31-2028	0.2135	0.1256
2	8-1-2028	10-31-2028	0.1471	0.1258
3	11-1-2028	1-31-2029	0.0714	0.0835
4	2-1-2029	4-30-2029	0.0454	0.0598

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5	**5-1-2029**	**7-31-2029**	0.4227	0.3933
6	**8-1-2029**	**10-31-2029**	0.6022	0.5465
7	**11-1-2029**	**1-31-2030**	0.5697	0.5465
8	**2-1-2030**	**4-30-2030**	0.4892	0.5287
9	**5-1-2030**	**7-31-2030**	0.0968	0.1245
10	**8-1-2030**	**9-30-2030**	0.0221	0.0287
		Highest	0.6022	0.5465

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.9087	0.0240	1.4841	1.2000e-004		8.7900e-003	8.7900e-003		8.7900e-003	8.7900e-003	0.0000	10.4155	10.4155	2.4600e-003	1.5000e-004	10.5208
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	293.0679	293.0679	0.0120	1.4500e-003	293.7995
Mobile	0.4063	0.3411	2.3470	7.5100e-003	0.7367	4.8100e-003	0.7415	0.1841	4.5100e-003	0.1886	0.0000	740.2421	740.2421	0.0291	0.0365	751.8311
Stationary	0.0275	0.0768	0.0701	1.3000e-004		4.04E-03	4.0400e-003		4.0400e-003	4.0400e-003	0.0000	12.7567	12.7567	1.7900e-003	0.0000	12.8014
Waste						0.0000	0.0000		0.0000	0.0000	19.2050	0.0000	19.2050	1.1350	0.0000	47.5795
Water						0.0000	0.0000		0.0000	0.0000	4.6756	36.8898	41.5654	0.0176	0.0104	45.0898
Total	**1.3425**	**0.4419**	**3.9012**	**7.7600e-003**	**0.7367**	**0.0176**	**0.7544**	**0.1841**	**0.0173**	**0.2014**	**23.8805**	**1,093.3720**	**1,117.2526**	**1.1979**	**0.0484**	**1,161.6220**

Mitigated Operational

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	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.9087	0.0240	1.4841	1.2000e-004		8.7900e-003	8.7900e-003		8.7900e-003	8.7900e-003	0.0000	10.4155	10.4155	2.4600e-003	1.5000e-004	10.5208
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0
Mobile	0.4063	0.3411	2.3470	7.5100e-003	0.7367	4.8100e-003	0.7415	0.1841	4.5100e-003	0.1886	0.0000	740.2421	740.2421	0.0291	0.0365	751.8311
Stationary	0.0275	0.0768	0.0701	1.3000e-004		4.0400e-003	4.0400e-003		4.0400e-003	4.0400e-003	0.0000	12.7567	12.7567	1.7900e-003	0.0000	12.8014
Waste						0.0000	0.0000		0.0000	0.0000	19.2050	0.0000	19.2050	1.1350	0.0000	47.5795
Water						0.0000	0.0000		0.0000	0.0000	4.6756	36.8898	41.5654	0.0176	0.0104	45.0898
Total	**1.3425**	**0.4419**	**3.9012**	**7.7600e-003**	**0.7367**	**0.0176**	**0.7544**	**0.1841**	**0.0173**	**0.2014**	**23.8805**	**800.3042**	**824.1847**	**1.1859**	**0.0470**	**867.8226**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**26.80**	**26.23**	**1.00**	**3.00**	**25.29**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	5/1/2028	9/1/2028	5	90	
2	Site Preparation	Site Preparation	5/1/2028	9/1/2028	5	90	
3	Grading	Grading	7/1/2028	1/1/2029	5	131	
4	Building Construction	Building Construction	6/1/2029	8/22/2030	5	320	

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5	Architectural Coating	Architectural Coating	6/1/2029	5/1/2030	5	239	
6	Trenching	Trenching	1/1/2029	6/15/2029	5	120	

Acres of Grading (Site Preparation Phase): 30.38

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 374,544; Residential Outdoor: 124,848; Non-Residential Indoor: 3,737; Non-Residential Outdoor: 1,246; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.70	78	0.48
Demolition	Excavators	1	0.90	158	0.38
Demolition	Concrete/Industrial Saws	1	0.90	81	0.73
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	1	3.00	89	0.20
Grading	Graders	0	0.00	187	0.41
Site Preparation	Graders	1	2.70	187	0.41
Site Preparation	Rubber Tired Dozers	1	2.70	247	0.40
Grading	Excavators	1	3.70	158	0.38
Demolition	Rubber Tired Dozers	1	0.90	247	0.40
Grading	Rubber Tired Dozers	0	0.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Demolition	Tractors/Loaders/Backhoes	1	0.90	97	0.37
Grading	Tractors/Loaders/Backhoes	1	3.70	97	0.37
Grading	Concrete/Industrial Saws	1	3.70	81	0.73
Site Preparation	Tractors/Loaders/Backhoes	1	2.70	97	0.37
Trenching	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Trenching	Excavators	1	4.00	158	0.38

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Building Construction	Generator Sets	1	5.00	84	0.74
Building Construction	Welders	1	2.00	46	0.45
Architectural Coating	Aerial Lifts	1	6.00	63	0.31

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	4	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	3	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	3	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	4	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Trenching	2	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	2	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - 2028

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					3.8200e-003	0.0000	3.8200e-003	5.8000e-004	0.0000	5.8000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.2900e-003	0.0580	0.0614	1.2000e-004		2.5200e-003	2.5200e-003		2.3500e-003	2.3500e-003	0.0000	10.2049	10.2049	2.5400e-003	0.0000	10.2684

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Total	**6.2900e-003**	**0.0580**	**0.0614**	**1.2000e-004**	**3.8200e-003**	**2.5200e-003**	**6.3400e-003**	**5.8000e-004**	**2.3500e-003**	**2.9300e-003**	**0.0000**	**10.2049**	**10.2049**	**2.5400e-003**	**0.0000**	**10.2684**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.7200e-003	0.0000	1.7200e-003	2.6000e-004	0.0000	2.6000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.9600e-003	0.0411	0.0742	1.2000e-004		1.8000e-004	1.8000e-004		1.8000e-004	1.8000e-004	0.0000	10.2049	10.2049	2.5400e-003	0.0000	10.2684

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Total	**1.9600e-003**	**0.0411**	**0.0742**	**1.2000e-004**	**1.7200e-003**	**1.8000e-004**	**1.9000e-003**	**2.6000e-004**	**1.8000e-004**	**4.4000e-004**	**0.0000**	**10.2049**	**10.2049**	**2.5400e-003**	**0.0000**	**10.2684**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 Site Preparation - 2028

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1076	0.0000	0.1076	0.0520	0.0000	0.0520	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0166	0.1735	0.1036	2.8000e-004		6.9200e-003	6.9200e-003		6.3600e-003	6.3600e-003	0.0000	24.3766	24.3766	7.8800e-003	0.0000	24.5737

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Total	**0.0166**	**0.1735**	**0.1036**	**2.8000e-004**	**0.1076**	**6.9200e-003**	**0.1145**	**0.0520**	**6.3600e-003**	**0.0584**	**0.0000**	**24.3766**	**24.3766**	**7.8800e-003**	**0.0000**	**24.5737**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0484	0.0000	0.0484	0.0234	0.0000	0.0234	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.8200e-003	0.0812	0.1578	2.8000e-004		4.5000e-004	4.5000e-004		4.5000e-004	4.5000e-004	0.0000	24.3765	24.3765	7.8800e-003	0.0000	24.5736

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Total	**4.8200e-003**	**0.0812**	**0.1578**	**2.8000e-004**	**0.0484**	**4.5000e-004**	**0.0489**	**0.0234**	**4.5000e-004**	**0.0239**	**0.0000**	**24.3765**	**24.3765**	**7.8800e-003**	**0.0000**	**24.5736**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2028

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					3.8000e-004	0.0000	3.8000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0179	0.1453	0.2751	4.4000e-004		6.2300e-003	6.2300e-003		5.9500e-003	5.9500e-003	0.0000	38.1146	38.1146	7.8100e-003	0.0000	38.3099

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Total	**0.0179**	**0.1453**	**0.2751**	**4.4000e-004**	**3.8000e-004**	**6.2300e-003**	**6.6100e-003**	**6.0000e-005**	**5.9500e-003**	**6.0100e-003**	**0.0000**	**38.1146**	**38.1146**	**7.8100e-003**	**0.0000**	**38.3099**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.7000e-004	0.0000	1.7000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.4600e-003	0.1766	0.3048	4.4000e-004		6.6000e-004	6.6000e-004		6.6000e-004	6.6000e-004	0.0000	38.1146	38.1146	7.8100e-003	0.0000	38.3098

Eterna Tower, 17 & 29 E Santa Clara St, San Jose - Santa Clara County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Total	**7.4600e-003**	**0.1766**	**0.3048**	**4.4000e-004**	**1.7000e-004**	**6.6000e-004**	**8.3000e-004**	**3.0000e-005**	**6.6000e-004**	**6.9000e-004**	**0.0000**	**38.1146**	**38.1146**	**7.8100e-003**	**0.0000**	**38.3098**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2029

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					3.8000e-004	0.0000	3.8000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.4000e-004	1.1200e-003	2.1200e-003	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.2932	0.2932	6.0000e-005	0.0000	0.2947

Eterna Tower, 17 & 29 E Santa Clara St, San Jose - Santa Clara County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Total	**1.4000e-004**	**1.1200e-003**	**2.1200e-003**	**0.0000**	**3.8000e-004**	**5.0000e-005**	**4.3000e-004**	**6.0000e-005**	**5.0000e-005**	**1.1000e-004**	**0.0000**	**0.2932**	**0.2932**	**6.0000e-005**	**0.0000**	**0.2947**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.7000e-004	0.0000	1.7000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.0000e-005	1.3600e-003	2.3400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	0.2932	0.2932	6.0000e-005	0.0000	0.2947

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Total	**6.0000e-005**	**1.3600e-003**	**2.3400e-003**	**0.0000**	**1.7000e-004**	**1.0000e-005**	**1.8000e-004**	**3.0000e-005**	**1.0000e-005**	**4.0000e-005**	**0.0000**	**0.2932**	**0.2932**	**6.0000e-005**	**0.0000**	**0.2947**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2029

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0401	0.3733	0.3530	7.9000e-004		0.0155	0.0155		0.0147	0.0147	0.0000	67.9636	67.9636	0.0135	0.0000	68.3004
Total	**0.0401**	**0.3733**	**0.3530**	**7.9000e-004**		**0.0155**	**0.0155**		**0.0147**	**0.0147**	**0.0000**	**67.9636**	**67.9636**	**0.0135**	**0.0000**	**68.3004**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0138	0.2635	0.4585	7.9000e-004		2.0000e-003	2.0000e-003		2.0000e-003	2.0000e-003	0.0000	67.9635	67.9635	0.0135	0.0000	68.3003
Total	**0.0138**	**0.2635**	**0.4585**	**7.9000e-004**		**2.0000e-003**	**2.0000e-003**		**2.0000e-003**	**2.0000e-003**	**0.0000**	**67.9635**	**67.9635**	**0.0135**	**0.0000**	**68.3003**

Eterna Tower, 17 & 29 E Santa Clara St, San Jose - Santa Clara County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2030

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0359	0.2001	0.3617	9.8000e-004		4.5900e-003	4.5900e-003		4.5900e-003	4.5900e-003	0.0000	83.4951	83.4951	2.9100e-003	0.0000	83.5679
Total	**0.0359**	**0.2001**	**0.3617**	**9.8000e-004**		**4.5900e-003**	**4.5900e-003**		**4.5900e-003**	**4.5900e-003**	**0.0000**	**83.4951**	**83.4951**	**2.9100e-003**	**0.0000**	**83.5679**

Unmitigated Construction Off-Site

Eterna Tower, 17 & 29 E Santa Clara St, San Jose - Santa Clara County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0153	0.2912	0.5068	9.8000e-004		2.2200e-003	2.2200e-003		2.2200e-003	2.2200e-003	0.0000	83.4950	83.4950	2.9100e-003	0.0000	83.5678
Total	**0.0153**	**0.2912**	**0.5068**	**9.8000e-004**		**2.2200e-003**	**2.2200e-003**		**2.2200e-003**	**2.2200e-003**	**0.0000**	**83.4950**	**83.4950**	**2.9100e-003**	**0.0000**	**83.5678**

Mitigated Construction Off-Site

Eterna Tower, 17 & 29 E Santa Clara St, San Jose - Santa Clara County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Architectural Coating - 2029

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.8363					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0164	0.1267	0.2154	3.5000e-004		4.8800e-003	4.8800e-003		4.8400e-003	4.8400e-003	0.0000	30.0288	30.0288	3.8900e-003	0.0000	30.1259
Total	**0.8528**	**0.1267**	**0.2154**	**3.5000e-004**		**4.8800e-003**	**4.8800e-003**		**4.8400e-003**	**4.8400e-003**	**0.0000**	**30.0288**	**30.0288**	**3.8900e-003**	**0.0000**	**30.1259**

Unmitigated Construction Off-Site

Eterna Tower, 17 & 29 E Santa Clara St, San Jose - Santa Clara County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.8363					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.9700e-003	0.1434	0.2277	3.5000e-004		2.5200e-003	2.5200e-003		2.5200e-003	2.5200e-003	0.0000	30.0288	30.0288	3.8900e-003	0.0000	30.1259
Total	**0.8433**	**0.1434**	**0.2277**	**3.5000e-004**		**2.5200e-003**	**2.5200e-003**		**2.5200e-003**	**2.5200e-003**	**0.0000**	**30.0288**	**30.0288**	**3.8900e-003**	**0.0000**	**30.1259**

Mitigated Construction Off-Site

Eterna Tower, 17 & 29 E Santa Clara St, San Jose - Santa Clara County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Architectural Coating - 2030

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.4787					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.4500e-003	0.0601	0.1248	2.1000e-004		1.3900e-003	1.3900e-003		1.3900e-003	1.3900e-003	0.0000	18.1624	18.1624	6.7000e-004	0.0000	18.1793
Total	**0.4871**	**0.0601**	**0.1248**	**2.1000e-004**		**1.3900e-003**	**1.3900e-003**		**1.3900e-003**	**1.3900e-003**	**0.0000**	**18.1624**	**18.1624**	**6.7000e-004**	**0.0000**	**18.1793**

Unmitigated Construction Off-Site

Eterna Tower, 17 & 29 E Santa Clara St, San Jose - Santa Clara County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.4787					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.9900e-003	0.0821	0.1304	2.1000e-004		1.4400e-003	1.4400e-003		1.4400e-003	1.4400e-003	0.0000	18.1624	18.1624	6.7000e-004	0.0000	18.1792
Total	**0.4827**	**0.0821**	**0.1304**	**2.1000e-004**		**1.4400e-003**	**1.4400e-003**		**1.4400e-003**	**1.4400e-003**	**0.0000**	**18.1624**	**18.1624**	**6.7000e-004**	**0.0000**	**18.1792**

Mitigated Construction Off-Site

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	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Trenching - 2029

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	8.9800e-003	0.0767	0.1647	2.5000e-004		3.4200e-003	3.4200e-003		3.1500e-003	3.1500e-003	0.0000	21.8376	21.8376	7.0600e-003	0.0000	22.0142
Total	**8.9800e-003**	**0.0767**	**0.1647**	**2.5000e-004**		**3.4200e-003**	**3.4200e-003**		**3.1500e-003**	**3.1500e-003**	**0.0000**	**21.8376**	**21.8376**	**7.0600e-003**	**0.0000**	**22.0142**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

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Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.9900e-003	0.1089	0.1878	2.5000e-004		4.1000e-004	4.1000e-004		4.1000e-004	4.1000e-004	0.0000	21.8376	21.8376	7.0600e-003	0.0000	22.0141
Total	**3.9900e-003**	**0.1089**	**0.1878**	**2.5000e-004**		**4.1000e-004**	**4.1000e-004**		**4.1000e-004**	**4.1000e-004**	**0.0000**	**21.8376**	**21.8376**	**7.0600e-003**	**0.0000**	**22.0141**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.4063	0.3411	2.3470	7.5100e-003	0.7367	4.8100e-003	0.7415	0.1841	4.5100e-003	0.1886	0.0000	740.2421	740.2421	0.0291	0.0365	751.8311
Unmitigated	0.4063	0.3411	2.3470	7.5100e-003	0.7367	4.8100e-003	0.7415	0.1841	4.5100e-003	0.1886	0.0000	740.2421	740.2421	0.0291	0.0365	751.8311

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments High Rise	890.00	906.00	718.00	2,004,079	2,004,079
Strip Mall	110.40	104.72	50.89	155,679	155,679
Total	1,000.40	1,010.72	768.89	2,159,759	2,159,759

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4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments High Rise	10.80	4.80	5.70	31.00	15.00	54.00	86	11	3
Strip Mall	9.50	7.30	7.30	16.60	64.40	19.00	45	40	15

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments High Rise	0.529137	0.031005	0.234316	0.130484	0.026305	0.006520	0.011184	0.023553	0.001665	0.001218	0.003469	0.000536	0.000609
Strip Mall	0.529137	0.031005	0.234316	0.130484	0.026305	0.006520	0.011184	0.023553	0.001665	0.001218	0.003469	0.000536	0.000609

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Percent of Electricity Use Generated with Renewable Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	293.0679	293.0679	0.0120	1.4500e-003	293.7995
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

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NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments High Rise	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Strip Mall	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments High Rise	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Strip Mall	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments High Rise	773772	283.5825	0.0116	1.4000e-003	284.2904
Strip Mall	25881.5	9.4854	3.9000e-004	5.0000e-005	9.5091
Total		**293.0679**	**0.0120**	**1.4500e-003**	**293.7995**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments High Rise	0	0.0000	0.0000	0.0000	0.0000
Strip Mall	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.9087	0.0240	1.4841	1.2000e-004		8.7900e-003	8.7900e-003		8.7900e-003	8.7900e-003	0.0000	10.4155	10.4155	2.4600e-003	1.5000e-004	10.5208
Unmitigated	0.9087	0.0240	1.4841	1.2000e-004		8.7900e-003	8.7900e-003		8.7900e-003	8.7900e-003	0.0000	10.4155	10.4155	2.4600e-003	1.5000e-004	10.5208

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1315					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.7321					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	8.1000e-004	6.9000e-003	2.9400e-003	4.0000e-005		5.6000e-004	5.6000e-004		5.6000e-004	5.6000e-004	0.0000	7.9897	7.9897	1.5000e-004	1.5000e-004	8.0372
Landscaping	0.0443	0.0171	1.4811	8.0000e-005		8.2400e-003	8.2400e-003		8.2400e-003	8.2400e-003	0.0000	2.4258	2.4258	2.3100e-003	0.0000	2.4836

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Total	**0.9087**	**0.0240**	**1.4841**	**1.2000e-004**		**8.8000e-003**	**8.8000e-003**		**8.8000e-003**	**8.8000e-003**	**0.0000**	**10.4155**	**10.4155**	**2.4600e-003**	**1.5000e-004**	**10.5208**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1315					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.7321					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	8.1000e-004	6.9000e-003	2.9400e-003	4.0000e-005		5.6000e-004	5.6000e-004		5.6000e-004	5.6000e-004	0.0000	7.9897	7.9897	1.5000e-004	1.5000e-004	8.0372
Landscaping	0.0443	0.0171	1.4811	8.0000e-005		8.2400e-003	8.2400e-003		8.2400e-003	8.2400e-003	0.0000	2.4258	2.4258	2.3100e-003	0.0000	2.4836
Total	**0.9087**	**0.0240**	**1.4841**	**1.2000e-004**		**8.8000e-003**	**8.8000e-003**		**8.8000e-003**	**8.8000e-003**	**0.0000**	**10.4155**	**10.4155**	**2.4600e-003**	**1.5000e-004**	**10.5208**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e

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Category	MT/yr			
Mitigated	41.5654	0.0176	0.0104	45.0898
Unmitigated	41.5654	0.0176	0.0104	45.0898

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments High Rise	13.0308 / 8.21507	40.9894	0.0174	0.0102	44.4646
Strip Mall	0.184441 / 0.113044	0.5760	2.5000e-004	1.4000e-004	0.6252
Total		**41.5654**	**0.0176**	**0.0104**	**45.0898**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments High Rise	13.0308 / 8.21507	40.9894	0.0174	0.0102	44.4646

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Strip Mall	0.184441 / 0.113044	0.5760	2.5000e-004	1.4000e-004	0.6252
Total		**41.5654**	**0.0176**	**0.0104**	**45.0898**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	19.2050	1.1350	0.0000	47.5795
Unmitigated	19.2050	1.1350	0.0000	47.5795

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments High Rise	92	18.6752	1.1037	0.0000	46.2669

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Strip Mall	2.61	0.5298	0.0313	0.0000	1.3126
Total		**19.2050**	**1.1350**	**0.0000**	**47.5795**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments High Rise	92	18.6752	1.1037	0.0000	46.2669
Strip Mall	2.61	0.5298	0.0313	0.0000	1.3126
Total		**19.2050**	**1.1350**	**0.0000**	**47.5795**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	1	0	50	670	0.73	Diesel

Boilers

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

10.1 Stationary Sources

Unmitigated/Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Equipment Type	tons/yr										MT/yr					
Emergency Generator - Diesel (... 750 HP)	0.0275	0.0768	0.0701	1.3000e-004		4.0400e-003	4.0400e-003		4.0400e-003	4.0400e-003	0.0000	12.7567	12.7567	1.7900e-003	0.0000	12.8014
Total	**0.0275**	**0.0768**	**0.0701**	**1.3000e-004**		**4.0400e-003**	**4.0400e-003**		**4.0400e-003**	**4.0400e-003**	**0.0000**	**12.7567**	**12.7567**	**1.7900e-003**	**0.0000**	**12.8014**

11.0 Vegetation

Attachment 3: EMFAC2021 Emissions Adjustment Factors

CalEEMod Construction Inputs

Phase	CalEEMod WORKER TRIPS	CalEEMod VENDOR TRIPS	Total Worker Trips	Total Vendor Trips	CalEEMod HAULING TRIPS	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class	*Worker VMT*	*Vendor VMT*	*Hauling VMT*
Demolition	10	0	900	0	35	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT	9720	0	700
Site Preparation	8	0	720	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT	7776	0	0
Grading	8	0	1048	0	850	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT	11318.4	0	17000
Trenching	5	0	600	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT	6480	0	0
Building Construction	145	22	46400	7040	64	10.8	7.3	7.3	LD_Mix	HDT_Mix	HHDT	501120	51392	467.2
Architectural Coating	29	0	6931	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT	74854.8	0	0

Number of Days Per Year					
2028	5/1/28	12/31/28	245	175	
2029	1/1/29	12/31/29	365	261	
2030	1/1/30	8/22/30	234	167	
			844	**604**	***Total Workdays***

