ICON-ECHO MIXED-USE TOWERS 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 Icon-Echo Mixed-Use Towers 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 2.1-acre site is located along the westside of N. 4th Street between E. St. John Street and E. Santa Clara Street in downtown San José. The site is currently developed with an 8-pump gas station, 13,500 square feet (sf) of commercial/retail use, and a 6,860-sf church. The project proposes to demolish the existing uses and construct a 27-story mixed-use building consisting of 8,500-sf of ground-floor retail use, 525,000-sf of office use in the southern tower, and 415 residential units in the northern tower. One level of below-grade parking and four floors of above-grade parking for the residential and office uses, totaling 1,146 parking spaces, would be included in the proposed project.[2] The project would also include two 1,000-kilowatt (kW) generators powered by 1,340-horsepower (HP) diesel engines which are proposed on the ground floor of each residential and office towers. 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

[1] Bay Area Air Quality Management District, *CEQA Air Quality Guidelines*, May 2017.
[2] The project land uses have been updated since this analysis was conducted. Ten (10) commercial condominium units have been added to the retail use and the number of total parking spaces has increased from 1,146 spaces to 1,255 spaces. These project modifications would result barely measurable increases to the criteria pollutant emissions and health risk impacts, and would not change the project's impacts, as discussed further in the report.

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 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 adjacent senior living residences to the west of the project site and the multi-family residences to the east of the site across N. 4th Street. There are additional sensitive receptors at

[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.

farther distances to the north and south of the site. There are also children at the Little Einstein's Montessori Preschool (ages 2 - 5) and at the Horace Mann Preschool and Elementary School (ages 2 - 10) east of the project site. The project would introduce new sensitive receptors (i.e., new residents) to the area.

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

[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.

stationary diesel-fueled engines to reduce particulate matter emissions by 90 percent, a significant component of the plan involves application of emission control strategies to existing diesel vehicles and equipment. Many of the measures of the Diesel Risk Reduction Plan have been approved and adopted, including the federal on-road and non-road diesel engine emission standards for new engines, as well as adoption of regulations for low sulfur fuel in California.

CARB has adopted and implemented a number of regulations for stationary and mobile sources to reduce emissions of DPM. Several of these regulatory programs affect medium and heavy-duty diesel trucks that represent the bulk of DPM emissions from California highways. CARB regulations require on-road diesel trucks to be retrofitted with particulate matter controls or replaced to meet 2010 or later engine standards that have much lower DPM and $PM_{2.5}$ 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

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

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

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

Permits

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

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

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

New Source Review

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

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.

[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.

- 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.
- 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 traffic-related emissions of criteria air pollutants (and their precursors) from planned development that includes the Proposed Project. Stationary source operational emissions, if any are proposed as part of the project, would still be required to be analyzed. 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 µg/m^3	0.8 µg/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 Downtown

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

Strategy (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 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 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 were entered into CalEEMod as described in Table 2.

Table 2. Summary of Project Construction Land Use Inputs[11]

Project Land Uses	Size	Units	Square Feet	Acreage
Apartments High Rise	415	Dwelling Units	400,101	2.1
General Office Building	525.00	1,000 Square Feet	525,000	
Strip Mall	8.50	1,000 Square Feet	8,500	
Enclosed Parking with Elevator	1,146	Parking Spaces	470,000	

[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 was conducted. Ten (10) commercial condominium units have been added to the retail use, but the overall retail square footage has not changed. Also, the number of total parking spaces has increased from 1,146 spaces to 1,255 spaces. However, the overall total building square footage would remain the same and construction activities (i.e., schedule, equipment quantities, hours used) would not change with the updated project land uses. While emissions would increase slightly from these change, the project's criteria pollutant emissions and the community risk impacts (with mitigation) are far below the thresholds that any minor increase due to the land use changes would not cause the emissions and impacts to exceed the thresholds.

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 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 scenario, including equipment list and schedule, were based on data provided by the project applicant. 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 was provided. Since different equipment would have different estimates of the working days per phase, the hours per day for each phase was computed by dividing the total number of hours that the equipment would be used by the total number of days in that phase. The construction schedule assumed that the earliest possible start date would be January 2023 and the project would be built out 6 days a week over a period of approximately 36 months or 939 construction workdays. The earliest year of operation was assumed to be 2026.