Phase	Start Date	End Date	Days/Week	Workdays
Demolition	5/1/2028	9/1/2028	5	90
Site Preparation	5/1/2028	9/1/2028	5	90
Grading	7/1/2028	1/1/2029	5	131
Trenching	1/1/2029	6/15/2029	5	120
Building Construction	6/1/2029	8/22/2030	5	320
Architectural Coating	6/1/2029	5/1/2030	5	239

Summary of Construction Traffic Emissions (EMFAC2021)

Pollutants YEAR	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	NBio- CO2	CH4	N2O	CO2e
					Tons							*Metric Tons*		
Criteria Pollutants														
2028	0.0212	0.0548	0.1863	0.0008	0.0651	0.0060	0.0712	0.0098	0.0023	0.0121	78.5171	0.0032	0.0057	80.3051
2029	0.0301	0.0782	0.2669	0.0012	0.0970	0.0090	0.1060	0.0146	0.0034	0.0180	115.0504	0.0045	0.0083	117.6350
2030	0.0186	0.0481	0.1652	0.0007	0.0622	0.0057	0.0679	0.0094	0.0021	0.0115	72.5390	0.0027	0.0052	74.1452
Toxic Air Contaminants (0.5 Mile Trip Length)														
2028	0.0196	0.0196	0.0632	0.0001	0.0031	0.0003	0.0034	0.0005	0.0001	0.0006	6.3103	0.0014	0.0010	6.6340
2029	0.0279	0.0285	0.0906	0.0001	0.0046	0.0005	0.0051	0.0007	0.0002	0.0009	9.2325	0.0020	0.0014	9.7021
2030	0.0173	0.0178	0.0560	0.0001	0.0030	0.0003	0.0033	0.0004	0.0001	0.0006	5.8121	0.0012	0.0009	6.1052

CalEEMod EMFAC2021 Fleet Mix Input — Year 2031

FleetMixLandUseSubType	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments High Rise	0.529137	0.031005	0.234316	0.130484	0.026305	0.00652	0.011184	0.023553	0.001665	0.001218	0.003469	0.000536	0.000609
Strip Mall	0.529137	0.031005	0.234316	0.130484	0.026305	0.00652	0.011184	0.023553	0.001665	0.001218	0.003469	0.000536	0.000609

CalEEMod EMFAC2021 Emission Factors Input — Year 2031

Season	EmissionType	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
A	CH4_IDLEX	0	0	0	0	0.004163	0.002431	0.015576	0.193547448	0.00749	0	0	0.082527	0
A	CH4_RUNEX	0.001197	0.002965	0.001808	0.00199	0.003572	0.004191	0.009346	0.080769617	0.010907	0.630967551	0.142192	0.086023	0.005697
A	CH4_STREX	0.043508	0.066209	0.057803	0.061782	0.015536	0.008301	0.006271	3.8937E-08	0.012838	0.002427586	0.153937	0.005212	0.022315
A	CO_IDLEX	0	0	0	0	0.178146	0.134714	0.612329	4.946380741	0.548912	0	0	1.832379	0
A	CO_RUNEX	0.482959	0.855246	0.639548	0.656958	0.496011	0.364363	0.139057	0.595282824	0.266251	7.347205688	10.94097	0.671567	0.338889
A	CO_STREX	2.036775	3.234055	2.681896	2.722251	2.003584	1.098578	0.67172	0.000892766	1.40535	0.507079202	7.811708	0.661875	1.862105
A	CO2_NBIO_IDLEX	0	0	0	0	7.604903	13.31535	138.4966	701.4911037	89.39808	0	0	178.7408	0
A	CO2_NBIO_RUNEX	232.5284	314.3084	324.3457	386.7522	642.9346	689.5361	1029.462	1353.639487	1222.157	854.6079045	185.7066	919.1898	1653.043
A	CO2_NBIO_STREX	59.30204	80.5368	81.78539	96.88925	15.43562	8.385892	6.479863	0.009024472	11.5378	2.98552132	42.09261	3.913478	19.85322
A	NOX_IDLEX	0	0	0	0	0.034397	0.074221	0.698879	3.751612565	0.324644	0	0	1.020934	0
A	NOX_RUNEX	0.022277	0.058614	0.038893	0.044644	0.275514	0.45352	0.521637	1.39408401	0.799974	0.210803121	0.504082	1.385254	1.247134
A	NOX_STREX	0.174849	0.260187	0.240905	0.261965	0.310879	0.170726	1.163022	2.555038036	0.907664	0.023940429	0.0987	0.523347	0.295934
A	PM10_IDLEX	0	0	0	0	0.000654	0.001461	0.000538	0.001674964	0.000293	0	0	0.000656	0
A	PM10_PMBW	0.007213	0.009313	0.009025	0.009076	0.073417	0.085796	0.042602	0.08198742	0.049924	0.175105303	0.012	0.043359	0.044939
A	PM10_PMTW	0.008	0.008	0.008	0.008	0.009311	0.010478	0.012	0.035151572	0.012	0.07912302	0.004	0.010421	0.013358
A	PM10_RUNEX	0.000806	0.001196	0.000955	0.000937	0.008607	0.016134	0.004723	0.023036954	0.012088	0.00396615	0.002026	0.007756	0.021639
A	PM10_STREX	0.001401	0.001945	0.001571	0.001523	0.000122	5.24E-05	7.89E-05	1.3113E-07	0.000114	1.26121E-05	0.003383	4.61E-05	0.000227
A	PM25_IDLEX	0	0	0	0	0.000626	0.001398	0.000514	0.001595617	0.00028	0	0	0.000626	0
A	PM25_PMBW	0.002524	0.00326	0.003159	0.003177	0.025696	0.030029	0.014911	0.028695597	0.017474	0.061286856	0.0042	0.015176	0.015729
A	PM25_PMTW	0.002	0.002	0.002	0.002	0.002328	0.002619	0.003	0.008787893	0.003	0.019780755	0.001	0.002605	0.00334
A	PM25_RUNEX	0.000742	0.001099	0.000879	0.000863	0.008205	0.015423	0.004511	0.022037233	0.011557	0.003790605	0.00189	0.007404	0.020667
A	PM25_STREX	0.001288	0.001788	0.001444	0.0014	0.000112	4.82E-05	7.25E-05	1.20569E-07	0.000105	1.15963E-05	0.003163	4.24E-05	0.000209
A	ROG_DIURN	0.222055	0.450464	0.246266	0.271815	0.082009	0.04673	0.013865	3.19262E-05	0.067259	0.007109717	3.59893	0.048139	18.86004
A	ROG_HTSK	0.057826	0.113462	0.061282	0.066273	0.019296	0.010499	0.00311	1.00075E-05	0.013378	0.002202354	3.552992	0.010052	4.450796
A	ROG_IDLEX	0	0	0	0	0.016876	0.013376	0.020019	0.30743389	0.039344	0	0	0.198227	0
A	ROG_RESTL	0.222055	0.450464	0.246266	0.271815	0.082009	0.04673	0.013865	3.19262E-05	0.067259	0.007109717	3.59893	0.048139	18.86004
A	ROG_RUNEX	0.00411	0.01226	0.006557	0.007597	0.046133	0.078809	0.012929	0.013674768	0.030016	0.045144992	0.880643	0.036576	0.048613
A	ROG_RUNLS	0.166918	0.339196	0.183782	0.203675	0.115755	0.062901	0.026524	8.98588E-05	0.074799	0.007880204	3.777267	0.032309	0.109657
A	ROG_STREX	0.186942	0.313402	0.253471	0.283876	0.073293	0.038975	0.032303	2.1107E-07	0.06834	0.008071506	1.106857	0.029397	0.086271
A	SO2_IDLEX	0	0	0	0	7.4E-05	0.000127	0.001273	0.006051549	0.000842	0	0	0.001609	0
A	SO2_RUNEX	0.002134	0.002885	0.002977	0.003548	0.006273	0.006632	0.009736	0.012198032	0.011604	0.006301336	0.001836	0.008526	0.016191
A	SO2_STREX	0.000544	0.000739	0.000751	0.000889	0.000153	8.29E-05	6.41E-05	8.92161E-08	0.000114	2.95149E-05	0.000416	3.87E-05	0.000196
A	TOG_DIURN	0.222055	0.450464	0.246266	0.271815	0.082009	0.04673	0.013865	3.19262E-05	0.067259	0.007109717	0.078884	0.048139	18.86004
A	TOG_HTSK	0.057826	0.113462	0.061282	0.066273	0.019296	0.010499	0.00311	1.00075E-05	0.013378	0.002202354	3.552992	0.010052	4.450796
A	TOG_IDLEX	0	0	0	0	0.023785	0.017683	0.038328	0.530153632	0.052007	0	0	0.324528	0
A	TOG_RESTL	0.222055	0.450464	0.246266	0.271815	0.082009	0.04673	0.013865	3.19262E-05	0.067259	0.007109717	0.078884	0.048139	18.86004
A	TOG_RUNEX	0.005993	0.01789	0.009553	0.011054	0.05503	0.090571	0.023939	0.096131629	0.04473	0.68338702	1.082616	0.128396	0.059846
A	TOG_RUNLS	0.166918	0.339196	0.183782	0.203675	0.115755	0.062901	0.026524	8.98588E-05	0.074799	0.007880204	3.777267	0.032309	0.109657
A	TOG_STREX	0.204678	0.343136	0.277519	0.310808	0.080246	0.042672	0.035368	2.31095E-07	0.074824	0.008837283	1.204268	0.032186	0.094456
A	N2O_IDLEX	0	0	0	0	0.000574	0.001681	0.021452	0.113410989	0.013107	0	0	0.022998	0
A	N2O_RUNEX	0.003093	0.005447	0.00436	0.005169	0.034253	0.072046	0.131839	0.216271217	0.15052	0.132844713	0.036744	0.108945	0.068587
A	N2O_STREX	0.024918	0.031595	0.031191	0.031598	0.027323	0.014624	0.004551	2.81532E-06	0.010736	0.004374983	0.006118	0.004889	0.033146

Source: EMFAC2021 (v1.0.1) Emission Rates
Region Type: County
Region: Santa Clara
Calendar Year: 2028
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for CVMT and EVMT, trips/day for Trips, kWh/day for Energy Consumption, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HOTSOAK and RUNLOSS, g/vehicle/day for IDLEX and DIURN

Region	Calendar Y	Vehicle Cat	Model Yea	Speed	Fuel	Population	Total VMT	CVMT	EVMT	Trips	Energy Con	NOx_RUNEX	NOx_IDLEX	NOx_STREX	PM2.5_RU	PM2.5_IDL	PM2.5_STR	PM2.5_PM	PM2.5_PM	PM10_RUN	PM10_IDLE	PM10_STR	PM10_PM	PM10_PM	CO2_RUNE	CO2_IDLEX	CO2_STREX	CH4_RUNE	CH4_IDLEX	CH4_STREX	N2O_RUNE	N2O_IDLEX	N2O_STRE	ROG_RUNI	ROG_IDLEX	ROG_STRE	ROG_HOTS	ROG_RUNI	ROG_DIUR	TOG_RUNE	TOG_IDLEX	TOG_STRE	TOG_HOTS	TOG_RUNI	TOG_DIUR	NH3_RUNE	CO_RUNEX	CO_IDLEX	CO_STREX	SOx_RUNE	SOx_IDLEX	SOx_STREX
Santa Clara	2028	HHDT	Aggregate	Aggregate	Gasoline	1.470835	154.303	154.303	0	29.42846	0	3.160849	0	0.799958	0.001802	0	0.000748	0.005	0.032409	0.00196	0	0.000813	0.02	0.092597	1951.66	0	49.27078	0.108026	0	0.000299	0.124786	0	0.028209	0.5443	0	0.001621	0.088862	0.781156	5.484444	0.794242	0	0.001775	0.088862	0.781156	5.484444	0.045	24.51976	0	4.057756	0.019294	0	0.000487
Santa Clara	2028	HHDT	Aggregate	Aggregate	Diesel	9119.079	1024317	1024317	0	134474.3	0	1.649728	61.49517	2.940109	0.02493	0.025825	0	0.00878	0.027829	0.026057	0.026993	0	0.035118	0.079512	1528	11109.9	0	0.000679	0.234703	0	0.240737	1.750369	0	0.01462	5.053085	0	0	0	0	0.016644	5.752553	0	0	0	0	0.216623	0.067122	73.97201	0	0.014469	0.105204	0
Santa Clara	2028	HHDT	Aggregate	Aggregate	Electricity	270.954	28275.15	0	28275.15	3483.7	52140.45	0	0	0	0	0	0	0.008552	0.01525	0	0	0	0	0	0	0	0	0	0	0	0	0.034206	0.043571	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Santa Clara	2028	HHDT	Aggregate	Aggregate	Natural Ga	909.887	57673.44	57673.44	0	8080.24	0	0.845299	12.05981	0	0.001592	0.026365	0	0.009	0.050678	0.001731	0.028674	0	0.036	0.144795	1343.406	10310.04	0	1.91551	31.69951	0	0.273862	2.101769	0	0.038157	0.471295	0	0	0	0	1.967209	32.37261	0	0	0	0	0.820835	11.87837	75.6236	0	0	0	0
Santa Clara	2028	LDA	Aggregate	Aggregate	Gasoline	600154.7	21978505	21978505	0	2786673	0	0.030254	0	0.217367	0.000997	0	0.00169	0.002	0.002654	0.001084	0	0.001838	0.008	0.007582	259.6812	0	65.1265	0.001655	0	0.057308	0.003885	0	0.029996	0.005911	0	0.251605	0.076497	0.209635	1.284962	0.088625	0	0.275476	0.076497	0.209635	1.284962	0.03804	0.603253	0	2.607541	0.002567	0	0.000644
Santa Clara	2028	LDA	Aggregate	Aggregate	Diesel	1207.848	34499.52	34499.52	0	5156.172	0	0.118376	0	0	0.009649	0	0	0.002	0.002722	0.010085	0	0	0.008	0.007778	222.2686	0	0	0.000886	0	0	0	0	0	0.035019	0	0	0.019079	0	0	0	0.02172	0	0	0	0	0	0.0031	0.281436	0	0	0.002106	0	0
Santa Clara	2028	LDA	Aggregate	Aggregate	Electricity	69984.64	2868125	0	2868125	136272.3	1107333	0	0	0	0	0	0	0.002	0.001536	0	0	0	0.008	0.004389	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Santa Clara	2028	LDA	Aggregate	Aggregate	Plug-in Hyb	22751.93	936162.1	430803.2	505358.9	94079.21	1526333.5	0.00302	0	0.011551	0.000467	0	0.001715	0.002	0.001393	0.000508	0	0.001865	0.008	0.003979	128.3175	0	63.11439	0.000404	0	0.041698	0.000525	0	0.020069	0.001306	0	0.173285	0.045191	0.046177	0.492538	0.018641	0.198046	0	0.339893	0.001269	0	0.000624
Santa Clara	2028	LDT1	Aggregate	Aggregate	Gasoline	49081.01	1563538	1563538	0	218519.1	0	0.084308	0	0.305828	0.00136	0	0.002171	0.002	0.00324	0.00148	0	0.002362	0.008	0.009256	309.8369	0	78.99943	0.004111	0	0.081169	0.006927	0	0.034482	0.017586	0	0.397179	0.135565	0.390418	2.261735	0.025662	0	0.434861	0.135565	0.390418	2.261735	0.037654	1.051411	0	3.964013	0.003063	0	0.000791
Santa Clara	2028	LDT1	Aggregate	Aggregate	Diesel	3.376419	51.57305	51.57305	0	9.61996	0	1.103246	0	0	0.165443	0	0	0.002	0.003602	0.172924	0	0	0.008	0.010292	378.4488	0	0	0.012442	0	0	0.059625	0	0	0.267875	0	0	0.304958	0	0	0	1.8775	0	0	0	0	0	0.0031	1.8775	0	0	0.003586	0	0
Santa Clara	2028	LDT1	Aggregate	Aggregate	Electricity	344.7167	14328.81	0	14328.81	1657.81	5532.102	0	0	0	0	0	0	0.002	0.001534	0	0	0	0.008	0.004382	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Santa Clara	2028	LDT1	Aggregate	Aggregate	Plug-in Hyb	210.9723	9240.009	3862.243	5377.766	872.3706	1624.246	0.002741	0	0.11551	0.000276	0	0.001121	0.002	0.001402	0.0003	0	0.001219	0.008	0.004004	116.5535	0	68.31316	0.000365	0	0.041529	0.000473	0	0.019911	0.001186	0	0.173285	0.023021	0.019863	0.274915	0.001731	0	0.189725	0.023021	0.019863	0.274915	0.017556	0.179889	0	1.339893	0.001152	0	0.000675
Santa Clara	2028	LDT2	Aggregate	Aggregate	Gasoline	306289.6	10804407	10804407	0	1428230	0	0.048684	0	0.272265	0.001037	0	0.001722	0.002	0.00314	0.001128	0	0.001873	0.008	0.008973	321.5584	0	81.40965	0.002155	0	0.067575	0.00483	0	0.033529	0.008041	0	0.302046	0.071308	0.20464	1.273765	0.011733	0	0.330702	0.071308	0.20464	1.273765	0.038949	0.699045	0	3.020134	0.003179	0	0.000805
Santa Clara	2028	LDT2	Aggregate	Aggregate	Diesel	1124.634	40163.41	40163.41	0	5296.19	0	0.032087	0	0	0.004136	0	0	0.002	0.003139	0.004324	0	0	0.008	0.008969	293.3692	0	0	0.00057	0	0	0.04622	0	0	0.012281	0	0	0.013981	0	0	0	0.0031	0.127096	0	0	0	0	0.0031	0.127096	0	0	0.00278	0	0
Santa Clara	2028	LDT2	Aggregate	Aggregate	Electricity	3966.166	128586.5	0	128586.5	19886.52	49645.02	0	0	0	0	0	0	0.002	0.001529	0	0	0	0.008	0.00437	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Santa Clara	2028	LDT2	Aggregate	Aggregate	Plug-in Hyb	3889.8	160537.5	69997.62	90539.85	16084.32	27345.73	0.002861	0	0.11551	0.00035	0	0.001357	0.002	0.001398	0.00038	0	0.001476	0.008	0.003995	121.5807	0	75.13065	0.00038	0	0.041442	0.000491	0	0.01983	0.001237	0	0.173285	0.025845	0.023469	0.303951	0.001805	0	0.189725	0.025845	0.023469	0.303951	0.0183	0.187649	0	1.339893	0.001202	0	0.000743
Santa Clara	2028	LHDT1	Aggregate	Aggregate	Gasoline	19758.18	736964	736964	0	294367.4	0	0.105907	0.032213	0.550872	0.001382	0	0.000225	0.002	0.0273	0.001503	0	0.000245	0.008	0.078	819.0942	115.0602	25.40508	0.005002	0.103139	0.028129	0.006125	0.002833	0.046743	0.023788	0.369318	0.136586	0.037892	0.223771	2.358305	0.034712	0.538908	0.149544	0.037892	0.223771	2.358305	0.045	0.894116	3.764573	3.249257	0.008098	0.001137	0.000251
Santa Clara	2028	LHDT1	Aggregate	Aggregate	Diesel	11024.69	426298.1	426298.1	0	138676.7	0	0.963403	1.57457	0	0.026418	0.026447	0	0.003	0.0273	0.027612	0.027643	0	0.012	0.078	620.6931	125.5014	0	0.006234	0.005098	0	0.09779	0.019773	0	0.13422	0.10976	0	0	0	0	0.152801	0.124954	0	0	0	0	0.19297	0.350151	0.909745	0	0.005881	0.001189	0
Santa Clara	2028	LHDT1	Aggregate	Aggregate	Electricity	1021.234	60968.04	0	60968.04	14299.84	39934.45	0	0	0	0	0	0	0.002	0.01365	0	0	0	0.008	0.039	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Santa Clara	2028	LHDT2	Aggregate	Aggregate	Gasoline	2498.391	89760.82	89760.82	0	37222.3	0	0.097832	0.031367	0.543719	0.001242	0	0.000172	0.002	0.03185	0.001351	0	0.000187	0.008	0.091	927.6745	133.3883	24.76704	0.003463	0.100393	0.02699	0.006277	0.002707	0.045144	0.014905	0.359925	0.12934	0.035925	0.207704	2.286049	0.021749	0.525202	0.141611	0.035925	0.207704	2.286049	0.045	0.707005	3.772284	3.162872	0.009171	0.001319	0.000245
Santa Clara	2028	LHDT2	Aggregate	Aggregate	Diesel	5257.65	198606.8	198606.8	0	66134.62	0	0.865041	1.574905	0	0.026454	0.027	0	0.003	0.03185	0.02765	0.02822	0	0.012	0.091	735.4981	201.5097	0	0.00621	0.005098	0	0.115878	0.031748	0	0.133707	0.10976	0	0	0	0	0.152217	0.124954	0	0	0	0	0.198314	0.337166	0.909745	0	0.006969	0.001909	0
Santa Clara	2028	LHDT2	Aggregate	Aggregate	Electricity	258.9077	14761.07	0	14761.07	3434.171	9521.709	0	0	0	0	0	0	0.002	0.015925	0	0	0	0.008	0.0455	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Santa Clara	2028	MCY	Aggregate	Aggregate	Gasoline	29377.66	168474	168474	0	58755.32	0	0.525696	0	0.112461	0.001844	0	0.003234	0.001	0.0042	0.001975	0	0.003451	0.004	0.012	186.1355	0	44.44114	0.148032	0	0.164333	0.037627	0	0.006825	0.934888	0	1.195378	3.558397	3.787612	3.814128	1.139755	0	1.300164	3.558397	3.787612	3.814128	0.008953	11.46379	0	7.875637	0.00184	0	0.000439
Santa Clara	2028	MDV	Aggregate	Aggregate	Gasoline	168553.5	5803822	5803822	0	781481.4	0	0.061284	0	0.315881	0.001013	0	0.001716	0.002	0.003184	0.001101	0	0.001866	0.008	0.009096	389.5067	0	98.90409	0.002561	0	0.076579	0.005494	0	0.035243	0.010093	0	0.362532	0.080433	0.240438	1.475862	0.014727	0	0.396926	0.080433	0.240438	1.475862	0.038637	0.751575	0	3.184891	0.003851	0	0.000978
Santa Clara	2028	MDV	Aggregate	Aggregate	Diesel	2426.785	81862.87	81862.87	0	11233.79	0	0.032614	0	0	0.003648	0	0	0.002	0.003262	0.003813	0	0	0.008	0.009319	389.9259	0	0	0.000421	0	0	0.061433	0	0	0.009068	0	0	0.010323	0	0	0	0.0031	0.190366	0	0	0	0	0.0031	0.190366	0	0	0.003695	0	0
Santa Clara	2028	MDV	Aggregate	Aggregate	Electricity	4086.684	132418.2	0	132418.2	20489.55	51124.34	0	0	0	0	0	0	0.002	0.00153	0	0	0	0.008	0.004371	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Santa Clara	2028	MDV	Aggregate	Aggregate	Plug-in Hyb	2378.288	95173.34	41647.22	53526.11	9834.221	16166.48	0.002871	0	0.11551	0.000381	0	0.001468	0.002	0.001398	0.000414	0	0.001596	0.008	0.003995	122.0194	0	91.89575	0.00038	0	0.041303	0.00049	0	0.0197	0.001242	0	0.173285	0.029777	0.030116	0.357344	0.001812	0	0.189725	0.029777	0.030116	0.357344	0.018379	0.188325	0	1.339893	0.001206	0	0.000908
Santa Clara	2028	MH	Aggregate	Aggregate	Gasoline	2135.932	20452.38	20452.38	0	213.6786	0	0.26549	0	0.443358	0.001449	0	0.000349	0.003	0.015756	0.001576	0	0.000379	0.012	0.045017	1945.922	0	30.95502	0.009219	0	0.035524	0.019212	0	0.048659	0.036579	0	0.142607	9.09894	0.220886	3.673671	0.053375	0	0.156136	9.09894	0.220886	3.673671	0.045	0.773269	0	3.09385	0.019237	0	0.000306
Santa Clara	2028	MH	Aggregate	Aggregate	Diesel	1038.172	9908.83	9908.83	0	103.8172	0	3.609205	0	0	0.070805	0	0	0.004	0.015675	0.074006	0	0	0.016	0.044785	1083.65	0	0	0.005048	0	0	0.170729	0	0	0.108673	0	0	0.123716	0	0	0	0.173727	0.351812	0	0	0	0	0.173727	0.351812	0	0	0.010268	0	0
Santa Clara	2028	MHDT	Aggregate	Aggregate	Gasoline	1401.234	72189.25	72189.25	0	28035.89	0	0.242516	0.078583	0.374586	0.001336	0	0.00048	0.003	0.015756	0.001453	0	0.000522	0.012	0.045017	1692.94	512.6804	43.11567	0.007916	0.26741	0.042275	0.014019	0.006888	0.03076	0.037328	1.020423	0.224339	0.024741	0.206107	2.119603	0.054468	1.488999	0.245622	0.024741	0.206107	2.119603	0.045	0.73501	15.20594	4.808335	0.016736	0.005068	0.000426
Santa Clara	2028	MHDT	Aggregate	Aggregate	Diesel	10803.08	430729.5	430729.5	0	129114.2	0	0.860613	11.836	1.608029	0.008248	0.013921	0	0.003	0.015941	0.008621	0.01455	0	0.012	0.045546	1122.135	2173.473	0	0.000865	0.009639	0	0.176793	0.342432	0	0.018619	0.207523	0	0	0	0	0.021196	0.23625	0	0	0	0	0.215005	0.083705	7.507183	0	0.010626	0.020581	0
Santa Clara	2028	MHDT	Aggregate	Aggregate	Electricity	455.7542	23641.62	0	23641.62	5888.879	25808.42	0	0	0	0	0	0	0.003	0.00795	0	0	0	0.012	0.022714	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Santa Clara	2028	MHDT	Aggregate	Aggregate	Natural Ga	123.908	5444.71	5444.71	0	1175.944	0	0.104653	6.319766	0	0.001324	0.019478	0	0.003	0.016008	0.00144	0.021184	0	0.012	0.045737	964.7434	5240.847	0	0.760505	16.16251	0	0.196669	1.068381	0	0.010866	0.23093	0	0.776151	16.49502	0	0	0	1.06	2.992399	37.88217	0	0	0	1.06	2.992399	37.88217	0	0	0	0
Santa Clara	2028	OBUS	Aggregate	Aggregate	Gasoline	397.1145	16622.09	16622.09	0	7945.466	0	0.357116	0.059942	0.391986	0.001028	0	0.000266	0.003	0.01568	0.001118	0	0.000289	0.012	0.044799	1689.377	370.1334	30.60894	0.009705	0.195421	0.034455	0.017965	0.004869	0.029709	0.046721	0.746963	0.182947	0.035541	0.189879	3.415245	0.068175	1.089967	0.200304	0.035541	0.189879	3.415245	0.045	1.017018	5.778725	3.777572	0.016701	0.003659	0.000303
Santa Clara	2028	OBUS	Aggregate	Aggregate	Diesel	1000.421	63426.65	63426.65	0	10301.55	0	1.028839	6.455092	1.462805	0.016693	0.006255	0	0.003	0.018135	0.017448	0.006538	0	0.012	0.051815	1214.71	1504.36	0	0.001614	0.021006	0	0.191378	0.237013	0	0.034758	0.452257	0	0	0	0	0.039569	0.51486	0	0	0	0	0.216724	0.130637	7.741349	0	0.011503	0.014245	0
Santa Clara	2028	OBUS	Aggregate	Aggregate	Electricity	11.18613	887.4727	0	887.4727	223.8121	983.184	0	0	0	0	0	0	0.003	0.00784	0	0	0	0.012	0.022399	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Santa Clara	2028	OBUS	Aggregate	Aggregate	Natural Ga	10.8368	704.2664	704.2664	0	96.44751	0	0.118641	1.506606	0	0.001403	0.004634	0	0.003	0.016148	0.001526	0.00504	0	0.012	0.046137	949.9442	1177.671	0	0.829179	3.856516	0	0.193652	0.240076	0	0.011847	0.055102	0	0	0	0	0.846238	3.935858	0	0	0	0	1.06	3.360428	9.009932	0	0	0	0
Santa Clara	2028	SBUS	Aggregate	Aggregate	Gasoline	192.6095	9426.49	9426.49	0	770.4379	0	0.441988	0.854627	0.742088	0.000877	0	0.00059	0.002	0.015721	0.000954	0	0.000642	0.008	0.044917	795.4934	2545.579	56.45763	0.008926	2.46924	0.074272	0.024568	0.079725	0.067747	0.043131	1.064152	0.421106	0.123435	0.341525	2.080031	0.062937	15.52808	0.461058	0.123435	0.341525	2.080031	0.045	1.111121	82.24088	9.778336	0.007864	0.025166	0.000558
Santa Clara	2028	SBUS	Aggregate	Aggregate	Diesel	672.4071	14961.93	14961.93	0	9736.455	0	2.992481	19.58581	0.530181	0.015915	0.014197	0	0.003	0.015721	0.016635	0.014839	0	0.012	0.044917	1127.12	2187.632	0	0.002319	0.007838	0	0.177578	0.344662	0	0.049921	0.168747	0	0	0	0	0.056831	0.192106	0	0	0	0	0.16354	0.160085	5.10628	0	0.010673	0.020716	0
Santa Clara	2028	SBUS	Aggregate	Aggregate	Electricity	19.56942	629.4361	0	629.4361	226.2446	663.083	0	0	0	0	0	0	0.002	0.00576	0.00786	0	0	0	0.010305	0.022459	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Santa Clara	2028	SBUS	Aggregate	Aggregate	Natural Ga	27.79861	667.4476	667.4476	0	402.5239	0	0.501921	5.232817	0	0.003378	0.012266	0	0.003	0.015721	0.003674	0.01334	0	0.012	0.044917	1228.307	4092.288	0	3.255494	14.78651	0	0.250398	0.83424	0	0.046515	0.21127	0	0	0	0	3.322471	15.09072	0	0	0	0	1.06	10.7964	22.79477	0	0	0	0
Santa Clara	2028	UBUS	Aggregate	Aggregate	Gasoline	46.62731	4869.279	4869.279	0	186.5092	0	0.018118	0	0.301177	0.001197	0	0.000134	0.002	0.03185	0.001302	0	0.000145	0.008	0.091	850.5342	0	35.22796	0.001481	0	0.028231	0.003213	0	0.053536	0.003868	0	0.094762	0.022596	0.090653	0.320129	0.005644	0	0.103752	0.022596	0.090653	0.320129	0.045	0.581279	0	6.342648	0.008408	0	0.000348
Santa Clara	2028	UBUS	Aggregate	Aggregate	Diesel	397.7907	44197.62	44197.62	0	1591.163	0	0.382083	0	0	0.006946	0	0	0.002	0.03185	0.00726	0	0	0.032883	0.11	1110.56	0	0	0.003188	0	0	0.174969	0	0	0.068627	0	0	0.078126	0	0	0	0.22	0.07852	0	0	0.010523	0	0	0	0	0	0
Santa Clara	2028	UBUS	Aggregate	Aggregate	Electricity	30.09259	3155.026	0	3155.026	120.3703	5499.981	0	0	0	0	0	0	0.008937	0.01925	0	0	0	0	0.03575	0.055	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Santa Clara	2028	UBUS	Aggregate	Aggregate	Natural Ga	63.25774	7303.084	7303.084	0	253.0309	0	0.06078	0	0	0.000288	0	0	0.008444	0.0385	0.000301	0	0	0.033778	0.11	1320.856	0	0	4.332259	0	0	0.269265	0	0	0.061899	0	0	0.442388	0	0	0	0.97	50.55326	0	0	0	0	0	0	0	0	0	0	0

Source: EMFAC2021 (v1.0.1) Emission Rates
Region Type: County
Region: Santa Clara
Calendar Year: 2029
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for CVMT and EVMT, trips/day for Trips, kWh/day for Energy Consumption, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HOTSOAK and RUNLOSS, g/vehicle/day for IDLEX and DIURN

Region	Calendar Y	Vehicle Cat	Model Yea	Speed	Fuel	Population	Total VMT	CVMT	EVMT	Trips	Energy Con	NOx_RUNEX	NOx_IDLEX	NOx_STREX	PM2.5_RU	PM2.5_IDL	PM2.5_STR	PM2.5_PM	PM2.5_PM	PM10_RUN	PM10_IDLE	PM10_STR	PM10_PM	PM10_PMI	CO2_RUNEX	CO2_IDLEX	CO2_STREX	CH4_RUNE	CH4_IDLEX	CH4_STREX	N2O_RUNEX	N2O_IDLEX	N2O_STREX	ROG_RUNI	ROG_IDLEX	ROG_STREX	ROG_HOTS	ROG_RUNI	ROG_DIUR	TOG_RUNEX	TOG_IDLEX	TOG_STREX	TOG_HOTS	TOG_RUNI	TOG_DIUR	NH3_RUNEX	CO_RUNEX	CO_IDLEX	CO_STREX	SOx_RUNE	SOx_IDLEX	SOx_STREX
Santa Clara	2029	HHDT	Aggregate	Aggregate	Gasoline	1.536793	165.5766	165.5766	0	0	30.74816	0	3.080162	0	0.586332	0.001757	0	0.000721	0.005	0.03248	0.001911	0	0.000785	0.02	0.092801	1940.766	0	48.66979	0.107273	0	0.000252	0.122822	0	0.02219	0.536122	0	0.001366	0.078932	0.709067	4.983494	0.782308	0	0.001496	0.078932	0.709067	4.983494	0.045	25.44879	0	4.098094	0.019186	0	0.000481
Santa Clara	2029	HHDT	Aggregate	Aggregate	Diesel	9189.951	1025176	1025176	0	0	136692.8	0	1.603158	61.35773	2.911981	0.024839	0.025083	0	0.008784	0.027987	0.025962	0.026218	0	0.035135	0.079963	1500.678	10929.24	0	0.000661	0.234793	0	0.236432	1.721907	0	0.014241	5.055032	0	0	0	0	0	0.016213	5.754769	0	0	0	0	0.216929	0.064322	74.08532	0	0.014211	0.103493	0
Santa Clara	2029	HHDT	Aggregate	Aggregate	Electricity	389.0127	40402.41	0	40402.41	4941.334	74524.65	0	0	0	0	0	0	0	0.00854	0.015394	0	0	0	0.03416	0.043982	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Santa Clara	2029	HHDT	Aggregate	Aggregate	Natural Ga	927.9373	58000.86	58000.86	0	0	8218.381	0	0.7855	11.79811	0	0.001571	0.026829	0	0.009	0.051219	0.001708	0.029179	0	0.036	0.14634	1332.874	10274.79	0	1.81245	30.85577	0	0.271715	2.094583	0	0.03551	0.457441	0	0	0	0	0	1.860691	31.53958	0	0	0	0	0.815816	11.52019	76.00293	0	0	0	0
Santa Clara	2029	LDA	Aggregate	Aggregate	Gasoline	601100.9	21974248	21974248	0	0	2791408	0	0.028534	0	0.210484	0.00094	0	0.001611	0.002	0.002653	0.001022	0	0.001753	0.008	0.007581	255.907	0	64.01356	0.001549	0	0.054433	0.00377	0	0.029405	0.005446	0	0.236996	0.072676	0.201901	1.23834	0.007946	0	0.25948	0.072676	0.201901	1.23834	0.038712	0.581656	0	2.490795	0.00253	0	0.000633
Santa Clara	2029	LDA	Aggregate	Aggregate	Diesel	1084.711	31025.84	31025.84	0	0	0.101199	0	0	0	0.008169	0	0	0	0.002	0.002723	0.008538	0	0	0.008	0.007779	219.3894	0	0	0.000774	0	0	0.034565	0	0	0.016664	0	0	0	0	0	0.018971	0	0	0	0	0	0.00031	0.26372	0	0	0.002079	0	0
Santa Clara	2029	LDA	Aggregate	Aggregate	Electricity	72498.96	2926558	0	2926558	346873.8	1129893	0	0	0	0	0	0	0	0.002	0.001537	0	0	0	0.008	0.00439	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Santa Clara	2029	LDA	Aggregate	Aggregate	Plug-in Hyb	23765.79	963372.4	436887.4	526485	9827.154	1590142	0.002976	0	0.11551	0.000433	0	0.001624	0.002	0.001395	0.000471	0	0.001766	0.008	0.003987	126.4557	0	62.58503	0.000397	0	0.041543	0.000514	0	0.019925	0.001287	0	0.173285	0.041756	0.049483	0.514197	0.001878	0	0.189725	0.041756	0.049483	0.514197	0.018477	0.195178	0	1.339893	0.00125	0	0.000619
Santa Clara	2029	LDT1	Aggregate	Aggregate	Gasoline	48318.69	1536414	1536414	0	0	215179.5	0	0.075535	0	0.290636	0.001269	0	0.00205	0.002	0.003238	0.00138	0	0.00223	0.008	0.009251	305.5092	0	78.50939	0.003704	0	0.076224	0.006439	0	0.033624	0.01567	0	0.368642	0.128603	0.37501	2.192925	0.022866	0	0.403617	0.128603	0.37501	2.192925	0.038058	0.978505	0	3.704198	0.00302	0	0.000776
Santa Clara	2029	LDT1	Aggregate	Aggregate	Diesel	1.653364	28.5403	28.5403	0	0	4.975153	0	0.889608	0	0	0.133307	0	0	0.002	0.003479	0.139335	0	0	0.008	0.00994	374.2619	0	0	0.010079	0	0	0.058965	0	0	0.216996	0	0	0	0	0	0.247035	0	0	0	0	0	0.00031	1.525786	0	0	0.003546	0	0
Santa Clara	2029	LDT1	Aggregate	Aggregate	Electricity	397.5767	16724	0	16724	1920.733	6456.843	0	0	0	0	0	0	0	0.002	0.001533	0	0	0	0.008	0.00438	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Santa Clara	2029	LDT1	Aggregate	Aggregate	Plug-in Hyb	258.7815	11179.88	4644.176	6535.705	1070.061	1973.978	0.002726	0	0.11551	0.000254	0	0.001042	0.002	0.001403	0.000276	0	0.001134	0.008	0.004009	115.8336	0	67.96525	0.000362	0	0.041423	0.000468	0	0.019812	0.001179	0	0.173285	0.022958	0.01978	0.274668	0.00172	0	0.189725	0.022958	0.01978	0.274668	0.017447	0.178783	0	1.339893	0.001145	0	0.000672
Santa Clara	2029	LDT2	Aggregate	Aggregate	Gasoline	310989.9	10911556	10911556	0	0	1448447	0	0.045348	0	0.262502	0.000979	0	0.001642	0.002	0.003144	0.001065	0	0.001785	0.008	0.008983	317.0924	0	80.09757	0.002038	0	0.064625	0.004648	0	0.032973	0.007504	0	0.286567	0.068074	0.19608	1.221195	0.01095	0	0.313754	0.068074	0.19608	1.221195	0.039422	0.677144	0	2.906867	0.003135	0	0.000792
Santa Clara	2029	LDT2	Aggregate	Aggregate	Diesel	1143.868	40566.17	40566.17	0	0	5375.525	0	0.031162	0	0	0.004086	0	0	0.002	0.003142	0.004271	0	0	0.008	0.008977	289.569	0	0	0.000567	0	0	0.045622	0	0	0.012197	0	0	0	0	0	0.013886	0	0	0	0	0	0.00031	0.126667	0	0	0.002744	0	0
Santa Clara	2029	LDT2	Aggregate	Aggregate	Electricity	4679.639	149415.9	0	149415.9	23368.93	57686.88	0	0	0	0	0	0	0	0.002	0.00153	0	0	0	0.008	0.004372	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Santa Clara	2029	LDT2	Aggregate	Aggregate	Plug-in Hyb	4362.021	177043.8	76391.96	100651.9	18036.96	30399.87	0.002831	0	0.11551	0.000323	0	0.001275	0.002	0.0014	0.000351	0	0.001386	0.008	0.004001	120.3178	0	74.66324	0.000375	0	0.041299	0.000483	0	0.019697	0.001224	0	0.173285	0.026558	0.025177	0.316568	0.001787	0	0.189725	0.026558	0.025177	0.316568	0.018112	0.185704	0	1.339893	0.001189	0	0.000738
Santa Clara	2029	LHDT1	Aggregate	Aggregate	Gasoline	19785.75	733739.2	733739.2	0	0	294778.3	0	0.093984	0.03139	0.53304	0.001356	0	0.00021	0.002	0.0273	0.001475	0	0.000228	0.008	0.078	810.0219	114.232	25.25466	0.004416	0.101066	0.02705	0.005495	0.002799	0.045813	0.020663	0.359932	0.130231	0.035283	0.208462	2.194742	0.00151	0.526512	0.142587	0.035283	0.208462	2.194742	0.045	0.835308	3.766323	3.246281	0.008008	0.001129	0.00025
Santa Clara	2029	LHDT1	Aggregate	Aggregate	Diesel	1116.616	427809.9	427809.9	0	0	140456.3	0	0.873133	1.506549	0	0.02501	0.026359	0	0.003	0.0273	0.026141	0.027551	0	0.012	0.078	618.8511	124.3982	0	0.00593	0.005098	0	0.0975	0.019599	0	0.127659	0.10976	0	0	0	0	0.145332	0.124954	0	0	0	0	0.196382	0.330526	0.909745	0	0.005864	0.001179	0
Santa Clara	2029	LHDT1	Aggregate	Aggregate	Electricity	1496.343	86923.24	0	86923.24	20957.77	56939.01	0	0	0	0	0	0	0	0.002	0.01365	0	0	0	0.008	0.039	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Santa Clara	2029	LHDT2	Aggregate	Aggregate	Gasoline	2481.214	88578.37	88578.37	0	0	36966.39	0	0.086112	0.030466	0.526702	0.001218	0	0.000159	0.002	0.03185	0.001325	0	0.000173	0.008	0.091	918.097	132.4999	24.60866	0.003028	0.098013	0.025916	0.005652	0.002662	0.044207	0.012748	0.349631	0.12327	0.033607	0.19546	2.159585	0.00145	0.511081	0.134965	0.033607	0.19546	2.159585	0.045	0.676567	3.773947	3.168136	0.009076	0.00131	0.000243
Santa Clara	2029	LHDT2	Aggregate	Aggregate	Diesel	5355.483	196692.9	196692.9	0	0	67365.24	0	0.802636	1.51432	0	0.025578	0.02692	0	0.003	0.03185	0.026734	0.028138	0	0.012	0.091	731.7367	200.0024	0	0.006014	0.005098	0	0.115285	0.03151	0	0.129473	0.10976	0	0	0	0	0.147397	0.124954	0	0	0	0	0.200682	0.326474	0.909745	0	0.006934	0.001895	0
Santa Clara	2029	LHDT2	Aggregate	Aggregate	Electricity	378.3905	21014.89	0	21014.89	5018.593	13555.63	0	0	0	0	0	0	0	0.002	0.015925	0	0	0	0.008	0.0455	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Santa Clara	2029	MCY	Aggregate	Aggregate	Gasoline	29669.57	169225	169225	0	0	59339.14	0	0.517318	0	0.107717	0.001856	0	0.003223	0.001	0.0042	0.001988	0	0.003441	0.004	0.012	185.8416	0	43.61908	0.145368	0	0.160622	0.037277	0	0.006579	0.911484	0	1.163493	3.557716	3.791695	3.776823	1.114501	0	1.26562	3.557716	3.791695	3.776823	0.00898	11.24409	0	7.852658	0.001837	0	0.000431
Santa Clara	2029	MDV	Aggregate	Aggregate	Gasoline	171481.4	5884316	5884316	0	0	794727.1	0	0.055448	0	0.2998	0.000955	0	0.001631	0.002	0.003186	0.001039	0	0.001774	0.008	0.009102	383.9178	0	97.26589	0.002367	0	0.072275	0.005179	0	0.034473	0.009177	0	0.338162	0.076326	0.228423	1.406403	0.01339	0	0.370245	0.076326	0.228423	1.406403	0.039116	0.719422	0	3.049156	0.003795	0	0.000962
Santa Clara	2029	MDV	Aggregate	Aggregate	Diesel	2418.94	80770.39	80770.39	0	0	11161.69	0	0.029265	0	0	0.003328	0	0	0.002	0.003267	0.003479	0	0	0.008	0.009335	385.2842	0	0	0.000396	0	0	0.060702	0	0	0.008516	0	0	0	0	0	0.009695	0	0	0	0	0	0.00031	0.185913	0	0	0.003651	0	0
Santa Clara	2029	MDV	Aggregate	Aggregate	Electricity	4740.026	150975	0	150975	23654.84	58288.83	0	0	0	0	0	0	0	0.002	0.001531	0	0	0	0.008	0.004374	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Santa Clara	2029	MDV	Aggregate	Aggregate	Plug-in Hyb	2669.626	105407.8	45586.26	59821.53	11038.9	18067.89	0.002838	0	0.11551	0.000348	0	0.001364	0.002	0.001401	0.000378	0	0.001484	0.008	0.004002	120.5937	0	91.20584	0.000375	0	0.041171	0.000481	0	0.019577	0.001227	0	0.173285	0.028951	0.029245	0.350121	0.001791	0	0.189725	0.028951	0.029245	0.350121	0.018164	0.18613	0	1.339893	0.001192	0	0.000902
Santa Clara	2029	MH	Aggregate	Aggregate	Gasoline	2080.529	20177.51	20177.51	0	0	208.1362	0	0.233388	0	0.449097	0.001403	0	0.000336	0.003	0.015756	0.001526	0	0.000366	0.012	0.045017	1945.557	0	30.81592	0.007834	0	0.035213	0.017899	0	0.049659	0.02937	0	0.139773	8.269375	0.200993	3.383173	0.042857	0	0.153034	8.269375	0.200993	3.383173	0.045	0.56307	0	3.01218	0.019234	0	0.000305
Santa Clara	2029	MH	Aggregate	Aggregate	Diesel	1051.791	10000.18	10000.18	0	0	105.1791	0	3.504009	0	0	0.066478	0	0	0.004	0.015675	0.069484	0	0	0.016	0.044785	1084.041	0	0	0.004944	0	0	0.170791	0	0	0.106435	0	0	0	0	0	0.121169	0	0	0	0	0	0.177504	0.342376	0	0	0.010272	0	0
Santa Clara	2029	MHDT	Aggregate	Aggregate	Gasoline	1389.256	71256.85	71256.85	0	0	27796.23	0	0.208679	0.076326	0.359337	0.001337	0	0.000473	0.003	0.015756	0.001454	0	0.000515	0.012	0.045017	1678.256	508.5208	42.47975	0.006942	0.268676	0.044356	0.012606	0.006764	0.030003	0.032145	1.021686	0.21706	0.022838	0.190438	1.969064	0.046906	1.490843	0.237653	0.022838	0.190438	1.969064	0.045	0.620643	15.22063	4.612327	0.016591	0.005027	0.00042
Santa Clara	2029	MHDT	Aggregate	Aggregate	Diesel	10773.71	4245613	4245613	0	0	128772.1	0	0.791583	11.6255	1.574117	0.0073	0.01157	0	0.003	0.015941	0.00763	0.012093	0	0.012	0.045546	1115.703	2156.347	0	0.000765	0.009357	0	0.175779	0.339733	0	0.016471	0.201454	0	0	0	0	0.018751	0.22934	0	0	0	0	0.215725	0.077746	7.505571	0	0.010565	0.020419	0
Santa Clara	2029	MHDT	Aggregate	Aggregate	Electricity	692.4864	35786.03	0	35786.03	8941.882	39032.96	0	0	0	0	0	0	0	0.003	0.00795	0	0	0	0.012	0.022715	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Santa Clara	2029	MHDT	Aggregate	Aggregate	Natural Ga	130.9441	5651.609	5651.609	0	0	1253.787	0	0.100462	6.282168	0	0.001344	0.019627	0	0.003	0.016006	0.001462	0.021346	0	0.012	0.045731	961.1252	5220.59	0	0.761614	15.97009	0	0.195932	1.064252	0	0.010882	0.228181	0	0	0	0	0	0.777283	16.29865	0	0	0	0	1.06	2.990708	38.24457	0	0	0	0
Santa Clara	2029	OBUS	Aggregate	Aggregate	Gasoline	386.1026	15831.92	15831.92	0	0	7725.141	0	0.330257	0.058672	0.387006	0.001054	0	0.000271	0.003	0.01568	0.001147	0	0.000295	0.012	0.044799	1673.846	368.1588	30.40422	0.009027	0.195019	0.034097	0.016716	0.00475	0.029107	0.043337	0.746963	0.181239	0.035469	0.192981	3.463278	0.063237	1.089967	0.198434	0.035469	0.192981	3.463278	0.045	0.950979	5.778725	3.735662	0.016548	0.00364	0.000301
Santa Clara	2029	OBUS	Aggregate	Aggregate	Diesel	1022.156	63807	63807	0	0	10529.74	0	1.005208	6.214206	1.413103	0.015925	0.005807	0	0.003	0.018174	0.016645	0.00607	0	0.012	0.051926	1200.121	1491.944	0	0.001538	0.020998	0	0.18908	0.235056	0	0.033117	0.452085	0	0	0	0	0	0.037702	0.514664	0	0	0	0	0.21691	0.126763	7.756583	0	0.011364	0.014128	0
Santa Clara	2029	OBUS	Aggregate	Aggregate	Electricity	16.64277	1306.516	0	1306.516	332.9885	1447.42	0	0	0	0	0	0	0	0.003	0.00784	0	0	0	0.012	0.022399	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Santa Clara	2029	OBUS	Aggregate	Aggregate	Natural Ga	11.64934	749.4538	749.4538	0	0	103.6792	0	0.109569	1.502505	0	0.001466	0.004732	0	0.003	0.016148	0.001573	0.005146	0	0.012	0.046137	939.9347	1172.691	0	0.834145	3.805889	0	0.191612	0.239061	0	0.011918	0.054379	0	0	0	0	0	0.851306	3.884189	0	0	0	0	1.06	3.373808	9.230456	0	0	0	0
Santa Clara	2029	SBUS	Aggregate	Aggregate	Gasoline	195.9663	9563.071	9563.071	0	0	783.8652	0	0.419629	0.840344	0.754349	0.000884	0	0.000595	0.002	0.015721	0.000961	0	0.000647	0.008	0.044917	792.6042	2537.249	56.13365	0.008492	2.469702	0.073996	0.023812	0.078275	0.068491	0.04096	10.64152	0.418575	0.123029	0.346431	2.102249	0.059768	15.52808	0.458287	0.123029	0.346431	2.102249	0.045	1.054644	82.24088	9.667099	0.007836	0.025083	0.000555
Santa Clara	2029	SBUS	Aggregate	Aggregate	Diesel	667.2037	14758.12	14758.12	0	0	9661.109	0	2.770352	18.87512	0.53938	0.014981	0.012896	0	0.003	0.015721	0.015658	0.01348	0	0.012	0.044917	1122.834	2175.179	0	0.002212	0.007831	0	0.176903	0.3427	0	0.047619	0.168593	0	0	0	0	0.05421	0.19193	0	0	0	0	0.167639	0.154508	5.232364	0	0.010633	0.020598	0
Santa Clara	2029	SBUS	Aggregate	Aggregate	Electricity	29.63612	952.7034	0	952.7034	344.1721	1003.631	0	0	0	0	0	0	0	0.002585	0.00786	0	0	0	0.010339	0.022459	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Santa Clara	2029	SBUS	Aggregate	Aggregate	Natural Ga	28.5349	676.8434	676.8434	0	0	413.1854	0	0.488972	5.225702	0	0.003378	0.012435	0	0.003	0.015721	0.003674	0.013524	0	0.012	0.044917	1221.806	4097.042	0	3.219842	14.69867	0	0.249073	0.835209	0	0.046005	0.210015	0	0	0	0	0	3.286085	15.00107	0	0	0	0	1.06	10.62863	23.17741	0	0	0	0
Santa Clara	2029	UBUS	Aggregate	Aggregate	Gasoline	46.76335	4883.486	4883.486	0	0	187.0534	0	0.018829	0	0.312831	0.001197	0	0.000134	0.002	0.03185	0.001302	0	0.000145	0.008	0.091	850.5513	0	35.34997	0.001499	0	0.029528	0.003298	0	0.055	0.003933	0	0.099483	0.024152	0.090653	0.323595	0.00574	0	0.108921	0.024152	0.090653	0.323595	0.045	0.592532	0	6.409567	0.008409	0	0.000349
Santa Clara	2029	UBUS	Aggregate	Aggregate	Diesel	338.5092	37119.08	37119.08	0	0	1354.037	0	0.396482	0	0	0.007209	0	0	0.008494	0.0385	0.007535	0	0	0.033977	0.11	1140.779	0	0	0.003281	0	0	0.17973	0	0	0.070632	0	0	0	0	0	0.080409	0	0	0	0	0	0.22	0.081446	0	0	0.010809	0	0
Santa Clara	2029	UBUS	Aggregate	Aggregate	Electricity	77.23925	8775.56	0	8775.56	308.957	15297.94	0	0	0	0	0	0	0	0.007581	0.01925	0	0	0	0.030324	0.055	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Santa Clara	2029	UBUS	Aggregate	Aggregate	Natural Ga	76.82557	8920.557	8920.557	0	0	307.3023	0	0.058538	0	0	0.000282	0	0	0.00815	0.0385	0.000294	0	0	0.032599	0.11	1296.487	0	0	4.23523	0	0	0.264297	0	0	0.060513	0	0	0	0	0	4.322362	0	0	0	0	0	0.97	48.85872	0	0	0	0	0