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 EMFAC2014 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

[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).

(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 2023-2025 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]	68% LDA 5% LDT1 28% LDT2	33% MHDT 67% 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	1,012	-	1,291	8,000 tons of demolition hauling and 2,500 tons of pavement demolition. Default worker trips.
Site Preparation	286	-	-	CalEEMod default worker trips.
Grading	1,518	-	2,688	3,500-cy of import and 18,000-cy of export soil volumes. CalEEMod default worker trips.
Trenching	330	-	-	CalEEMod default worker trips.
Structure	176,088	55,176	-	CalEEMod default worker and vendor trips.
Building Construction	102,718	32,186	6,000	3,000 cement truck round trips. CalEEMod default worker and vendor trips.
Architectural Coating	19,019	-	-	CalEEMod default worker trips.
Sitework	645	-	30	15 asphalt truck round trips. CalEEMod default worker trips.

Notes: [1] Based on 2023-2025 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 unmitigated 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 unmitigated annualized project construction emissions would not exceed the BAAQMD significance thresholds during any year of construction.

Table 4. Construction Period Emissions - Unmitigated

Year	ROG	NOx	PM_{10} Exhaust	$PM_{2.5}$ Exhaust
Construction Emissions Per Year (Tons)				
2023	0.25	1.52	0.09	0.05
2024	0.37	2.62	0.14	0.10
2025	6.13	3.05	0.15	0.12
Average Daily Construction Emissions Per Year (pounds/day)				
2023 (311 construction workdays)	1.61	9.75	0.57	0.35
2024 (314 construction workdays)	2.34	16.70	0.89	0.65
2025 (313 construction workdays)	39.17	19.45	0.97	0.75
BAAQMD Thresholds (pounds per day)	*54* lbs./day	*54* lbs./day	*82* lbs./day	*54* lbs./day
Exceed Threshold?	No	No	No	No

Construction activities, particularly during site preparation and grading, would temporarily generate fugitive dust in the form of PM_{10} and $PM_{2.5}$. Sources of fugitive dust would include disturbed soils at the construction site and trucks carrying uncovered loads of soils. Unless properly controlled, vehicles leaving the site would deposit mud on local streets, which could be an additional source of airborne dust after it dries. The BAAQMD CEQA Air Quality Guidelines consider these impacts to be less than significant if best management practices are implemented to reduce these emissions. The DTS requires control measures to implement the standard BAAQMD CEQA Air Quality Guidelines best management practices to control dust and exhaust during construction. However, enhanced measures to control dust are required for this project's community health risk impact. *Mitigation Measure AQ-1 would implement BAAQMD's standard and enhanced best management practices*.

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

Measures to reduce fugitive dust (i.e., $PM_{2.5}$) emissions from construction are recommended to and ensure that health impacts to nearby sensitive receptors are minimized. During any construction period ground disturbance, the applicant shall ensure that the project contractor implements both basic and additional measures to control dust and exhaust. Implementation of the dust control measures recommended by BAAQMD and listed below would reduce the air quality impacts associated with grading and new construction to a less-than-significant level. The contractor shall implement the following enhanced best management practices:

1. All exposed surfaces shall be watered at a frequency adequate to maintain minimum soil moisture of 12 percent. Moisture content can be verified by lab samples or moisture probe.
2. All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
3. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
4. All vehicle speeds on unpaved roads shall be limited to 15 mph.