Source: EMFAC2021 (v1.0.1) Emission Rates
Region Type: County
Region: Santa Clara
Calendar Year: 2030
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for CVMT and EVMT, trips/day for Trips, kWh/day for Energy Consumption, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HOTSOAK and RUNLOSS, g/vehicle/day for IDLEX and DIURN

Region	Calendar Y	Vehicle Cat	Model Yea	Speed	Fuel	Population	Total VMT	CVMT	EVMT	Trips	Energy Con	NOx_RUNEX	NOx_IDLEX	NOx_STREX	PM2.5_RU	PM2.5_IDL	PM2.5_ST	PM2.5_PM	PM2.5_PM	PM10_RUN	PM10_IDLE	PM10_STR	PM10_PM	PM10_PM	CO2_RUNE	CO2_IDLEX	CO2_STREX	CH4_RUNE	CH4_IDLEX	CH4_STREX	N2O_RUNE	N2O_IDLEX	N2O_STRE	ROG_RUNI	ROG_IDLEX	ROG_STRE	ROG_HOTS	ROG_RUNI	ROG_DIUR	TOG_RUNE	TOG_IDLEX	TOG_STRE	TOG_HOTS	TOG_RUNI	TOG_DIUR	NH3_RUNE	CO_RUNEX	CO_IDLEX	CO_STREX	SOx_RUNE	SOx_IDLEX	SOx_STREX
Santa Clara	2030	HHDT	Aggregate	Aggregate	Gasoline	1.487616	172.8499	172.8499	0	29.76421	0	2.911619	0	0.534862	0.001674	0	0.000674	0.005	0.032468	0.00182	0	0.000733	0.02	0.092765	1924.768	0	48.04273	0.102337	0	0.000224	0.119593	0	0.0192	0.501241	0	0.001214	0.064624	0.580293	4.097317	0.731409	0	0.000133	0.064624	0.580293	4.097317	0.045	26.13927	0	4.442251	0.019028	0	0.000475
Santa Clara	2030	HHDT	Aggregate	Aggregate	Diesel	9231.234	1024357	1024357	0	136537.8	0	1.54454	61.29817	2.88955	0.024765	0.0244	0	0.008788	0.028144	0.025885	0.025504	0	0.035154	0.080413	1474.596	10772.22	0	0.000646	0.235119	0	0.232323	1.697167	0	0.013904	5.062058	0	0	0	0	0.015828	5.762768	0	0	0	0	0	0.217216	0.061916	74.26736	0	0.013964	0.102006	0
Santa Clara	2030	HHDT	Aggregate	Aggregate	Electricity	530.2501	54761.35	0	54761.35	6663.697	101036	0	0	0	0	0	0	0.008533	0.015514	0	0	0	0.03413	0.044327	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Santa Clara	2030	HHDT	Aggregate	Aggregate	Natural Ga	938.2726	57937.93	57937.93	0	8287.795	0	0.731127	11.54643	0.001557	0.027291	0	0	0.009	0.05172	0.001694	0.029682	0	0.036	0.147772	1322.875	10241.21	0	1.710465	30.09558	0	0.269677	2.087739	0	0.033169	0.444488	0	0	0	0	1.755601	30.73125	0	0	0	0	0	0.811239	11.16082	76.40969	0	0	0	0
Santa Clara	2030	LDA	Aggregate	Aggregate	Gasoline	602124.6	21985013	21985013	0	2796634	0	0.027128	0	0.204379	0.000885	0	0.001532	0.002	0.002653	0.000962	0	0.001666	0.008	0.00758	252.5101	0	62.99349	0.00146	0	0.051774	0.003674	0	0.028877	0.005055	0	0.223494	0.069299	0.197319	1.209286	0.073776	0	0.244698	0.069299	0.197319	1.209286	0.039301	0.56355	0	0.385556	0.002496	0	0.000623
Santa Clara	2030	LDA	Aggregate	Aggregate	Diesel	966.5715	27899.12	27899.12	0	4169.431	0	0.084622	0	0	0.00656	0	0	0.002	0.002722	0.006857	0	0	0.008	0.007776	216.2434	0	0	0.000652	0	0	0.034069	0	0	0.014035	0	0	0	0	0	0.015978	0	0	0	0	0	0	0.00231	0.244061	0	0	0.002049	0	0
Santa Clara	2030	LDA	Aggregate	Aggregate	Electricity	74807.28	2981995	0	2981995	356618	1151296	0	0	0	0	0	0	0.002	0.001537	0	0	0	0.008	0.004391	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Santa Clara	2030	LDA	Aggregate	Aggregate	Plug-in Hyb	2466.152	986083.3	441285.3	544798	101975.4	1645445.2	0.002937	0	0.11551	0.000402	0	0.001538	0.002	0.001398	0.000437	0	0.001673	0.008	0.003994	124.7883	0	62.09864	0.00039	0	0.041401	0.000504	0	0.019792	0.00127	0	0.173285	0.041078	0.050398	0.518869	0.018326	0.192609	0	1.339893	0.001234	0	0.000614																	
Santa Clara	2030	LDT1	Aggregate	Aggregate	Gasoline	47587.45	1511766	1511766	0	212019.3	0	0.06744	0	0.276451	0.001181	0	0.001933	0.002	0.003236	0.001284	0	0.002102	0.008	0.009245	301.4361	0	77.09479	0.003341	0	0.071607	0.005993	0	0.032827	0.01396	0	0.342108	0.122517	0.361736	2.125938	0.203571	0	0.374565	0.122517	0.361736	2.125938	0.038435	0.913385	0	3.462484	0.00298	0	0.000762																	
Santa Clara	2030	LDT1	Aggregate	Aggregate	Diesel	0.768467	17.0557	17.0557	0	2.625517	0	0.541325	0	0	0.080932	0	0	0.002	0.003285	0.084591	0	0	0.008	0.009386	366.951	0	0	0.006227	0	0	0.057813	0	0	0.134063	0	0	0	0	0	0.152622	0	0	0	0	0	0	0.00331	0.953187	0	0	0.003477	0	0
Santa Clara	2030	LDT1	Aggregate	Aggregate	Electricity	459.5988	19527.57	0	19527.57	2229.168	7539.252	0	0	0	0	0	0	0.002	0.001532	0	0	0	0.008	0.004379	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Santa Clara	2030	LDT1	Aggregate	Aggregate	Plug-in Hyb	311.9596	13308.96	5503.171	7805.787	1289.953	2357.58	0.002713	0	0.11551	0.000237	0	0.000982	0.002	0.001404	0.000258	0	0.001068	0.008	0.004012	115.302	0	67.69965	0.00036	0	0.041331	0.000464	0	0.019726	0.001173	0	0.173285	0.023088	0.020052	0.277122	0.001712	0	0.189725	0.023088	0.020052	0.277122	0.017367	0.17796	0	1.339893	0.00114	0	0.000669																	
Santa Clara	2030	LDT2	Aggregate	Aggregate	Gasoline	315384	11011602	11011602	0	1467133	0	0.042522	0	0.254325	0.000923	0	0.001563	0.002	0.003147	0.001004	0	0.001699	0.008	0.008992	313.0844	0	78.91261	0.001939	0	0.061959	0.004491	0	0.03252	0.007052	0	0.272663	0.065379	0.191547	1.192189	0.010291	0	0.298532	0.065379	0.191547	1.192189	0.039832	0.659365	0	2.809133	0.003095	0	0.00078																	
Santa Clara	2030	LDT2	Aggregate	Aggregate	Diesel	1158.99	40906.35	40906.35	0	5439.347	0	0.030058	0	0	0.003988	0	0	0.002	0.003143	0.004169	0	0	0.008	0.008981	285.9943	0	0	0.000559	0	0	0.045059	0	0	0.012039	0	0	0	0	0	0.013706	0	0	0	0	0	0	0.0031	0.125642	0	0	0.00271	0	0
Santa Clara	2030	LDT2	Aggregate	Aggregate	Electricity	5453.194	171699	0	171699	27128.05	66289.98	0	0	0	0	0	0	0.002	0.001531	0	0	0	0.008	0.004374	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Santa Clara	2030	LDT2	Aggregate	Aggregate	Plug-in Hyb	4846.712	193738.5	82854.31	110884.1	20041.15	33490.32	0.002806	0	0.11551	0.000301	0	0.001204	0.002	0.001402	0.000327	0	0.00131	0.008	0.004007	119.2524	0	74.25998	0.000371	0	0.041171	0.000476	0	0.019577	0.001214	0	0.173285	0.026751	0.026025	0.323076	0.017953	0.184065	0	1.339893	0.001179	0	0.000734																	
Santa Clara	2030	LHDT1	Aggregate	Aggregate	Gasoline	19753.02	727605.5	727605.5	0	294290.5	0	0.082552	0.030634	0.51718	0.001329	0	0.000195	0.002	0.0273	0.001446	0	0.000212	0.008	0.078	802.0575	113.4696	25.10498	0.003719	0.099174	0.025985	0.00491	0.002766	0.044981	0.016744	0.351327	0.123637	0.032922	0.194989	2.054962	0.024432	0.512656	0.135367	0.032922	0.194989	2.054962	0.045	0.768194	3.76818	3.242124	0.007929	0.001122	0.000248																	
Santa Clara	2030	LHDT1	Aggregate	Aggregate	Diesel	11269.28	427352.8	427352.8	0	141753.3	0	0.789576	1.444738	0	0.023821	0.026284	0	0.003	0.0273	0.024898	0.027472	0	0.012	0.078	617.2105	123.3953	0	0.005662	0.005098	0	0.097242	0.019441	0	0.121909	0.10976	0	0	0	0	0.138785	0.124954	0	0	0	0	0	0.199336	0.314077	0.909745	0	0.005848	0.001169	0	0
Santa Clara	2030	LHDT1	Aggregate	Aggregate	Electricity	2074.538	117461.4	0	117461.4	29061.96	76947.26	0	0	0	0	0	0	0.002	0.001365	0	0	0	0.008	0.039	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Santa Clara	2030	LHDT2	Aggregate	Aggregate	Gasoline	2461.018	87198.4	87198.4	0	36665.5	0	0.076883	0.029634	0.510604	0.001202	0	0.000149	0.002	0.03185	0.001308	0	0.000162	0.008	0.091	909.7177	131.684	24.47216	0.00272	0.095769	0.024975	0.005151	0.002617	0.043301	0.011255	0.340122	0.118021	0.031894	0.187158	2.069204	0.016423	0.496305	0.129219	0.031894	0.187158	2.069204	0.045	0.659048	3.775132	3.178541	0.008993	0.001302	0.000242																	
Santa Clara	2030	LHDT2	Aggregate	Aggregate	Diesel	5433.248	199824.8	199824.8	0	68343.42	0	0.748874	1.460368	0	0.024929	0.026926	0	0.003	0.03185	0.026056	0.028143	0	0.012	0.091	728.4033	198.6254	0	0.005847	0.005098	0	0.11476	0.031294	0	0.125888	0.10976	0	0	0	0	0.143315	0.124954	0	0	0	0	0	0.202684	0.318068	0.909745	0	0.006902	0.001882	0	0
Santa Clara	2030	LHDT2	Aggregate	Aggregate	Electricity	523.4249	28364.01	0	28364.01	6941.368	18295.8	0	0	0	0	0	0	0.002	0.015925	0	0	0	0.008	0.0455	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Santa Clara	2030	MCY	Aggregate	Aggregate	Gasoline	29945.67	170059	170059	0	59891.34	0	0.509869	0	0.103081	0.001864	0	0.003197	0.001	0.0042	0.001997	0	0.003416	0.004	0.012	185.5769	0	42.83228	0.142987	0	0.157242	0.036967	0	0.006341	0.890508	0	1.134366	3.555147	3.783469	3.680755	1.091848	0	1.234067	3.555147	3.783469	3.680755	0.009004	11.04655	0	7.830862	0.001835	0	0.000423																	
Santa Clara	2030	MDV	Aggregate	Aggregate	Gasoline	174344	5962227	5962227	0	807535.9	0	0.050767	0	0.286849	0.000902	0	0.001551	0.002	0.003188	0.000981	0	0.001687	0.008	0.00911	378.9313	0	95.79397	0.002213	0	0.068559	0.004925	0	0.033878	0.008456	0	0.317272	0.072796	0.219895	1.355815	0.012339	0	0.347373	0.072796	0.219895	1.355815	0.03954	0.69525	0	2.93398	0.003746	0	0.000947																	
Santa Clara	2030	MDV	Aggregate	Aggregate	Diesel	2406.787	79682.09	79682.09	0	11072.82	0	0.026422	0	0	0.003049	0	0	0.002	0.00327	0.003187	0	0	0.008	0.009343	380.8057	0	0	0.000373	0	0	0.059996	0	0	0.008029	0	0	0	0	0	0.00914	0	0	0	0	0	0	0.0031	0.181562	0	0	0.003608	0	0
Santa Clara	2030	MDV	Aggregate	Aggregate	Electricity	5418.753	169876.9	0	169876.9	26922.58	65586.51	0	0	0	0	0	0	0.002	0.001532	0	0	0	0.008	0.004377	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Santa Clara	2030	MDV	Aggregate	Aggregate	Plug-in Hyb	2963.422	115546.2	49482.19	66063.98	12253.75	19953.29	0.00281	0	0.11551	0.000321	0	0.001277	0.002	0.001403	0.000349	0	0.001389	0.008	0.004008	119.4157	0	90.62083	0.00037	0	0.041054	0.000474	0	0.019467	0.001215	0	0.173285	0.028447	0.028695	0.345627	0.001773	0	0.189725	0.028447	0.028695	0.345627	0.017986	0.184317	0	1.339893	0.001181	0	0.000896																	
Santa Clara	2030	MH	Aggregate	Aggregate	Gasoline	2034.688	19970.26	19970.26	0	203.5502	0	0.205296	0	0.454071	0.001366	0	0.000326	0.003	0.015756	0.001486	0	0.000355	0.012	0.045017	1945.26	0	30.65867	0.006703	0	0.034694	0.016757	0	0.050507	0.023566	0	0.135475	7.46433	0.181652	3.092727	0.045	0.391655	0	2.922173	0.019231	0	0.000303																	
Santa Clara	2030	MH	Aggregate	Aggregate	Diesel	1064.938	10092.31	10092.31	0	106.4938	0	3.402012	0	0.062183	0	0	0	0.004	0.015675	0.064995	0	0	0.016	0.044785	1084.369	0	0	0.00483	0	0	0.170843	0	0	0.103997	0	0	0	0	0	0.118394	0	0	0	0	0	0	0.181066	0.332398	0	0	0.010275	0	0
Santa Clara	2030	MHDT	Aggregate	Aggregate	Gasoline	1369.784	69786.55	69786.55	0	27406.63	0	0.182504	0.074436	0.34723	0.001338	0	0.000467	0.003	0.015756	0.001455	0	0.000508	0.012	0.045017	1664.876	504.5675	41.89188	0.006139	0.269683	0.040602	0.011558	0.006658	0.029379	0.027836	1.022884	0.21089	0.021107	0.176695	1.842352	0.040618	1.49259	0.230898	0.021107	0.176695	1.842352	0.045	0.52486	15.23455	4.434866	0.016459	0.004988	0.000414																	
Santa Clara	2030	MHDT	Aggregate	Aggregate	Diesel	10679.13	4158333.4	415833.4	0	127641.8	0	0.730884	11.4465	1.543564	0.006512	0.00966	0	0.003	0.015941	0.006806	0.010097	0	0.012	0.045547	1109.144	2139.822	0	0.000682	0.00913	0	0.174746	0.33713	0	0.014684	0.196569	0	0	0	0	0.016716	0.223779	0	0	0	0	0	0.21635	0.072794	7.506963	0	0.010503	0.020263	0	0
Santa Clara	2030	MHDT	Aggregate	Aggregate	Electricity	991.1386	51102.91	0	51102.91	12793.33	55704.06	0	0	0	0	0	0	0.003	0.007951	0	0	0	0.012	0.022716	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Santa Clara	2030	MHDT	Aggregate	Aggregate	Natural Ga	136.8437	5799.937	5799.937	0	1320.474	0	0.096762	6.249105	0	0.001362	0.019752	0	0.003	0.016004	0.001481	0.021482	0	0.012	0.045726	958.0225	5202.364	0	0.762569	15.80303	0	0.195299	1.060536	0	0.010896	0.225794	0	0	0	0	0.778258	16.12815	0	0	0	0	0	1.06	2.989146	38.55016	0	0	0	0
Santa Clara	2030	OBUS	Aggregate	Aggregate	Gasoline	373.8509	15017.96	15017.96	0	7480.008	0	0.303475	0.05759	0.379431	0.001075	0	0.000273	0.003	0.01568	0.001169	0	0.000296	0.012	0.044799	1659.483	366.2829	30.178	0.008294	0.194656	0.033726	0.01556	0.004647	0.028492	0.039512	0.74712	0.179242	0.035188	0.193999	3.485652	0.057656	1.090195	0.196247	0.035188	0.193999	3.485652	0.045	0.869951	5.779659	3.676722	0.016406	0.003621	0.000298																	
Santa Clara	2030	OBUS	Aggregate	Aggregate	Diesel	1041.415	64198.49	64198.49	0	10721.4	0	0.980356	5.976871	1.366725	0.015111	0.005302	0	0.003	0.018208	0.015794	0.005542	0	0.012	0.052023	1187.709	1474.191	0	0.001456	0.020843	0	0.187124	0.232259	0	0.031354	0.448735	0	0	0	0	0.035694	0.51085	0	0	0	0	0	0.217102	0.12266	7.728975	0	0.011247	0.01396	0	0
Santa Clara	2030	OBUS	Aggregate	Aggregate	Electricity	23.4704	1822.619	0	1822.619	469.5957	2019.183	0	0	0	0	0	0	0.003	0.00784	0	0	0	0.012	0.022399	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Santa Clara	2030	OBUS	Aggregate	Aggregate	Natural Ga	12.4197	789.0472	789.0472	0	110.5354	0	0.10256	1.499304	0	0.00148	0.004808	0	0.003	0.016148	0.001609	0.005229	0	0.012	0.046137	931.8762	1168.573	0	0.837982	3.766358	0	0.189969	0.238221	0	0.011973	0.053814	0	0	0	0	0.855222	3.843845	0	0	0	0	0	1.06	3.384146	9.402647	0	0	0	0
Santa Clara	2030	SBUS	Aggregate	Aggregate	Gasoline	198.1997	9649.073	9649.073	0	792.7989	0	0.406238	0.82859	0.759705	0.000888	0	0.000598	0.002	0.015721	0.000966	0	0.00065	0.008	0.044917	789.8243	2529.341	55.78331	0.007921	2.470848	0.074041	0.023184	0.077325	0.068817	0.038133	10.64152	0.418393	0.132523	0.393216	2.367471	0.055643	15.52808	0.458087	0.132523	0.393216	2.367471	0.045	0.979717	82.24088	9.529837	0.007808	0.025005	0.000551																	
Santa Clara	2030	SBUS	Aggregate	Aggregate	Diesel	659.3029	14502.39	14502.39	0	9546.705	0	2.539504	18.10728	0.550768	0.01404	0.011608	0	0.003	0.015721	0.014674	0.012133	0	0.012	0.044917	1118.5	2161.652	0	0.002094	0.007833	0	0.17622	0.340569	0	0.04508	0.168645	0	0	0	0	0.051321	0.19199	0	0	0	0	0	0.171795	0.148382	5.367405	0	0.010592	0.02047	0	0
Santa Clara	2030	SBUS	Aggregate	Aggregate	Electricity	42.27556	1362.719	0	1362.719	492.3385	1435.564	0	0	0	0	0	0	0.002	0.002592	0.00786	0	0	0	0.010366	0.022459	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Santa Clara	2030	SBUS	Aggregate	Aggregate	Natural Ga	29.19835	683.5221	683.5221	0	422.7921	0	0.477489	5.21952	0	0.003378	0.012583	0	0.003	0.015721	0.003674	0.013685	0	0.012	0.044917	1216.036	4101.156	0	3.18823	14.62233	0	0.247897	0.836047	0	0.045554	0.208924	0	0	0	0	3.253822	14.92316	0	0	0	0	0	1.06	10.47986	23.50992	0	0	0	0
Santa Clara	2030	UBUS	Aggregate	Aggregate	Gasoline	46.8994	4897.693	4897.693	0	187.5976	0	0.01748	0	0.295043	0.001197	0	0.000134	0.002	0.03185	0.001302	0	0.000145	0.008	0.091	850.5412	0	34.89923	0.001406	0	0.028862	0.003131	0	0.052846	0.003661	0	0.096632	0.024197	0.090857	0.324693	0.005342	0	0.1058	0.024197	0.090857	0.324693	0.045	0.587543	0	6.131541	0.008408	0	0.000345																	
Santa Clara	2030	UBUS	Aggregate	Aggregate	Diesel	338.5092	37119.08	37119.08	0	1354.037	0	0.396482	0	0	0.007209	0	0	0.008494	0.0385	0.007535	0	0	0.033977	0.11	1140.779	0	0	0.003281	0	0	0.17973	0	0	0.070632	0	0	0	0	0	0.080409	0	0	0	0	0	0	0.22	0.081446	0	0	0.010809	0	0
Santa Clara	2030	UBUS	Aggregate	Aggregate	Electricity	78.67225	8935.028	0	8935.028	314.689	15575.94	0	0	0	0	0	0	0.007594	0.01925	0	0	0	0.030375	0.055	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Santa Clara	2030	UBUS	Aggregate	Aggregate	Natural Ga	76.82557	8920.557	8920.557	0	307.3023	0	0.058538	0	0	0.000282	0	0	0.00815	0.0385	0.000294	0	0	0.032599	0.11	1296.487	0	0	4.23523	0	0	0.264297	0	0	0.060513	0	0	0	0	0	4.322362	0	0	0	0	0	0	0.97	48.85872	0	0	0	0	0