5. All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.
6. All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.
7. 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.
8. All excavation, grading, and/or demolition activities shall be suspended when average wind speeds exceed 20 mph.
9. Wind breaks (e.g., trees, fences) shall be installed on the windward side(s) of actively disturbed areas of construction. Wind breaks should have at maximum 50 percent air porosity.
10. Vegetative ground cover (e.g., fast-germinating native grass seed) shall be planted in disturbed areas as soon as possible and watered appropriately until vegetation is established.
11. The simultaneous occurrence of excavation, grading, and ground-disturbing construction activities on the same area at any one time shall be limited. Activities shall be phased to reduce the amount of disturbed surfaces at any one time.
12. All trucks and equipment, including their tires, shall be washed off prior to leaving the site.
13. Site accesses to a distance of 100 feet from the paved road shall be treated with a 6 to 12 inch compacted layer of wood chips, mulch, or gravel.
14. Sandbags or other erosion control measures shall be installed to prevent silt runoff to public roadways from sites with a slope greater than one percent.
15. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to two minutes. Clear signage shall be provided for construction workers at all access points.

Effectiveness of Mitigation Measure AQ-1

Mitigation Measure AQ-1 represents standard and enhanced mitigation measures that would achieve greater than an 80 percent reduction in on-site fugitive $PM_{2.5}$ emissions. These measures are consistent with recommendations in the BAAMQD CEQA Guidance for providing "best management practices" to control construction emissions.

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 2026 if construction begins in 2023. Emissions associated with build-out later than 2026 would be lower.

Traffic Information

CalEEMod allows the user to enter specific vehicle trip generation rates. Therefore, the project-specific daily trip generation rate provided by the traffic consultant was entered into the model.[13] The project would produce approximately 3,489 net daily trips when considering the *Residential & Office Mixed-Use Reduction, Residential & Retail Mixed-Use Reduction, Office & Retail Mixed-Use Reduction, Location Based Reduction, and VMT Reduction* adjustments applied in the traffic analysis. The daily trip generation was calculated using the size of the project and the adjusted total automobile trips. The Saturday and Sunday trip rates were adjusted by multiplying the ratio of the CalEEMod default rates for Saturday and Sunday trips to the default weekday rate with the project-specific daily weekday trip rate. The default trip lengths and trip types specified by CalEEMod were used.

EMFAC2021 Adjustment

The vehicle emission factors and fleet mix used in CalEEMod are based on 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.[14,15] The CalEEMod vehicle emission factors and fleet mix were updated with the emission

[13] Email correspondence with Fiona Phung, Project Manager, David J. Powers & Associates, Inc., May 6, 2021, Attachment: *ICON ECHO Volumes 5-5-21.xlsx*.
[14] 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
[15] 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:

rates and fleet mix from EMFAC2021, which were adjusted with the CARB EMFAC off-model adjustment factors. On road emission rates from 2023-2025 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.[16]

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. An emission factor of 178 pounds of CO_2 per megawatt of electricity produced was entered into CalEEMod, which is based on San Jose Clean Energy's 2020 emissions rate.[17]

The City of San José passed an ordinance in December 2020 that prohibits the use of natural gas infrastructure in new residential, office, and most retail-type buildings.[18] This ordinance applies to any new construction starting August 1, 2021. Natural gas use for the residential and office land uses were set to zero and assigned to electricity use. Natural gas use was assumed for the retail use as a commercial kitchen (which is allowed to use natural gas) could occupy the retail space.

Project Generator

The project proposes to include two stand-by emergency diesel generators on the ground floor of each residential and office towers. Each generator would be 1,000-kilowatts (kW) powered by a 1,340 horsepower (HP) diesel engine. The generators would be tested periodically and power the buildings in the event of a power failure. For modeling purposes, it was assumed that the generators 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 engines would typically be run for less than one hour. The engines would be required to meet CARB and EPA emission standards and consume commercially available California low-sulfur diesel fuel. Additionally, the generators would have to meet BAAQMD BACT requirements for IC Engine-Compression Ignition: Stationary Emergency, non-Agricultural, non-direct drive fire pump sources. Based on the size of the proposed generators, these include emission limits similar to U.S. EPA Tier 4 engines. The generators' emissions, including BACT engine requirements, 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

https://ww3.arb.ca.gov/msei/emfac_off_model_co2_adjustment_factors_06262020-final.pdf?utm_medium=email&utm_source=govdelivery

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

[17] San Jose Clean Energy Website, Standard Greensource service. Web: https://sanjosecleanenergy.org/commercial-rates/

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

prohibited by BAAQMD Regulation 6, Rule 3.[19] Therefore, the number of woodstoves and woodburning fireplaces in CalEEMod were set to zero and assigned as natural gas.