Attachment 4: Project Construction and Operation Dispersion Modeling Inputs and Risk Calculations

Construction Health Risk Assessment and Calculations

Eterna Tower, 17 & 29 E. Santa Clara Street, San Jose, CA

Year	Unmitigated DPM	DPM EMFAC2021	Unmitigated Emissions	Unmitigated Fug PM2.5	Fug PM2.5 EMFAC2021	Unmitigated Emissions
2028	0.0157	0.0003	0.0160	0.0527	0.0005	0.0532
2029	0.0239	0.0005	0.0244	0.0001	0.0007	0.0008
2030	0.0060	0.0003	0.0063	0.0000	0.0004	0.0004

Year	Mitigated DPM	DPM EMFAC2021	Mitigated Emissions	Mitigated Fug PM2.5	Fug PM2.5 EMFAC2021	Mitigated Emissions
2028	0.0013	0.0003	0.0016	0.0237	0.0005	0.0242
2029	0.0049	0.0005	0.0054	0.00003	0.0007	0.0007
2030	0.0037	0.0003	0.0040	0.0000	0.0004	0.0004

Eterna Tower, 17 & 29 E. Santa Clara Street, San Jose, CA

DPM Construction Emissions and Modeling Emission Rates

Construction Year	Activity	DPM (ton/year)	Source Type	No. Sources	DPM Emissions (lb/yr)	(lb/hr)	(g/s)	Emissions per Point Source (g/s)
2028	Construction	0.0160	Point	23	32.1	0.00977	1.23E-03	5.35E-05
2029	Construction	0.0244	Point	23	48.8	0.01486	1.87E-03	8.14E-05
2030	Construction	0.0063	Point	23	12.6	0.00383	4.83E-04	2.10E-05
Total		***0.0467***			***93.5***	***0.0285***	***0.0036***	

Emissions assumed to be evenly distributed over each construction areas

hr/day = 9 (8am - 5pm)
days/yr = 365
hours/year = 3285

Eterna Tower, 17 & 29 E. Santa Clara Street, San Jose, CA

PM2.5 Fugitive Dust Construction Emissions for Modeling

Construction Year	Activity	Area Source	PM2.5 Emissions (ton/year)	(lb/yr)	(lb/hr)	(g/s)	Modeled Area (m^2)	DPM Emission Rate $g/s/m^2$
2028	Construction	CON_FUG	0.0532	106.3	0.03237	4.08E-03	676.5	6.03E-06
2029	Construction	CON_FUG	0.0008	1.5	0.00046	5.77E-05	676.5	8.53E-08
2030	Construction	CON_FUG	0.0004	0.9	0.00027	3.41E-05	676.5	5.04E-08
Total			***0.0544***	***108.7***	***0.0331***	***0.0042***		

Emissions assumed to be evenly distributed over each construction areas

hr/day = 9 (8am - 5pm)
days/yr = 365
hours/year = 3285

DPM Construction Emissions and Modeling Emission Rates - With Mitigation

Construction Year	Activity	DPM (ton/year)	Source Type	No. Sources	DPM Emissions (lb/yr)	DPM Emissions (lb/hr)	DPM Emissions (g/s)	Emissions per Point Source (g/s)
2028	Construction	0.0016	Point	23	3.3	0.00099	1.25E-04	5.43E-06
2029	Construction	0.0054	Point	23	10.9	0.00331	4.17E-04	1.81E-05
2030	Construction	0.0040	Point	23	8.0	0.00242	3.05E-04	1.33E-05
Total		***0.0110***			***22.1***	***0.0067***	***0.0008***	

Emissions assumed to be evenly distributed over each construction areas

hr/day = 9 (8am - 5pm)
days/yr = 365
hours/year = 3285

PM2.5 Fugitive Dust Construction Emissions for Modeling - With Mitigation

Construction Year	Activity	Area Source	PM2.5 Emissions (ton/year)	PM2.5 Emissions (lb/yr)	PM2.5 Emissions (lb/hr)	PM2.5 Emissions (g/s)	Modeled Area (m^2)	DPM Emission Rate $g/s/m^2$
2028	Construction	CON_FUG	0.0242	48.3	0.01471	1.85E-03	676.5	2.74E-06
2029	Construction	CON_FUG	0.0007	1.4	0.00044	5.54E-05	676.5	8.19E-08
2030	Construction	CON_FUG	0.0004	0.9	0.00027	3.41E-05	676.5	5.04E-08
Total			***0.0253***	***50.7***	***0.0154***	***0.0019***		

Emissions assumed to be evenly distributed over each construction areas

hr/day = 9 (8am - 5pm)
days/yr = 365
hours/year = 3285

Eterna Tower, 17 & 29 E. Santa Clara St, San Jose, CA - Construction Health Impact Modeling

Source Parameters for Point Sources Used in Construction Modeling

Source	Stack Height (ft)	Stack Diam (in)	Exhaust Temp (F)	Volume Flow (acfm)	Velocity (ft/min)	Velocity (ft/sec)
Construction Equipment	9.0	2.5	918	632	18540	309.0

Source	Stack Height (m)	Stack Diam (m)	Exhaust Temp (K)			Velocity (ft/sec)
Construction Equipment	2.74	0.064	765.37			94.2

Eterna Tower, 17 & 29 E. Santa Clara Street, San Jose, CA - Construction Health Impact Summary

Maximum Impacts at MEI Residential Location - Without Mitigation

Emissions Year	Maximum Concentrations: Exhaust PM10/DPM ($\mu g/m^3$)	Maximum Concentrations: Fugitive PM2.5 ($\mu g/m^3$)	Cancer Risk* (per million): Infant/Child	Cancer Risk* (per million): Adult	Hazard Index (-)	Maximum Annual PM2.5 Concentration* ($\mu g/m^3$)
2028	0.0362	0.1495	6.44	0.10	0.01	0.32
2029	0.0551	0.0021	9.05	0.16	0.01	0.26
2030	0.0142	0.0013	0.37	0.04	0.003	0.07
Total	-	-	**15.85**	**0.30**	-	-
Maximum	0.0551	0.1495	**-**	**-**	**0.01**	**0.32**

* Maximum cancer risk and maximum PM2.5 concentration occur at different receptors.

Maximum Impacts at MEI Residential Location - With Mitigation

Emissions Year	Maximum Concentrations: Exhaust PM10/DPM ($\mu g/m^3$)	Maximum Concentrations: Fugitive PM2.5 ($\mu g/m^3$)	Cancer Risk* (per million): Infant/Child	Cancer Risk* (per million): Adult	Hazard Index (-)	Maximum Annual PM2.5 Concentration* ($\mu g/m^3$)
2028	0.0037	0.0679	0.65	0.01	0.001	0.09
2029	0.0123	0.0020	2.02	0.04	0.002	0.06
2030	0.0090	0.0013	0.23	0.03	0.002	0.04
Total	-	-	**2.90**	**0.07**	-	-
Maximum	0.0123	0.0679	**-**	**-**	**0.002**	**0.09**

* Maximum cancer risk and maximum PM2.5 concentration occur at different receptors.

- Tier 4 Interim Engine and BMP Mitigation

Eterna Tower, 17 & 29 E. Santa Clara Street, San Jose, CA - Construction Impacts - Without Mitigation
Maximum DPM Cancer Risk and PM2.5 Calculations From Construction
Impacts at Off-Site MEI Location - 6.1 meter receptor height (2nd Floor Level)

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

Where: CPF = Cancer potency factor $(mg/kg\text{-}day)^{-1}$
ASF = Age sensitivity factor for specified age group
ED = Exposure duration (years)
AT = Averaging time for lifetime cancer risk (years)
FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EF/365) x 10^{-6}

Where: C_{air} = concentration in air $(\mu g/m^3)$
DBR = daily breathing rate (L/kg body weight-day)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
10^{-6} = Conversion factor

Values

	Infant/Child			Adult
Age -->	**3rd Trimester**	**0 - 2**	**2 - 16**	**16 - 30**
Parameter				
ASF =	10	10	3	1
CPF =	1.10E+00	1.10E+00	1.10E+00	1.10E+00
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
AT =	70	70	70	70
FAH =	1.00	1.00	1.00	0.73

* 95th percentile breathing rates for infants and 80th percentile for children and adults

Construction Cancer Risk by Year - Maximum Impact Receptor Location

			Infant/Child - Exposure Information			Infant/Child	Adult - Exposure Information			Adult	Maximum		
			DPM Conc (ug/m3)		Age	Cancer	Modeled DPM Conc (ug/m3)		Age	Cancer			
Exposure Year	Exposure Duration (years)	Age	Year	Annual	Sensitivity Factor	Risk (per million)	Year	Annual	Sensitivity Factor	Risk (per million)	Hazard Index	Fugitive PM2.5	Total PM2.5
0	0.25	-0.25 - 0*	2028	0.0362	10	0.49	2028	0.0362	-	-			
1	1	0 - 1	2028	0.0362	10	5.95	2028	0.0362	1	0.10	0.0072	0.1877	0.2239
2	1	1 - 2	2029	0.0551	10	9.05	2029	0.0551	1	0.16	0.0110	0.0027	0.0577
3	1	2 - 3	2030	0.0142	3	0.37	2030	0.0142	1	0.04	0.0028	0.0016	0.0158
4	1	3 - 4		0.0000	3	0.00		0.0000	1	0.00			
5	1	4 - 5		0.0000	3	0.00		0.0000	1	0.00			
6	1	5 - 6		0.0000	3	0.00		0.0000	1	0.00			
7	1	6 - 7		0.0000	3	0.00		0.0000	1	0.00			
8	1	7 - 8		0.0000	3	0.00		0.0000	1	0.00			
9	1	8 - 9		0.0000	3	0.00		0.0000	1	0.00			
10	1	9 - 10		0.0000	3	0.00		0.0000	1	0.00			
11	1	10 - 11		0.0000	3	0.00		0.0000	1	0.00			
12	1	11 - 12		0.0000	3	0.00		0.0000	1	0.00			
13	1	12 - 13		0.0000	3	0.00		0.0000	1	0.00			
14	1	13 - 14		0.0000	3	0.00		0.0000	1	0.00			
15	1	14 - 15		0.0000	3	0.00		0.0000	1	0.00			
16	1	15 - 16		0.0000	3	0.00		0.0000	1	0.00			
17	1	16-17		0.0000	1	0.00		0.0000	1	0.00			
18	1	17-18		0.0000	1	0.00		0.0000	1	0.00			
19	1	18-19		0.0000	1	0.00		0.0000	1	0.00			
20	1	19-20		0.0000	1	0.00		0.0000	1	0.00			
21	1	20-21		0.0000	1	0.00		0.0000	1	0.00			
22	1	21-22		0.0000	1	0.00		0.0000	1	0.00			
23	1	22-23		0.0000	1	0.00		0.0000	1	0.00			
24	1	23-24		0.0000	1	0.00		0.0000	1	0.00			
25	1	24-25		0.0000	1	0.00		0.0000	1	0.00			
26	1	25-26		0.0000	1	0.00		0.0000	1	0.00			
27	1	26-27		0.0000	1	0.00		0.0000	1	0.00			
28	1	27-28		0.0000	1	0.00		0.0000	1	0.00			
29	1	28-29		0.0000	1	0.00		0.0000	1	0.00			
30	1	29-30		0.0000	1	0.00		0.0000	1	0.00			
Total Increased Cancer Risk						**15.85**				**0.30**			

* Third trimester of pregnancy

Eterna Tower, 17 & 29 E. Santa Clara Street, San Jose, CA - Construction Impacts - Without Mitigation
Maximum DPM Cancer Risk and PM2.5 Calculations From Construction
Impacts at Future 19 N. 2nd Street (Adult Seniors Only) - 6.1 meter receptor height

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

Where: CPF = Cancer potency factor $(mg/kg\text{-}day)^{-1}$
ASF = Age sensitivity factor for specified age group
ED = Exposure duration (years)
AT = Averaging time for lifetime cancer risk (years)
FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EF/365) x 10^{-6}

Where: C_{air} = concentration in air ($\mu g/m^3$)
DBR = daily breathing rate (L/kg body weight-day)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
10^{-6} = Conversion factor

Values

	Infant/Child			Adult
Age -->	**3rd Trimester**	**0 - 2**	**2 - 16**	**16 - 30**
Parameter				
ASF =	10	10	3	1
CPF =	1.10E+00	1.10E+00	1.10E+00	1.10E+00
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
AT =	70	70	70	70
FAH =	1.00	1.00	1.00	0.73

* 95th percentile breathing rates for infants and 80th percentile for children and adults

Construction Cancer Risk by Year - Maximum Impact Receptor Location

Exposure Year	Exposure Duration (years)	Age	Adult - Exposure Information: Modeled DPM Conc (ug/m3) Year	Modeled DPM Conc (ug/m3) Annual	Age Sensitivity Factor	Adult Cancer Risk (per million)
1	1	55-56	2028	0.1695	1	0.49
2	1	56-57	2029	0.2578	1	0.74
3	1	57-58	2030	0.0666	1	0.19
4	1	58-59		0.0000	1	0.00
5	1	59-60		0.0000	1	0.00
6	1	60-61		0.0000	1	0.00
7	1	61-62		0.0000	1	0.00
8	1	62-63		0.0000	1	0.00
9	1	63-64		0.0000	1	0.00
10	1	64-65		0.0000	1	0.00
11	1	65-66		0.0000	1	0.00
12	1	66-67		0.0000	1	0.00
13	1	67-68		0.0000	1	0.00
14	1	68-69		0.0000	1	0.00
15	1	69-70		0.0000	1	0.00
16	1	70-71		0.0000	1	0.00
17	1	71-72		0.0000	1	0.00
18	1	72-73		0.0000	1	0.00
19	1	73-74		0.0000	1	0.00
20	1	74-75		0.0000	1	0.00
21	1	75-76		0.0000	1	0.00
22	1	76-77		0.0000	1	0.00
23	1	77-78		0.0000	1	0.00
24	1	78-79		0.0000	1	0.00
25	1	79-80		0.0000	1	0.00
26	1	80-81		0.0000	1	0.00
27	1	81-82		0.0000	1	0.00
28	1	82-83		0.0000	1	0.00
29	1	83-84		0.0000	1	0.00
30	1	84-85		0.0000	1	0.00
Total Increased Cancer Risk						**1.42**

Maximum		
Hazard Index	**Fugitive PM2.5**	**Total PM2.5**
0.0339	0.1495	0.3190
0.0516	0.0021	0.2599
0.0133	0.0013	0.0678

* Assumed Adult Seniors Only

Eterna Tower, 17 & 29 E. Santa Clara Street, San Jose, CA - Construction Impacts - Without Mitigation
Maximum DPM Cancer Risk and PM2.5 Calculations From Construction
Impacts at Off-Site MEI Location - 9.1 meter receptor height (3rd Floor Level)

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

Where: CPF = Cancer potency factor $(mg/kg\text{-}day)^{-1}$
ASF = Age sensitivity factor for specified age group
ED = Exposure duration (years)
AT = Averaging time for lifetime cancer risk (years)
FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EF/365) x 10^{-6}

Where: C_{air} = concentration in air ($\mu g/m^3$)
DBR = daily breathing rate (L/kg body weight-day)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
10^{-6} = Conversion factor

Values

	Infant/Child			Adult
Age -->	**3rd Trimester**	**0 - 2**	**2 - 16**	**16 - 30**
Parameter				
ASF =	10	10	3	1
CPF =	1.10E+00	1.10E+00	1.10E+00	1.10E+00
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
AT =	70	70	70	70
FAH =	1.00	1.00	1.00	0.73

* 95th percentile breathing rates for infants and 80th percentile for children and adults

Construction Cancer Risk by Year - Maximum Impact Receptor Location

			Infant/Child - Exposure Information				Adult - Exposure Information				Maximum		
			DPM Conc (ug/m3)		Age	Infant/Child	Modeled DPM Conc (ug/m3)		Age	Adult			
Exposure Year	Exposure Duration (years)	Age	Year	Annual	Sensitivity Factor	Cancer Risk (per million)	Year	Annual	Sensitivity Factor	Cancer Risk (per million)	Hazard Index	Fugitive PM2.5	Total PM2.5
0	0.25	-0.25 - 0*	2028	0.0332	10	0.45	2028	0.0332	-	-			
1	1	0 - 1	2028	0.0332	10	5.46	2028	0.0332	1	0.10	0.0066	0.1466	0.1798
2	1	1 - 2	2029	0.0505	10	8.30	2029	0.0505	1	0.15	0.0101	0.0021	0.0526
3	1	2 - 3	2030	0.0130	3	0.34	2030	0.0130	1	0.04	0.0026	0.0012	0.0143
4	1	3 - 4		0.0000	3	0.00		0.0000	1	0.00			
5	1	4 - 5		0.0000	3	0.00		0.0000	1	0.00			
6	1	5 - 6		0.0000	3	0.00		0.0000	1	0.00			
7	1	6 - 7		0.0000	3	0.00		0.0000	1	0.00			
8	1	7 - 8		0.0000	3	0.00		0.0000	1	0.00			
9	1	8 - 9		0.0000	3	0.00		0.0000	1	0.00			
10	1	9 - 10		0.0000	3	0.00		0.0000	1	0.00			
11	1	10 - 11		0.0000	3	0.00		0.0000	1	0.00			
12	1	11 - 12		0.0000	3	0.00		0.0000	1	0.00			
13	1	12 - 13		0.0000	3	0.00		0.0000	1	0.00			
14	1	13 - 14		0.0000	3	0.00		0.0000	1	0.00			
15	1	14 - 15		0.0000	3	0.00		0.0000	1	0.00			
16	1	15 - 16		0.0000	3	0.00		0.0000	1	0.00			
17	1	16-17		0.0000	1	0.00		0.0000	1	0.00			
18	1	17-18		0.0000	1	0.00		0.0000	1	0.00			
19	1	18-19		0.0000	1	0.00		0.0000	1	0.00			
20	1	19-20		0.0000	1	0.00		0.0000	1	0.00			
21	1	20-21		0.0000	1	0.00		0.0000	1	0.00			
22	1	21-22		0.0000	1	0.00		0.0000	1	0.00			
23	1	22-23		0.0000	1	0.00		0.0000	1	0.00			
24	1	23-24		0.0000	1	0.00		0.0000	1	0.00			
25	1	24-25		0.0000	1	0.00		0.0000	1	0.00			
26	1	25-26		0.0000	1	0.00		0.0000	1	0.00			
27	1	26-27		0.0000	1	0.00		0.0000	1	0.00			
28	1	27-28		0.0000	1	0.00		0.0000	1	0.00			
29	1	28-29		0.0000	1	0.00		0.0000	1	0.00			
30	1	29-30		0.0000	1	0.00		0.0000	1	0.00			
Total Increased Cancer Risk						**14.55**				**0.28**			

* Third trimester of pregnancy

Eterna Tower, 17 & 29 E. Santa Clara Street, San Jose, CA - Construction Impacts - Without Mitigation
Maximum DPM Cancer Risk and PM2.5 Calculations From Construction
Impacts at Future 19 N. 2nd Street (Adult Seniors Only) - 9.1 meter receptor height

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

Where: CPF = Cancer potency factor $(mg/kg\text{-}day)^{-1}$
ASF = Age sensitivity factor for specified age group
ED = Exposure duration (years)
AT = Averaging time for lifetime cancer risk (years)
FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EF/365) x 10^{-6}

Where: C_{air} = concentration in air $(\mu g/m^3)$
DBR = daily breathing rate (L/kg body weight-day)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
10^{-6} = Conversion factor

Values

	Infant/Child			Adult
Age -->	**3rd Trimester**	**0 - 2**	**2 - 16**	**16 - 30**
Parameter				
ASF =	10	10	3	1
CPF =	1.10E+00	1.10E+00	1.10E+00	1.10E+00
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
AT =	70	70	70	70
FAH =	1.00	1.00	1.00	0.73

* 95th percentile breathing rates for infants and 80th percentile for children and adults

Construction Cancer Risk by Year - Maximum Impact Receptor Location

Exposure Year	Exposure Duration (years)	Age	Adult - Exposure Information: Modeled DPM Conc (ug/m3) Year	Modeled DPM Conc (ug/m3) Annual	Age Sensitivity Factor	Adult Cancer Risk (per million)
1	1	55-56	2028	0.1261	1	0.36
2	1	56-57	2029	0.1918	1	0.55
3	1	57-58	2030	0.0495	1	0.14
4	1	58-59		0.0000	1	0.00
5	1	59-60		0.0000	1	0.00
6	1	60-61		0.0000	1	0.00
7	1	61-62		0.0000	1	0.00
8	1	62-63		0.0000	1	0.00
9	1	63-64		0.0000	1	0.00
10	1	64-65		0.0000	1	0.00
11	1	65-66		0.0000	1	0.00
12	1	66-67		0.0000	1	0.00
13	1	67-68		0.0000	1	0.00
14	1	68-69		0.0000	1	0.00
15	1	69-70		0.0000	1	0.00
16	1	70-71		0.0000	1	0.00
17	1	71-72		0.0000	1	0.00
18	1	72-73		0.0000	1	0.00
19	1	73-74		0.0000	1	0.00
20	1	74-75		0.0000	1	0.00
21	1	75-76		0.0000	1	0.00
22	1	76-77		0.0000	1	0.00
23	1	77-78		0.0000	1	0.00
24	1	78-79		0.0000	1	0.00
25	1	79-80		0.0000	1	0.00
26	1	80-81		0.0000	1	0.00
27	1	81-82		0.0000	1	0.00
28	1	82-83		0.0000	1	0.00
29	1	83-84		0.0000	1	0.00
30	1	84-85		0.0000	1	0.00
Total Increased Cancer Risk						**1.05**

Maximum Hazard Index	Maximum Fugitive PM2.5	Maximum Total PM2.5
0.0252	0.0469	0.1729
0.0384	0.0007	0.1924
0.0099	0.0004	0.0499

* Assumed Adult Seniors Only

Eterna Tower, 17 & 29 E. Santa Clara Street, San Jose, CA - Construction Impacts - With Mitigation
Maximum DPM Cancer Risk and PM2.5 Calculations From Construction
Impacts at Off-Site MEI Location - 6.1 meter receptor height (2nd Floor Level)

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

Where: CPF = Cancer potency factor $(mg/kg\text{-}day)^{-1}$
ASF = Age sensitivity factor for specified age group
ED = Exposure duration (years)
AT = Averaging time for lifetime cancer risk (years)
FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EF/365) x 10^{-6}

Where: C_{air} = concentration in air ($\mu g/m^3$)
DBR = daily breathing rate (L/kg body weight-day)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
10^{-6} = Conversion factor

Values

	Infant/Child			Adult
Age -->	**3rd Trimester**	**0 - 2**	**2 - 16**	**16 - 30**
Parameter				
ASF =	10	10	3	1
CPF =	1.10E+00	1.10E+00	1.10E+00	1.10E+00
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
AT =	70	70	70	70
FAH =	1.00	1.00	1.00	0.73

* 95th percentile breathing rates for infants and 80th percentile for children and adults

Construction Cancer Risk by Year - Maximum Impact Receptor Location

			Infant/Child - Exposure Information				Adult - Exposure Information				Maximum		
			DPM Conc (ug/m3)		Age	Infant/Child	Modeled DPM Conc (ug/m3)		Age	Adult			
Exposure Year	Exposure Duration (years)	Age	Year	Annual	Sensitivity Factor	Cancer Risk (per million)	Year	Annual	Sensitivity Factor	Cancer Risk (per million)	Hazard Index	Fugitive PM2.5	Total PM2.5
0	0.25	-0.25 - 0*	2028	0.0037	10	0.05	2028	0.0037	-	-			
1	1	0 - 1	2028	0.0037	10	0.60	2028	0.0037	1	0.01	0.0007	0.0853	0.0890
2	1	1 - 2	2029	0.0123	10	2.02	2029	0.0123	1	0.04	0.0025	0.0026	0.0148
3	1	2 - 3	2030	0.0090	3	0.23	2030	0.0090	1	0.03	0.0018	0.0016	0.0106
4	1	3 - 4		0.0000	3	0.00		0.0000	1	0.00			
5	1	4 - 5		0.0000	3	0.00		0.0000	1	0.00			
6	1	5 - 6		0.0000	3	0.00		0.0000	1	0.00			
7	1	6 - 7		0.0000	3	0.00		0.0000	1	0.00			
8	1	7 - 8		0.0000	3	0.00		0.0000	1	0.00			
9	1	8 - 9		0.0000	3	0.00		0.0000	1	0.00			
10	1	9 - 10		0.0000	3	0.00		0.0000	1	0.00			
11	1	10 - 11		0.0000	3	0.00		0.0000	1	0.00			
12	1	11 - 12		0.0000	3	0.00		0.0000	1	0.00			
13	1	12 - 13		0.0000	3	0.00		0.0000	1	0.00			
14	1	13 - 14		0.0000	3	0.00		0.0000	1	0.00			
15	1	14 - 15		0.0000	3	0.00		0.0000	1	0.00			
16	1	15 - 16		0.0000	3	0.00		0.0000	1	0.00			
17	1	16-17		0.0000	1	0.00		0.0000	1	0.00			
18	1	17-18		0.0000	1	0.00		0.0000	1	0.00			
19	1	18-19		0.0000	1	0.00		0.0000	1	0.00			
20	1	19-20		0.0000	1	0.00		0.0000	1	0.00			
21	1	20-21		0.0000	1	0.00		0.0000	1	0.00			
22	1	21-22		0.0000	1	0.00		0.0000	1	0.00			
23	1	22-23		0.0000	1	0.00		0.0000	1	0.00			
24	1	23-24		0.0000	1	0.00		0.0000	1	0.00			
25	1	24-25		0.0000	1	0.00		0.0000	1	0.00			
26	1	25-26		0.0000	1	0.00		0.0000	1	0.00			
27	1	26-27		0.0000	1	0.00		0.0000	1	0.00			
28	1	27-28		0.0000	1	0.00		0.0000	1	0.00			
29	1	28-29		0.0000	1	0.00		0.0000	1	0.00			
30	1	29-30		0.0000	1	0.00		0.0000	1	0.00			
Total Increased Cancer Risk						**2.90**				**0.07**			

* Third trimester of pregnancy

Eterna Tower, 17 & 29 E. Santa Clara Street, San Jose, CA - Construction Impacts - With Mitigation
Maximum DPM Cancer Risk and PM2.5 Calculations From Construction
Impacts at Future 19 N. 2nd Street (Adult Seniors Only) - 6.1 meter receptor height

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

Where: CPF = Cancer potency factor $(mg/kg\text{-}day)^{-1}$
ASF = Age sensitivity factor for specified age group
ED = Exposure duration (years)
AT = Averaging time for lifetime cancer risk (years)
FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EF/365) x 10^{-6}

Where: C_{air} = concentration in air $(\mu g/m^3)$
DBR = daily breathing rate (L/kg body weight-day)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
10^{-6} = Conversion factor

Values

	Infant/Child			Adult
Age –>	**3rd Trimester**	**0 - 2**	**2 - 16**	**16 - 30**
Parameter				
ASF =	10	10	3	1
CPF =	1.10E+00	1.10E+00	1.10E+00	1.10E+00
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
AT =	70	70	70	70
FAH =	1.00	1.00	1.00	0.73

* 95th percentile breathing rates for infants and 80th percentile for children and adults

Construction Cancer Risk by Year - Maximum Impact Receptor Location

Exposure Year	Exposure Duration (years)	Age	Adult - Exposure Information: Modeled DPM Conc (ug/m3) Year	Modeled DPM Conc (ug/m3) Annual	Age Sensitivity Factor	Adult Cancer Risk (per million)
1	1	55-56	2028	0.0172	1	0.05
2	1	56-57	2029	0.0575	1	0.17
3	1	57-58	2030	0.0420	1	0.12
4	1	58-59		0.0000	1	0.00
5	1	59-60		0.0000	1	0.00
6	1	60-61		0.0000	1	0.00
7	1	61-62		0.0000	1	0.00
8	1	62-63		0.0000	1	0.00
9	1	63-64		0.0000	1	0.00
10	1	64-65		0.0000	1	0.00
11	1	65-66		0.0000	1	0.00
12	1	66-67		0.0000	1	0.00
13	1	67-68		0.0000	1	0.00
14	1	68-69		0.0000	1	0.00
15	1	69-70		0.0000	1	0.00
16	1	70-71		0.0000	1	0.00
17	1	71-72		0.0000	1	0.00
18	1	72-73		0.0000	1	0.00
19	1	73-74		0.0000	1	0.00
20	1	74-75		0.0000	1	0.00
21	1	75-76		0.0000	1	0.00
22	1	76-77		0.0000	1	0.00
23	1	77-78		0.0000	1	0.00
24	1	78-79		0.0000	1	0.00
25	1	79-80		0.0000	1	0.00
26	1	80-81		0.0000	1	0.00
27	1	81-82		0.0000	1	0.00
28	1	82-83		0.0000	1	0.00
29	1	83-84		0.0000	1	0.00
30	1	84-85		0.0000	1	0.00
Total Increased Cancer Risk						**0.34**

Maximum Hazard Index	Maximum Fugitive PM2.5	Maximum Total PM2.5
0.0034	0.0679	0.0851
0.0115	0.0020	0.0595
0.0084	0.0013	0.0433

* Assumed Adult Seniors Only

Project Generator Health Risk Assessment and Calculations

Eterna Tower, 17 & 29 E. Santa Clara Street, San Jose, CA

Standby Emergency Generator Impacts

Off-site Sensitive Receptors

MEI Location = 6.1 meter receptor height

DPM Emission Rates		
	DPM Emissions per Generator	
	Max Daily	Annual
Source Type	(lb/day)	(lb/year)
One, 500-kW, 670-hp Generator	0.022	8.08
CalEEMod DPM Emissions	4.04E-03	tons/year

Modeling Information		
Model	AERMOD	
Source	Diesel Generator Engine	
Source Type	Point	
Meteorological Data	2013-2017 San Jose Airport Meterological Data	
Point Source Stack Parameters		
Generator Engine Size (hp)	670	
Stack Height (ft)	12.00	near ground level release assumed
Stack Diameter (ft)**	0.60	
Exhaust Gas Flowrate (CFM)*	2527.73	
Stack Exit Velocity (ft/sec)**	149.00	
Exhaust Temperature (˚F)**	872.00	
Emissions Rate (lb/hr)	0.0009	

* AERMOD default

**BAAQMD default generator parameters

Eterna Tower, 17 & 29 E. Santa Clara Street, San Jose - Cancer Risks from Project Operation
Project Emergency Generators
Impacts at Construction MEI Receptor- 6.1m Receptor Height
Impact at Project Cancer Risk and PM2.5 MEIs (27-year Exposure)

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

Where: CPF = Cancer potency factor $(mg/kg\text{-}day)^{-1}$
ASF = Age sensitivity factor for specified age group
ED = Exposure duration (years)
AT = Averaging time for lifetime cancer risk (years)
FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EF/365) x 10^{-6}

Where: C_{air} = concentration in air $(\mu g/m^3)$
DBR = daily breathing rate (L/kg body weight-day)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
10^{-6} = Conversion factor

	Infant/Child			Adult
Age -->	3rd Trimester	0 - 2	2 - 16	16 - 30
Parameter				
ASF =	10	10	3	1
CPF =	1.10E+00	1.10E+00	1.10E+00	1.10E+00
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
AT =	70	70	70	70
FAH =	0.85	0.85	0.72	0.73

* 95th percentile breathing rates for infants and 80th percentile for children and adults

Project Generators Operation Cancer Risk by Year - Maximum Impact Receptor Location

Exposure Year	Exposure Duration (years)	Age	Infant/Child - Exposure Information: DPM Conc (ug/m3) Year	DPM Conc (ug/m3) Annual	Age Sensitivity Factor	Cancer Risk (per million)		Hazard Index	Fugitive PM2.5	Total PM2.5
0	0.25	-0.25 - 0*	2028	0.0000	10	0.000				
1	1	0 - 1	2028	0.0000	10	0.000				
2	1	1 - 2	2029	0.0000	10	0.000				
3	1	2 - 3	2030	0.0000	3	0.000				
4	1	3 - 4	2031	0.0048	3	0.089		0.001	0.003	0.01
5	1	4 - 5	2032	0.0048	3	0.089		0.001	0.003	0.01
6	1	5 - 6	2033	0.0048	3	0.089		0.001	0.003	0.01
7	1	6 - 7	2034	0.0048	3	0.089		0.001	0.003	0.01
8	1	7 - 8	2035	0.0048	3	0.089		0.001	0.003	0.01
9	1	8 - 9	2036	0.0048	3	0.089		0.001	0.003	0.01
10	1	9 - 10	2037	0.0048	3	0.089		0.001	0.003	0.01
11	1	10 - 11	2038	0.0048	3	0.089		0.001	0.003	0.01
12	1	11 - 12	2039	0.0048	3	0.089		0.001	0.003	0.01
13	1	12 - 13	2040	0.0048	3	0.089		0.001	0.003	0.01
14	1	13 - 14	2041	0.0048	3	0.089		0.001	0.003	0.01
15	1	14 - 15	2042	0.0048	3	0.089		0.001	0.003	0.01
16	1	15 - 16	2043	0.0048	3	0.089		0.001	0.003	0.01
17	1	16-17	2044	0.0048	1	0.014		0.001	0.003	0.01
18	1	17-18	2045	0.0048	1	0.014		0.001	0.003	0.01
19	1	18-19	2046	0.0048	1	0.014		0.001	0.003	0.01
20	1	19-20	2047	0.0048	1	0.014		0.001	0.003	0.01
21	1	20-21	2048	0.0048	1	0.014		0.001	0.003	0.01
22	1	21-22	2049	0.0048	1	0.014		0.001	0.003	0.01
23	1	22-23	2050	0.0048	1	0.014		0.001	0.003	0.01
24	1	23-24	2051	0.0048	1	0.014		0.001	0.003	0.01
25	1	24-25	2052	0.0048	1	0.014		0.001	0.003	0.01
26	1	25-26	2053	0.0048	1	0.014		0.001	0.003	0.01
27	1	26-27	2054	0.0048	1	0.014		0.001	0.003	0.01
28	1	27-28	2055	0.0048	1	0.014		0.001	0.003	0.01
29	1	28-29	2056	0.0048	1	0.014		0.001	0.003	0.01
30	1	29-30	2057	0.0048	1	0.014		0.001	0.003	0.01
Total Increased Cancer Risk						**1.34**	**Max**	**0.001**	**0.003**	**0.01**

* Third trimester of pregnancy

Attachment 5: Cumulative Community Risk from Existing TAC Sources

CT-EMFAC2017 Emissions Factors for E. Santa Clara Street 2028

File Name: Eterna Tower - Santa Clara St - Santa Clara (SF) - 2028 - Annual.EF
CT-EMFAC2017 Version: 1.0.2.27401
Run Date: 7/6/2021 14:47
Area: Santa Clara (SF)
Analysis Year: 2028
Season: Annual

Vehicle Category	VMT Fraction Across Category	Diesel VMT Fraction Within Category	Gas VMT Fraction Within Category
Truck 1	0.014	0.517	0.483
Truck 2	0.021	0.933	0.05
Non-Truck	0.965	0.015	0.945

Road Type: Major/Collector
Silt Loading Factor: CARB 0.032 g/m2
Precipitation Correction: CARB P = 64 days N = 365 days

Fleet Average Running Exhaust Emission Factors (grams/veh-mile)

Pollutant Name	<= 5 mph	10 mph	15 mph	20 mph	25 mph	30 mph	35 mph
PM2.5	0.007234	0.004693	0.003186	0.00228	0.001732	0.001402	0.00121
TOG	0.150241	0.098664	0.066256	0.04689	0.035556	0.028455	0.023901
Diesel PM	0.000631	0.000535	0.000424	0.000345	0.000303	0.000288	0.000296

Fleet Average Running Loss Emission Factors (grams/veh-hour)

Pollutant Name	Emission Factor
TOG	1.122713

Fleet Average Tire Wear Factors (grams/veh-mile)

Pollutant Name	Emission Factor
PM2.5	0.002113

Fleet Average Brake Wear Factors (grams/veh-mile)

Pollutant Name	Emission Factor
PM2.5	0.016796

Fleet Average Road Dust Factors (grams/veh-mile)

Pollutant Name	Emission Factor
PM2.5	0.014896

==========END==========

E. Santa Clara Street Emissions and Health Risk Calculations

Analysis Year = ***2028***

Vehicle Type	**2021 Caltrans Vehicles (veh/day)**	**2028 Vehicles (veh/day)**
Truck 1 (MDT)	460	493
Truck 2 (HDT)	124	132
Non-Truck	16,061	17,185
Total	**16,645**	**17,810**

Increase From 2021	1.07
Vehicles/Direction	**8,905**
Avg Vehicles/Hour/Direction	371

Traffic Data Year = ***2021***

Nearby Project Cumulative ADT	AADT Total	Total Truck
E. Santa Clara Street	16,645	584
	Percent of Total Vehicles	3.51%

Traffic Increase per Year (%) = *1.00%*

Eterna Tower, 17 & 29 E. Santa Clara Street, San Jose - Offsite Residential Roadway Modeling
Cumulative Operation - Santa Clara Street
DPM Modeling - Roadway Links, Traffic Volumes, and DPM Emissions
Year = **2028**

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Length (mi)	Link Width (m)	Link Width (ft)	Release Height (m)	Average Speed (mph)	Average Vehicles per Day
DPM_EBSC	Santa Clara Street Eastbound	EB	2	635.2	0.39	13.3	43.7	3.4	20	8,905
DPM_WBSC	Santa Clara Street Westbound	WB	2	636.8	0.40	13.3	43.7	3.4	20	8,905
									Total	17,810

Emission Factors - DPM

Speed Category	1	2	3	4
Travel Speed (mph)	20			
Emissions per Vehicle (g/VMT)	0.00035			

Emisson Factors from CT-EMFAC2017

2028 Hourly Traffic Volumes and DPM Emissions - DPM_EBSC

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	3.96%	353	1.33E-05	9	6.46%	575	2.18E-05	17	5.61%	500	1.89E-05
2	2.66%	237	8.96E-06	10	7.36%	655	2.48E-05	18	3.24%	289	1.09E-05
3	2.88%	256	9.70E-06	11	6.40%	570	2.16E-05	19	2.22%	198	7.48E-06
4	3.28%	292	1.10E-05	12	6.97%	621	2.35E-05	20	0.86%	77	2.90E-06
5	2.09%	186	7.04E-06	13	6.23%	555	2.10E-05	21	3.06%	272	1.03E-05
6	3.34%	297	1.13E-05	14	6.17%	549	2.08E-05	22	4.25%	378	1.43E-05
7	6.06%	540	2.04E-05	15	5.10%	454	1.72E-05	23	2.55%	227	8.59E-06
8	4.54%	404	1.53E-05	16	3.86%	344	1.30E-05	24	0.85%	76	2.86E-06
								Total		8,905	