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.

Existing Uses

The existing site consist of a gas station, commercial/retail use, and a church. A CalEEMod model run was developed to compute emissions from use of the existing land uses as if it were operating in 2026. Inputs for the existing modeling scenario included 8 pumps entered as "Convenience Market with Gas Pumps", 13,500-sf entered as "Strip Mall", and 6,860-sf entered as "Place of Worship". The existing trip generation rates and other inputs were applied to the existing modeling in the same manner described for the proposed project. Historical energy usage was applied.

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.

Table 5. Operational Period Emissions

Scenario	ROG	NOx	PM_{10}	$PM_{2.5}$
2026 Annual Project Operational Emissions (*tons/year*)	6.46	1.92	3.16	0.82
2026 Existing Use Emissions (*tons/year*)	0.74	0.64	1.14	0.29
Net Annual Emissions (*tons/year*)	5.72	1.28	2.02	0.53
BAAQMD Thresholds (tons /year)	*10 tons*	*10 tons*	*15 tons*	*10 tons*
Exceed Threshold?	*No*	*No*	*No*	*No*
2026 Daily Project Operational Emissions (*pounds/day*)[1]	31.34	7.03	11.06	2.90
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).

[19] 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

Project construction activity would generate dust and equipment exhaust that would affect nearby sensitive receptors. The project would also include the installation of stand-by generators powered by diesel engines 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.

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 all existing residences to the east, west, and north 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 children at the Little Einstein's Montessori Preschool (ages 2 - 5) and at the Horace Mann Preschool and Elementary School (ages 2 - 10).

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

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 0.23 tons (452 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 0.08 tons (164 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, high school, daycare) in the vicinity of the project construction area. The AERMOD dispersion model is a BAAQMD-recommended model for use in modeling analysis of 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 23 feet (7 meter) intervals throughout the construction site. This resulted in 149 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

[21] DPM is identified by California as a toxic air contaminant due to the potential to cause cancer.
[22] Bay Area Air Quality Management District (BAAQMD), 2012, *Recommended Methods for Screening and Modeling Local Risks and Hazards, Version 3.0.* May.

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 between 7:00 a.m. to 7:00 p.m. Monday through Saturday per the project applicant's construction schedule. Annual DPM and $PM_{2.5}$ concentrations from construction activities during the 2023-2025 period were computed by the model. DPM and $PM_{2.5}$ concentrations were computed at nearby sensitive receptor locations. Receptor heights of 5 feet (1.5 meters), 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 first through third floors, respectively.[23] A receptor height of 3 feet (1 meter) was used to represent the breathing height of children at the preschools and elementary school.

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. Students at the preschools and elementary school were assumed to be 2 years and older. The child (ages 2 through 16 years old) cancer risk parameters were used to calculate the increased cancer risk for the preschools and elementary school students.

[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

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 MEI was located on the second floor (20 feet above ground) of the residence to the south of the project site opposite E. Santa Clara Street. The location of the MEI and nearby sensitive receptors are shown in Figure 1. Table 6 lists the community risks from construction at the location of the residential construction MEI. *Attachment 4* to this report includes the emission calculations used for the construction modeling and the cancer risk calculations.

Additionally, modeling was conducted to predict the cancer risks, non-cancer health hazards, and maximum $PM_{2.5}$ concentrations associated with construction activities at the nearby preschools and elementary school. The maximum increased cancer risks were adjusted using child exposure parameters. The uncontrolled cancer risk, $PM_{2.5}$ concentration, and HI at the nearby preschools and elementary school do not exceed their respective BAAQMD single-source significance thresholds. Project construction health risks at the maximum impacted school receptor are shown in Table 6.

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

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 Operational Traffic

An analysis was conducted of the impacts of TACs and $PM_{2.5}$ from local roadways increase in traffic due to the project. The project would generate 3,489 net daily trips.[24] A majority of these trips would be from light-duty, gasoline vehicles (i.e., passenger cars). To address the added community risks, the impact from this traffic was assessed using the CT-EMFAC 2017 emissions model, AERMOD dispersion model and cancer risk calculations following BAAQMD methodology described in *Attachment 1*. Figure 1 shows the modeled roadway segment.