2028 Hourly Traffic Volumes Per Direction and DPM Emissions - DPM_WBSC

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	3.96%	353	1.34E-05	9	6.46%	575	2.18E-05	17	5.61%	500	1.89E-05
2	2.66%	237	8.98E-06	10	7.36%	655	2.49E-05	18	3.24%	289	1.09E-05
3	2.88%	256	9.73E-06	11	6.40%	570	2.16E-05	19	2.22%	198	7.50E-06
4	3.28%	292	1.11E-05	12	6.97%	621	2.35E-05	20	0.86%	77	2.90E-06
5	2.09%	186	7.06E-06	13	6.23%	555	2.10E-05	21	3.06%	272	1.03E-05
6	3.34%	297	1.13E-05	14	6.17%	549	2.08E-05	22	4.25%	378	1.44E-05
7	6.06%	540	2.05E-05	15	5.10%	454	1.72E-05	23	2.55%	227	8.61E-06
8	4.54%	404	1.53E-05	16	3.86%	344	1.30E-05	24	0.85%	76	2.87E-06
								Total		8,905	

Cumulative Operation - Santa Clara Street
PM2.5 Modeling - Roadway Links, Traffic Volumes, and PM2.5 Emissions
Year = 2028

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Length (mi)	Link Width (m)	Link Width (ft)	Release Height (m)	Average Speed (mph)	Average Vehicles per Day
PM25_EBSC	Santa Clara Street Eastbound	EB	2	635.2	0.39	13.3	44	1.3	20	8,905
PM25_WBSC	Santa Clara Street Westbound	WB	2	636.8	0.40	13.3	44	1.3	20	8,905
									Total	17,810

Emission Factors - PM2.5

Speed Category	1	2	3	4
Travel Speed (mph)	20			
Emissions per Vehicle (g/VMT)	0.002280			

Emisson Factors from CT-EMFAC2017

2028 Hourly Traffic Volumes and PM2.5 Emissions - PM25_EBSC

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	1.15%	102	2.56E-05	9	7.11%	633	1.58E-04	17	7.39%	658	1.65E-04
2	0.42%	37	9.35E-06	10	4.39%	391	9.77E-05	18	8.18%	728	1.82E-04
3	0.40%	36	8.90E-06	11	4.66%	415	1.04E-04	19	5.70%	508	1.27E-04
4	0.26%	23	5.79E-06	12	5.89%	525	1.31E-04	20	4.27%	380	9.51E-05
5	0.49%	44	1.09E-05	13	6.15%	548	1.37E-04	21	3.25%	289	7.23E-05
6	0.90%	80	2.00E-05	14	6.04%	538	1.34E-04	22	3.30%	294	7.35E-05
7	3.79%	338	8.44E-05	15	7.01%	624	1.56E-04	23	2.46%	219	5.48E-05
8	7.76%	691	1.73E-04	16	7.14%	636	1.59E-04	24	1.87%	167	4.16E-05
								Total		8,903	

2028 Hourly Traffic Volumes Per Direction and PM2.5 Emissions - PM25_WBSC

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.15%	102	2.57E-05	9	7.11%	633	1.59E-04	17	7.39%	658	1.65E-04
2	0.42%	37	9.37E-06	10	4.39%	391	9.80E-05	18	8.18%	728	1.83E-04
3	0.40%	36	8.93E-06	11	4.66%	415	1.04E-04	19	5.70%	508	1.27E-04
4	0.26%	23	5.80E-06	12	5.89%	525	1.31E-04	20	4.27%	380	9.53E-05
5	0.49%	44	1.09E-05	13	6.15%	548	1.37E-04	21	3.25%	289	7.25E-05
6	0.90%	80	2.01E-05	14	6.04%	538	1.35E-04	22	3.30%	294	7.36E-05
7	3.79%	338	8.46E-05	15	7.01%	624	1.56E-04	23	2.46%	219	5.49E-05
8	7.76%	691	1.73E-04	16	7.14%	636	1.59E-04	24	1.87%	167	4.17E-05
								Total		8,903	

Eterna Tower, 17 & 29 E. Santa Clara Street, San Jose - Offsite Residential Roadway Modeling
Cumulative Operation - Santa Clara Street
TOG Exhaust Modeling - Roadway Links, Traffic Volumes, and TOG Exhaust Emissions
Year = 2028

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Length (mi)	Link Width (m)	Link Width (ft)	Release Height (m)	Average Speed (mph)	Average Vehicles per Day
TEXH_EBSC	Santa Clara Street Eastbound	EB	2	635.2	0.39	13.3	44	1.3	20	8,905
TEXH_WBSC	Santa Clara Street Westbound	WB	2	636.8	0.40	13.3	44	1.3	20	8,905
									Total	17,810

Emission Factors - TOG Exhaust

Speed Category	1	2	3	4
Travel Speed (mph)	20			
Emissions per Vehicle (g/VMT)	0.04689			

Emisson Factors from CT-EMFAC2017

2028 Hourly Traffic Volumes and TOG Exhaust Emissions - TEXH_EBSC

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	1.15%	102	5.26E-04	9	7.11%	633	3.25E-03	17	7.39%	658	3.38E-03
2	0.42%	37	1.92E-04	10	4.39%	391	2.01E-03	18	8.18%	728	3.74E-03
3	0.40%	36	1.83E-04	11	4.66%	415	2.13E-03	19	5.70%	508	2.61E-03
4	0.26%	23	1.19E-04	12	5.89%	525	2.70E-03	20	4.27%	380	1.95E-03
5	0.49%	44	2.24E-04	13	6.15%	548	2.82E-03	21	3.25%	289	1.49E-03
6	0.90%	80	4.12E-04	14	6.04%	538	2.77E-03	22	3.30%	294	1.51E-03
7	3.79%	338	1.74E-03	15	7.01%	624	3.21E-03	23	2.46%	219	1.13E-03
8	7.76%	691	3.55E-03	16	7.14%	636	3.27E-03	24	1.87%	167	8.56E-04
								Total		8,903	

2028 Hourly Traffic Volumes Per Direction and TOG Exhaust Emissions - TEXH_WBSC

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.15%	102	5.28E-04	9	7.11%	633	3.26E-03	17	7.39%	658	3.39E-03
2	0.42%	37	1.93E-04	10	4.39%	391	2.01E-03	18	8.18%	728	3.75E-03
3	0.40%	36	1.84E-04	11	4.66%	415	2.14E-03	19	5.70%	508	2.62E-03
4	0.26%	23	1.19E-04	12	5.89%	525	2.70E-03	20	4.27%	380	1.96E-03
5	0.49%	44	2.25E-04	13	6.15%	548	2.82E-03	21	3.25%	289	1.49E-03
6	0.90%	80	4.13E-04	14	6.04%	538	2.77E-03	22	3.30%	294	1.51E-03
7	3.79%	338	1.74E-03	15	7.01%	624	3.22E-03	23	2.46%	219	1.13E-03
8	7.76%	691	3.56E-03	16	7.14%	636	3.28E-03	24	1.87%	167	8.58E-04
								Total		8,903	

Eterna Tower, 17 & 29 E. Santa Clara Street, San Jose - Offsite Residential Roadway Modeling
Cumulative Operation - Santa Clara Street
TOG Evaporative Emissions Modeling - Roadway Links, Traffic Volumes, and TOG Evaporative Emissions
Year = 2028

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Length (mi)	Link Width (m)	Link Width (ft)	Release Height (m)	Average Speed (mph)	Average Vehicles per Day
TEVAP_EBSC	Santa Clara Street Eastbound	EB	2	635.2	0.39	13.3	44	1.3	20	8,905
TEVAP_WBSC	Santa Clara Street Westbound	WB	2	636.8	0.40	13.3	44	1.3	20	8,905
									Total	17,810

Emission Factors - PM2.5 - Evaporative TOG

Speed Category	1	2	3	4
Travel Speed (mph)	20			
Emissions per Vehicle per Hour (g/hour)	1.12271			
Emissions per Vehicle per Mile (g/VMT)	0.05614			

Emisson Factors from CT-EMFAC2017

2028 Hourly Traffic Volumes and TOG Evaporative Emissions - TEVAP_EBSC

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	1.15%	102	6.30E-04	9	7.11%	633	3.90E-03	17	7.39%	658	4.05E-03
2	0.42%	37	2.30E-04	10	4.39%	391	2.41E-03	18	8.18%	728	4.48E-03
3	0.40%	36	2.19E-04	11	4.66%	415	2.55E-03	19	5.70%	508	3.12E-03
4	0.26%	23	1.42E-04	12	5.89%	525	3.23E-03	20	4.27%	380	2.34E-03
5	0.49%	44	2.69E-04	13	6.15%	548	3.37E-03	21	3.25%	289	1.78E-03
6	0.90%	80	4.93E-04	14	6.04%	538	3.31E-03	22	3.30%	294	1.81E-03
7	3.79%	338	2.08E-03	15	7.01%	624	3.84E-03	23	2.46%	219	1.35E-03
8	7.76%	691	4.25E-03	16	7.14%	636	3.91E-03	24	1.87%	167	1.02E-03
								Total		8,903	

2028 Hourly Traffic Volumes Per Direction and TOG Evaporative Emissions - TEVAP_WBSC

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.15%	102	6.32E-04	9	7.11%	633	3.91E-03	17	7.39%	658	4.06E-03
2	0.42%	37	2.31E-04	10	4.39%	391	2.41E-03	18	8.18%	728	4.49E-03
3	0.40%	36	2.20E-04	11	4.66%	415	2.56E-03	19	5.70%	508	3.13E-03
4	0.26%	23	1.43E-04	12	5.89%	525	3.24E-03	20	4.27%	380	2.35E-03
5	0.49%	44	2.69E-04	13	6.15%	548	3.38E-03	21	3.25%	289	1.79E-03
6	0.90%	80	4.95E-04	14	6.04%	538	3.32E-03	22	3.30%	294	1.81E-03
7	3.79%	338	2.08E-03	15	7.01%	624	3.85E-03	23	2.46%	219	1.35E-03
8	7.76%	691	4.26E-03	16	7.14%	636	3.92E-03	24	1.87%	167	1.03E-03
								Total		8,903	

Eterna Tower, 17 & 29 E. Santa Clara Street, San Jose - Offsite Residential Roadway Modeling
Cumulative Operation - Santa Clara Street
Fugitive Road PM2.5 Modeling - Roadway Links, Traffic Volumes, and Fugitive Road PM2.5 Emissions
Year = 2028

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Length (mi)	Link Width (m)	Link Width (ft)	Release Height (m)	Average Speed (mph)	Average Vehicles per Day
FUG_EBSC	Santa Clara Street Eastbound	EB	2	635.2	0.39	13.3	44	1.3	20	8,905
FUG_WBSC	Santa Clara Street Westbound	WB	2	636.8	0.40	13.3	44	1.3	20	8,905
									Total	17,810

Emission Factors - Fugitive PM2.5

Speed Category	1	2	3	4
Travel Speed (mph)	20			
Tire Wear - Emissions per Vehicle (g/VMT)	0.00211			
Brake Wear - Emissions per Vehicle (g/VMT)	0.01680			
Road Dust - Emissions per Vehicle (g/VMT)	0.01490			
Total Fugitive PM2.5 - Emissions per Vehicle (g/VMT)	0.03381			

Emisson Factors from CT-EMFAC2017

2028 Hourly Traffic Volumes and Fugitive PM2.5 Emissions - FUG_EBSC

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	1.15%	102	3.80E-04	9	7.11%	633	2.35E-03	17	7.39%	658	2.44E-03
2	0.42%	37	1.39E-04	10	4.39%	391	1.45E-03	18	8.18%	728	2.70E-03
3	0.40%	36	1.32E-04	11	4.66%	415	1.54E-03	19	5.70%	508	1.88E-03
4	0.26%	23	8.58E-05	12	5.89%	525	1.94E-03	20	4.27%	380	1.41E-03
5	0.49%	44	1.62E-04	13	6.15%	548	2.03E-03	21	3.25%	289	1.07E-03
6	0.90%	80	2.97E-04	14	6.04%	538	1.99E-03	22	3.30%	294	1.09E-03
7	3.79%	338	1.25E-03	15	7.01%	624	2.31E-03	23	2.46%	219	8.12E-04
8	7.76%	691	2.56E-03	16	7.14%	636	2.36E-03	24	1.87%	167	6.17E-04
								Total		8,903	

2028 Hourly Traffic Volumes Per Direction and Fugitive PM2.5 Emissions - FUG_WBSC

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.15%	102	3.81E-04	9	7.11%	633	2.35E-03	17	7.39%	658	2.45E-03
2	0.42%	37	1.39E-04	10	4.39%	391	1.45E-03	18	8.18%	728	2.71E-03
3	0.40%	36	1.32E-04	11	4.66%	415	1.54E-03	19	5.70%	508	1.89E-03
4	0.26%	23	8.60E-05	12	5.89%	525	1.95E-03	20	4.27%	380	1.41E-03
5	0.49%	44	1.62E-04	13	6.15%	548	2.03E-03	21	3.25%	289	1.08E-03
6	0.90%	80	2.98E-04	14	6.04%	538	2.00E-03	22	3.30%	294	1.09E-03
7	3.79%	338	1.25E-03	15	7.01%	624	2.32E-03	23	2.46%	219	8.14E-04
8	7.76%	691	2.57E-03	16	7.14%	636	2.36E-03	24	1.87%	167	6.19E-04
								Total		8,903	

Eterna Tower, 17 & 29 E. Santa Clara Street, San Jose - E. Santa Clara Street Traffic - TACs & PM2
AERMOD Risk Modeling Parameters and Maximum Concentrations
at Construction Cancer Risk and PM2.5 MEI Receptors, 6.1m receptor height (2nd floor)

Emission Year	2028
Receptor Information	Construction Cancer Risk & PM2.5 MEI receptors
Number of Receptors	2
Receptor Height	2nd Floor, 6.1 meters
Receptor Distances	At Construction MEI locations
Meteorological Conditions	
BAQMD San Jose Airport Met Data	2013-2017
Land Use Classification	Urban
Wind Speed	Variable
Wind Direction	Variable

Construction Cancer Risk MEI Maximum Concentrations

Meteorological Data Years	Concentration (µg/m3)		
	DPM	Exhaust TOG	Evaporative TOG
2013-2017	0.0008	0.1106	0.1323

Construction PM2.5 MEI Maximum Concentrations

Meteorological Data Years	PM2.5 Concentration (µg/m3)		
	Total PM2.5	Fugitive PM2.5	Vehicle PM2.5
2013-2017	0.07266	0.0681	0.0046

Eterna Tower, 17 & 29 E. Santa Clara Street, San Jose, CA - E. Santa Clara Street Cancer Risk & PM2.5 Impacts at Construction Cancer Risk & PM2.5 MEIs - 6.1 meter receptor height (2nd floor)
30 Year Residential Exposure

Cancer Risk Calculation Method

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

Where: CPF = Cancer potency factor $(mg/kg\text{-}day)^{-1}$
ASF = Age sensitivity factor for specified age group
ED = Exposure duration (years)
AT = Averaging time for lifetime cancer risk (years)
FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EF/365) x 10^{-6}

Where: C_{air} = concentration in air $(\mu g/m^3)$
DBR = daily breathing rate (L/kg body weight-day)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
10^{-6} = Conversion factor

Cancer Potency Factors $(mg/kg\text{-}day)^{-1}$

TAC	CPF
DPM	1.10E+00
Vehicle TOG Exhaust	6.28E-03
Vehicle TOG Evaporative	3.70E-04

Values

	Infant/Child			Adult
Age -->	3rd Trimester	0 - 2	2 - 16	16 - 30
Parameter				
ASF =	10	10	3	1
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
AT =	70	70	70	70
FAH =	0.85	0.85	0.72	0.73

* 95th percentile breathing rates for infants and 80th percentile for children and adults

Construction Cancer Risk by Year - Maximum Impact Receptor Location

Maximum - Exposure Information					Concentration (ug/m3)			Cancer Risk (per million)			TOTAL
Exposure Year	Exposure Duration (years)	Age	Year	Age Sensitivity Factor	DPM	Exhaust TOG	Evaporative TOG	DPM	Exhaust TOG	Evaporative TOG	
0	0.25	-0.25 - 0*	2028	10	0.0008	0.1106	0.1323	0.009	0.007	0.0005	0.02
1	1	0 - 1	2028	10	0.0008	0.1106	0.1323	0.113	0.088	0.0062	0.21
2	1	1 - 2	2029	10	0.0008	0.1106	0.1323	0.113	0.088	0.0062	0.21
3	1	2 - 3	2030	3	0.0008	0.1106	0.1323	0.015	0.012	0.0008	0.03
4	1	3 - 4	2031	3	0.0008	0.1106	0.1323	0.015	0.012	0.0008	0.03
5	1	4 - 5	2032	3	0.0008	0.1106	0.1323	0.015	0.012	0.0008	0.03
6	1	5 - 6	2033	3	0.0008	0.1106	0.1323	0.015	0.012	0.0008	0.03
7	1	6 - 7	2034	3	0.0008	0.1106	0.1323	0.015	0.012	0.0008	0.03
8	1	7 - 8	2035	3	0.0008	0.1106	0.1323	0.015	0.012	0.0008	0.03
9	1	8 - 9	2036	3	0.0008	0.1106	0.1323	0.015	0.012	0.0008	0.03
10	1	9 - 10	2037	3	0.0008	0.1106	0.1323	0.015	0.012	0.0008	0.03
11	1	10 - 11	2038	3	0.0008	0.1106	0.1323	0.015	0.012	0.0008	0.03
12	1	11 - 12	2039	3	0.0008	0.1106	0.1323	0.015	0.012	0.0008	0.03
13	1	12 - 13	2040	3	0.0008	0.1106	0.1323	0.015	0.012	0.0008	0.03
14	1	13 - 14	2041	3	0.0008	0.1106	0.1323	0.015	0.012	0.0008	0.03
15	1	14 - 15	2042	3	0.0008	0.1106	0.1323	0.015	0.012	0.0008	0.03
16	1	15 - 16	2043	3	0.0008	0.1106	0.1323	0.015	0.012	0.0008	0.03
17	1	16-17	2044	1	0.0008	0.1106	0.1323	0.002	0.002	0.0001	0.00
18	1	17-18	2045	1	0.0008	0.1106	0.1323	0.002	0.002	0.0001	0.00
19	1	18-19	2046	1	0.0008	0.1106	0.1323	0.002	0.002	0.0001	0.00
20	1	19-20	2047	1	0.0008	0.1106	0.1323	0.002	0.002	0.0001	0.00
21	1	20-21	2048	1	0.0008	0.1106	0.1323	0.002	0.002	0.0001	0.00
22	1	21-22	2049	1	0.0008	0.1106	0.1323	0.002	0.002	0.0001	0.00
23	1	22-23	2050	1	0.0008	0.1106	0.1323	0.002	0.002	0.0001	0.00
24	1	23-24	2051	1	0.0008	0.1106	0.1323	0.002	0.002	0.0001	0.00
25	1	24-25	2052	1	0.0008	0.1106	0.1323	0.002	0.002	0.0001	0.00
26	1	25-26	2053	1	0.0008	0.1106	0.1323	0.002	0.002	0.0001	0.00
27	1	26-27	2054	1	0.0008	0.1106	0.1323	0.002	0.002	0.0001	0.00
28	1	27-28	2055	1	0.0008	0.1106	0.1323	0.002	0.002	0.0001	0.00
29	1	28-29	2056	1	0.0008	0.1106	0.1323	0.002	0.002	0.0001	0.00
30	1	29-30	2057	1	0.0008	0.1106	0.1323	0.002	0.002	0.0001	0.00
Total Increased Cancer Risk								0.48	0.373	0.026	**0.88**

Maximum Hazard Index	Maximum Fugitive PM2.5	Total PM2.5
0.0002	0.07	0.07

* Third trimester of pregnancy

Eterna Tower, 17 & 29 E. Santa Clara Street, San Jose - E. Santa Clara Street Traffic - TACs & PM2.5
AERMOD Risk Modeling Parameters and Maximum Concentrations
On-Site 2nd Floor Residential Receptors (6.1 meter receptor height)

Emission Year	2023
Receptor Information	Maximum On-Site Receptor
Number of Receptors	23
Receptor Height	6.1 meters
Receptor Distances	6 meter grid spacing in residential area
Meteorological Conditions	
BAQMD San Jose Airport Met Data	2013-2017
Land Use Classification	Urban
Wind Speed	Variable
Wind Direction	Variable

2nd Floor Project Cancer Risk Maximum Concentrations

Meteorological Data Years	Concentration (µg/m3)		
	DPM	Exhaust TOG	Evaporative TOG
2013-2017	0.0012	0.1006	0.1204

2nd Floor Project PM2.5 Maximum Concentrations

Meteorological Data Years	PM2.5 Concentration (µg/m3)		
	Total PM2.5	Fugitive PM2.5	Vehicle PM2.5
2013-2017	0.0776	0.0727	0.0049

Eterna Tower, 17 & 29 E. Santa Clara Street, San Jose, CA - E. Santa Clara Street Cancer Risk
Impacts at On-Site 2nd Floor Residential Receptors - 6.1 meter receptor height
30 Year Residential Exposure

Cancer Risk Calculation Method

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

Where: CPF = Cancer potency factor $(mg/kg\text{-}day)^{-1}$
ASF = Age sensitivity factor for specified age group
ED = Exposure duration (years)
AT = Averaging time for lifetime cancer risk (years)
FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EF/365) x 10^{-6}

Where: C_{air} = concentration in air $(\mu g/m^3)$
DBR = daily breathing rate (L/kg body weight-day)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
10^{-6} = Conversion factor

Cancer Potency Factors $(mg/kg\text{-}day)^{-1}$

TAC	CPF
DPM	1.10E+00
Vehicle TOG Exhaust	6.28E-03
Vehicle TOG Evaporative	3.70E-04

Values

	Infant/Child			Adult
Age -->	3rd Trimester	0 - 2	2 - 16	16 - 30
Parameter				
ASF =	10	10	3	1
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
AT =	70	70	70	70
FAH =	0.85	0.85	0.72	0.73

* 95th percentile breathing rates for infants and 80th percentile for children and adults

Construction Cancer Risk by Year - Maximum Impact Receptor Location

Maximum - Exposure Information					Concentration (ug/m3)			Cancer Risk (per million)			TOTAL
Exposure Year	Exposure Duration (years)	Age	Year	Age Sensitivity Factor	DPM	Exhaust TOG	Evaporative TOG	DPM	Exhaust TOG	Evaporative TOG	
0	0.25	-0.25 - 0*	2031	10	0.0012	0.1006	0.1204	0.014	0.007	0.0005	0.02
1	1	0 - 1	2031	10	0.0012	0.1006	0.1204	0.168	0.080	0.0057	0.25
2	1	1 - 2	2032	10	0.0012	0.1006	0.1204	0.168	0.080	0.0057	0.25
3	1	2 - 3	2033	3	0.0012	0.1006	0.1204	0.022	0.011	0.0008	0.03
4	1	3 - 4	2034	3	0.0012	0.1006	0.1204	0.022	0.011	0.0008	0.03
5	1	4 - 5	2035	3	0.0012	0.1006	0.1204	0.022	0.011	0.0008	0.03
6	1	5 - 6	2036	3	0.0012	0.1006	0.1204	0.022	0.011	0.0008	0.03
7	1	6 - 7	2037	3	0.0012	0.1006	0.1204	0.022	0.011	0.0008	0.03
8	1	7 - 8	2038	3	0.0012	0.1006	0.1204	0.022	0.011	0.0008	0.03
9	1	8 - 9	2039	3	0.0012	0.1006	0.1204	0.022	0.011	0.0008	0.03
10	1	9 - 10	2040	3	0.0012	0.1006	0.1204	0.022	0.011	0.0008	0.03
11	1	10 - 11	2041	3	0.0012	0.1006	0.1204	0.022	0.011	0.0008	0.03
12	1	11 - 12	2042	3	0.0012	0.1006	0.1204	0.022	0.011	0.0008	0.03
13	1	12 - 13	2043	3	0.0012	0.1006	0.1204	0.022	0.011	0.0008	0.03
14	1	13 - 14	2044	3	0.0012	0.1006	0.1204	0.022	0.011	0.0008	0.03
15	1	14 - 15	2045	3	0.0012	0.1006	0.1204	0.022	0.011	0.0008	0.03
16	1	15 - 16	2046	3	0.0012	0.1006	0.1204	0.022	0.011	0.0008	0.03
17	1	16-17	2047	1	0.0012	0.1006	0.1204	0.003	0.002	0.0001	0.01
18	1	17-18	2048	1	0.0012	0.1006	0.1204	0.003	0.002	0.0001	0.01
19	1	18-19	2049	1	0.0012	0.1006	0.1204	0.003	0.002	0.0001	0.01
20	1	19-20	2050	1	0.0012	0.1006	0.1204	0.003	0.002	0.0001	0.01
21	1	20-21	2051	1	0.0012	0.1006	0.1204	0.003	0.002	0.0001	0.01
22	1	21-22	2052	1	0.0012	0.1006	0.1204	0.003	0.002	0.0001	0.01
23	1	22-23	2053	1	0.0012	0.1006	0.1204	0.003	0.002	0.0001	0.01
24	1	23-24	2054	1	0.0012	0.1006	0.1204	0.003	0.002	0.0001	0.01
25	1	24-25	2055	1	0.0012	0.1006	0.1204	0.003	0.002	0.0001	0.01
26	1	25-26	2056	1	0.0012	0.1006	0.1204	0.003	0.002	0.0001	0.01
27	1	26-27	2057	1	0.0012	0.1006	0.1204	0.003	0.002	0.0001	0.01
28	1	27-28	2058	1	0.0012	0.1006	0.1204	0.003	0.002	0.0001	0.01
29	1	28-29	2059	1	0.0012	0.1006	0.1204	0.003	0.002	0.0001	0.01
30	1	29-30	2060	1	0.0012	0.1006	0.1204	0.003	0.002	0.0001	0.01
Total Increased Cancer Risk								0.71	0.340	0.024	**1.07**

Maximum Hazard Index	Maximum Fugitive PM2.5	Total PM2.5
0.0002	0.07	0.08

* Third trimester of pregnancy

Eterna Tower, 17 & 29 E. Santa Clara Street, San Jose - E. Santa Clara Street Traffic - TACs & PM2.5
AERMOD Risk Modeling Parameters and Maximum Concentrations
On-Site 3rd Floor Residential Receptors (9.1 meter receptor height)

Emission Year	2023
Receptor Information	Maximum On-Site Receptor
Number of Receptors	23
Receptor Height	9.1 meters
Receptor Distances	6 meter grid spacing in residential area
Meteorological Conditions	
BAQMD San Jose Airport Met Data	2013-2017
Land Use Classification	Urban
Wind Speed	Variable
Wind Direction	Variable

4th Floor Project Cancer Risk Maximum Concentrations

Meteorological Data Years	Concentration (µg/m3)		
	DPM	Exhaust TOG	Evaporative TOG
2013-2017	0.0007	0.0521	0.0623

4th Floor Project PM2.5 Maximum Concentrations

Meteorological Data Years	PM2.5 Concentration (µg/m3)		
	Total PM2.5	Fugitive PM2.5	Vehicle PM2.5
2013-2017	0.04015	0.0376	0.0025

Eterna Tower, 17 & 29 E. Santa Clara Street, San Jose, CA - E. Santa Clara Street Cancer Risk
Impacts at On-Site 3rd Floor Residential Receptors - 9.1 meter receptor height
30 Year Residential Exposure

Cancer Risk Calculation Method

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

Where: CPF = Cancer potency factor $(mg/kg\text{-}day)^{-1}$
ASF = Age sensitivity factor for specified age group
ED = Exposure duration (years)
AT = Averaging time for lifetime cancer risk (years)
FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EF/365) x 10^{-6}

Where: C_{air} = concentration in air $(\mu g/m^3)$
DBR = daily breathing rate (L/kg body weight-day)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
10^{-6} = Conversion factor

Cancer Potency Factors $(mg/kg\text{-}day)^{-1}$

TAC	CPF
DPM	1.10E+00
Vehicle TOG Exhaust	6.28E-03
Vehicle TOG Evaporative	3.70E-04

Values

	Infant/Child			Adult
Age -->	3rd Trimester	0 - 2	2 - 16	16 - 30
Parameter				
ASF =	10	10	3	1
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
AT =	70	70	70	70
FAH =	0.85	0.85	0.72	0.73

* 95th percentile breathing rates for infants and 80th percentile for children and adults

Construction Cancer Risk by Year - Maximum Impact Receptor Location

Maximum - Exposure Information					Concentration (ug/m3)			Cancer Risk (per million)			
Exposure Year	Exposure Duration (years)	Age	Year	Age Sensitivity Factor	DPM	Exhaust TOG	Evaporative TOG	DPM	Exhaust TOG	Evaporative TOG	TOTAL
0	0.25	-0.25 - 0*	2031	10	0.0007	0.0521	0.0623	0.008	0.003	0.0002	0.01
1	1	0 - 1	2031	10	0.0007	0.0521	0.0623	0.094	0.042	0.0029	0.14
2	1	1 - 2	2032	10	0.0007	0.0521	0.0623	0.094	0.042	0.0029	0.14
3	1	2 - 3	2033	3	0.0007	0.0521	0.0623	0.012	0.006	0.0004	0.02
4	1	3 - 4	2034	3	0.0007	0.0521	0.0623	0.012	0.006	0.0004	0.02
5	1	4 - 5	2035	3	0.0007	0.0521	0.0623	0.012	0.006	0.0004	0.02
6	1	5 - 6	2036	3	0.0007	0.0521	0.0623	0.012	0.006	0.0004	0.02
7	1	6 - 7	2037	3	0.0007	0.0521	0.0623	0.012	0.006	0.0004	0.02
8	1	7 - 8	2038	3	0.0007	0.0521	0.0623	0.012	0.006	0.0004	0.02
9	1	8 - 9	2039	3	0.0007	0.0521	0.0623	0.012	0.006	0.0004	0.02
10	1	9 - 10	2040	3	0.0007	0.0521	0.0623	0.012	0.006	0.0004	0.02
11	1	10 - 11	2041	3	0.0007	0.0521	0.0623	0.012	0.006	0.0004	0.02
12	1	11 - 12	2042	3	0.0007	0.0521	0.0623	0.012	0.006	0.0004	0.02
13	1	12 - 13	2043	3	0.0007	0.0521	0.0623	0.012	0.006	0.0004	0.02
14	1	13 - 14	2044	3	0.0007	0.0521	0.0623	0.012	0.006	0.0004	0.02
15	1	14 - 15	2045	3	0.0007	0.0521	0.0623	0.012	0.006	0.0004	0.02
16	1	15 - 16	2046	3	0.0007	0.0521	0.0623	0.012	0.006	0.0004	0.02
17	1	16-17	2047	1	0.0007	0.0521	0.0623	0.002	0.001	0.0001	0.00
18	1	17-18	2048	1	0.0007	0.0521	0.0623	0.002	0.001	0.0001	0.00
19	1	18-19	2049	1	0.0007	0.0521	0.0623	0.002	0.001	0.0001	0.00
20	1	19-20	2050	1	0.0007	0.0521	0.0623	0.002	0.001	0.0001	0.00
21	1	20-21	2051	1	0.0007	0.0521	0.0623	0.002	0.001	0.0001	0.00
22	1	21-22	2052	1	0.0007	0.0521	0.0623	0.002	0.001	0.0001	0.00
23	1	22-23	2053	1	0.0007	0.0521	0.0623	0.002	0.001	0.0001	0.00
24	1	23-24	2054	1	0.0007	0.0521	0.0623	0.002	0.001	0.0001	0.00
25	1	24-25	2055	1	0.0007	0.0521	0.0623	0.002	0.001	0.0001	0.00
26	1	25-26	2056	1	0.0007	0.0521	0.0623	0.002	0.001	0.0001	0.00
27	1	26-27	2057	1	0.0007	0.0521	0.0623	0.002	0.001	0.0001	0.00
28	1	27-28	2058	1	0.0007	0.0521	0.0623	0.002	0.001	0.0001	0.00
29	1	28-29	2059	1	0.0007	0.0521	0.0623	0.002	0.001	0.0001	0.00
30	1	29-30	2060	1	0.0007	0.0521	0.0623	0.002	0.001	0.0001	0.00
Total Increased Cancer Risk								0.40	0.176	0.012	**0.58**

Maximum Hazard Index	Maximum Fugitive PM2.5	Total PM2.5
0.0001	0.04	0.04

* Third trimester of pregnancy

Bay Area Air Quality Management District

Risk & Hazard Stationary Source Inquiry Form

This form is required when users request stationary source data from BAAQMD

This form is to be used with the BAAQMD's Google Earth stationary source screening tables.

Click here for guidance on coducting risk & hazard screening, including roadways & freeways, refer to the District's Risk & Hazard Analysis flow chart.

Click here for District's Recommended Methods for Screening and Modeling Local Risks and Hazards document.

Table A: Requester Contact Information

Date of Request	**4/8/2021**
Contact Name	Casey Divine
Affiliation	Illingworth & Rodkin, Inc.
Phone	707-794-0400 x103
Email	cdivine@illingworthrodkin.com
Project Name	Eterna Tower
Address	17 & 29 E Santa Clara St
City	San Jose
County	Santa Clara
Type (residential, commercial, mixed use, industrial, etc.)	Mixed-Use
Project Size (# of units or building square feet)	200 du, 5-ksf retail
Comments:	

For Air District assistance, the following steps must be completed:

1. Complete all the contact and project information requested in **Table A** ncomplete forms will not be processed. Please include a project site map.

2. Download and install the free program Google Earth, **http://www.google.com/earth/download/ge/,** and then download the county specific Google Earth stationary source application files from the District's website, **http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES/Tools-and-Methodology.aspx.** The small points on the map represent stationary sources permitted by the District (Map A on right). These permitted sources include diesel back-up generators, gas stations, dry cleaners, boilers, printers, auto spray booths, etc. Click on a point to view the source's Information Table, including the name, location, and preliminary estimated cancer risk, hazard index, and PM2.5 concentration.

3. Find the project site in Google Earth by inputting the site's address in the Google Earth search box.

4. Identify stationary sources within at least a 1000ft radius of project site. Verify that the location of the source on the map matches with the source's address in the Information Table, by using the Google Earth address search box to confirm the source's address location. Please report any mapping errors to the District.

5. List the stationary source information in **Table B** lue section only.

6. Note that a small percentage of the stationa ve Health Risk Screening Assessment (HRSA) data INSTEAD of screening level data. These sources will be noted by an asterisk next to the Plant Name (*Map B on* right). If HRSA values are presented, these values have already been modeled and cannot be adjusted further.

7. Email this completed form to District staff. District staff will provide the most recent risk, hazard, and PM2.5 data that are available for the source(s). If this information or data are not available, source emissions data will be provided. Staff will respond to inquiries within three weeks.

Note that a public records request received for the same stationary source information will cancel the processing of your SSIF request.

Submit forms, maps, and questions to Areana Flores at 415-749-4616, or aflores@baaqmd.gov

Table B: Google Earth data

Distance from Receptor (feet) or MEI[1]	Plant No.	Facility Name	Address	Cancer Risk[2]	Hazard Risk[2]	$PM_{2.5}$[2]	Source No.[3]	Type of Source[4]	Fuel Code[5]	Status/Comments	Project MEI: Distance Adjustment Multiplier	Project MEI: Adjusted Cancer Risk Estimate	Project MEI: Adjusted Hazard Risk	Project MEI: Adjusted PM2.5
875	12969	Verizon Business - SBEZCA	55 So Market Street	46.29	0.07	0.03		Generators		2018 Dataset	0.05	2.31	0.004	0.002
650	19758	60 SOMA Fee Owner CA,LLC c/o Harvest Properties	60 So Market	6.34	--	0.01		Generators		2018 Dataset	0.08	0.51	#VALUE!	0.001
1000	20324	Judicial Council of California, JCC 43-B2	161 N 1st Street	124.87	0.19	0.16		Generators		2018 Dataset	0.04	4.99	0.01	0.01
875	20903	CoreSite	55 So Market Street	75.09	0.07	0.11		Generators		2018 Dataset	0.05	3.75	0.004	0.01
850	22415	Essex OSM Reit LLC	1 So Market Street	3.62	--	--		Generators		2018 Dataset	0.05	0.18	#VALUE!	#VALUE!
735	22612	Digital Realty	150 So 1st Street	1.41	--	--		Generators		2018 Dataset	0.07	0.10	#VALUE!	#VALUE!
300	23479	SV Towers Investments LLC, C/O Harvest Properties	75 E Santa Clara St	2.73	--	--		Generators		2018 Dataset	0.25	0.68	#VALUE!	#VALUE!
650	104124	Chevron #4259	147 E Santa Clara St	13.39	0.06	--		Gas Dispensing Facility		2018 Dataset	0.03	0.39	0.002	#VALUE!

Footnotes:

1. Maximally exposed individual

2. These Cancer Risk, Hazard Index, and PM2.5 columns represent the values in the Google Earth Plant Information Table.
3. Each plant may have multiple permits and sources.
4. Permitted sources include diesel back-up generators, gas stations, dry cleaners, boilers, printers, auto spray booths, etc.
5. Fuel codes: 98 = diesel, 189 = Natural Gas.
6. If a Health Risk Screening Assessment (HRSA) was completed for the source, the application number will be listed here.
7. The date that the HRSA was completed.
8. Engineer who completed the HRSA. For District purposes only.
9. All HRSA completed before 1/5/2010 need to be multiplied by an age sensitivity factor of 1.7.
10. The HRSA "Chronic Health" number represents the Hazard Index.
11. Further information about common sources:
    a. Sources that only include diesel internal combustion engines can be adjusted using the BAAQMD's Diesel Multiplier worksheet.
    b. The risk from natural gas boilers used for space heating when <25 MM BTU/hr would have an estimated cancer risk of one in a million or less, and a chronic hazard index of 0.003
    c. BAAQMD Reg 11 Rule 16 required that all co-residential (sharing a wall, floor, ceiling or is in the same building as a residential unit) dry cleaners cease use of perc on July 1, 2010. Therefore, there is no cancer risk, hazard or PM2.5 concentrations from co-residential dry cleaning businesses in the BAAQMD.
    d. Non co-residential dry cleaners must phase out use of perc by Jan. 1, 2023. Therefore, the risk from these dry cleaners does not need to be factored in over a 70-year period, but instead should
    e. Gas stations can be adjusted using BAAQMD's Gas Station Distance Mulitplier worksheet.
    f. Unless otherwise noted, exempt sources are considered insignificant. See BAAQMD Reg 2 Rule 1 for a list of exempt sources.
    g. This spray booth is considered to be insignificant.

Date last updated:
03/13/2018

Project Site

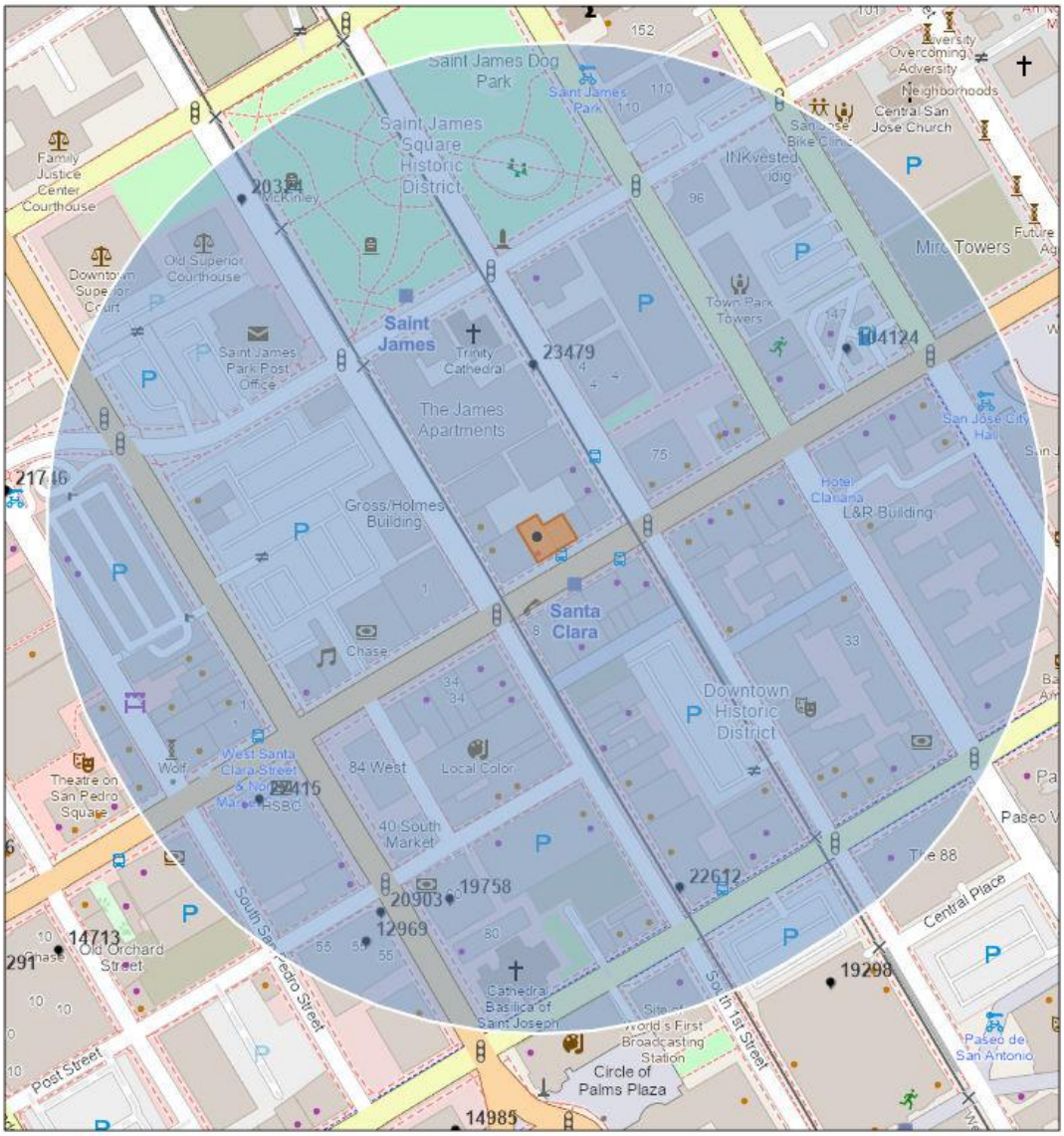
Distance from Receptor (feet) or MEI[1]	FACID (Plant No.)	Distance Adjustment Multiplier	Adjusted Cancer Risk Estimate	Adjusted Hazard Risk	Adjusted PM2.5
825	12969	0.05	2.31	0.004	0.002
650	19758	0.08	0.51	#VALUE!	0.001
825	20324	0.05	6.24	0.01	0.01
825	20903	0.05	3.75	0.004	0.01
700	22415	0.07	0.25	#VALUE!	#VALUE!
1000	22612	0.04	0.06	#VALUE!	#VALUE!
175	23479	0.50	1.37	#VALUE!	#VALUE!
630	104124	0.03	0.42	0.002	#VALUE!

Stationary Source Risk & Hazards Screening Report

Area of Interest (AOI) Information

Area : 3,495,235.08 ft²

Mar 30 2021 11:45:19 Pacific Daylight Time



Summary

Name	Count	Area(ft²)	Length(ft)
Permitted Facilities 2018	8	N/A	N/A

Permitted Facilities 2018

#	FACID	Name	Address	City	St
1	12969	Verizon Business - SBEZCA	55 So Market Street	San Jose	CA
2	19758	60 SOMA Fee Owner CA,LLC c/o Harvest Properties	60 So Market	San Jose	CA
3	20324	Judicial Council of California, JCC 43-B2	161 N 1st Street	San Jose	CA
4	20903	CoreSite	55 So Market Street	San Jose	CA
5	22415	Essex OSM Reit LLC	1 So Market Street	San Jose	CA
6	22612	Digital Realty	150 So 1st Street	San Jose	CA
7	23479	SV Towers Investments LLC, C/O Harvest Properties	75 E Santa Clara St	San Jose	CA
8	104124	Chevron #4259	147 E Santa Clara St	San Jose	CA

#	Zip	County	Cancer	Hazard	PM_25	Type	Count
1	95113	Santa Clara	46.290	0.070	0.030	Generators	1
2	95113	Santa Clara	6.340	0.000	0.010	Generators	1
3	95113	Santa Clara	124.870	0.190	0.160	Generators	1
4	95113	Santa Clara	75.090	0.070	0.110	Generators	1
5	95113	Santa Clara	3.620	0.000	0.000	Generators	1
6	95113	Santa Clara	1.410	0.000	0.000	Generators	1
7	95113	Santa Clara	2.730	0.000	0.000	Generators	1
8	95113	Santa Clara	13.390	0.060	0.000	Gas Dispensing Facility	1

Note: The estimated risk and hazard impacts from these sources would be expected to be substantially lower when site specific Health Risk Screening Assessments are conducted.

The screening level map is not recommended for evaluating sensitive land uses such as schools, senior centers, day cares, and health facilities.