[24] Email correspondence with Fiona Phung, Project Manager, David J. Powers & Associates, Inc., May 6, 2021, Attachment: *ICON ECHO Volumes 5-5-21.xlsx*.

Traffic Emissions

This analysis involved the development of DPM, organic TACs, and $PM_{2.5}$ roadway emissions in the project area using the Caltrans version of the EMFAC2017 emission model, known as CT-EMFAC2017.[25] 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 (e.g., 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 (2026 – project operational year), and season (annual).

Project operation was assumed to begin in 2026 or thereafter. To calculate the increased cancer risk from increased traffic volumes due to the project traffic, the community risks were 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 from roadway traffic was adjusted for 27 years of exposure (2026-2052). In order to estimate TAC and $PM_{2.5}$ emissions over the exposure period for calculating increased cancer risks to exiting residents from project traffic, the CT-EMFAC2017 model was used to develop vehicle emission factors for the year 2026. Year 2026 emissions were conservatively assumed as being representative of future conditions over the time period that cancer risks are evaluated (27 years) from the roadway traffic, since, as discussed above, overall vehicle emissions, and in particular diesel truck emissions will decrease in the future.

Traffic Dispersion Modeling Inputs

A conservative analysis was conducted based on project driveway locations where all project traffic emissions from on- and near-site travel were assumed to occur along N. 4th Street. This roadway is closest to the nearby sensitive receptors. The project's trip generation provided by the traffic consultant of 3,489 net daily trips was used to assess project traffic impacts.[27] The average hourly traffic distributions for Santa Clara County roadways were developed using the EMFAC model,[28] which were then applied to the trip volumes to obtain estimated hourly traffic volumes and emissions for the roadway. For all hours of the day, the average speed of 20 mph on N. 4th 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.

[25] Note that Caltrans has not yet updated their version of EMFAC to incorporate EMFAC2021 emission rates for traffic modeling studies.
[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] Email correspondence with Fiona Phung, Project Manager, David J. Powers & Associates, Inc., May 6, 2021, Attachment: *ICON ECHO Volumes 5-5-21.xlsx*.
[28] The Burden output from EMFAC2007, a previous version of CARB's EMFAC model, was used for this since the current web-based version of EMFAC2021 does not include Burden type output with hour by hour traffic volume information.

Dispersion Modeling

Operational traffic roadway travel emissions were modeled with the AERMOD model using a series of adjacent volume sources along a line (line volume sources) to represent traffic emissions on the roadway segment where all of the project traffic would occur. Five years (2013-2017) of hourly meteorological data from the San José Airport prepared for use with the AERMOD model by the BAAQMD, were used for the modeling. TAC and $PM_{2.5}$ concentrations for 2026 were calculated by the model at the same sensitive receptor locations with the same receptor heights of 20 feet (6.1 meters) and 20 feet (9.1 meters) used for the construction health risk modeling at the MEI location and 3 feet (1 meter) at the school receptors.

Figure 1 shows the project roadway segment modeled and residential MEI receptor location used in the modeling. Table 6 lists the project roadway risks and hazards at the location of the MEI and maximum school receptor. The emission rates and roadway calculations used in the project impact analysis are shown in *Attachment 4*.

Project Operational Stand-By Diesel Generators

The project proposes to include two stand-by emergency diesel generators on the ground floor of each residential and office towers. Site plans show the generator rooms extend to the top of the second floor. Therefore, it was assumed that the generators emissions would be release near the top of the second floor along the boundaries of the building's generator rooms (see Figure 1). Each generator would be 1,000-kW powered by a 1,340-HP diesel engine.

Operation of a diesel generator would be a source of TAC emissions. The generators 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 engines 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 these generators 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 and schools). The same receptors, breathing heights, and BAAQMD San José International 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.[29] 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 generators at the MEI, 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 generators at the location of residential MEI and maximum school receptor. The emissions and health risk calculations for the proposed generators are included in *Attachment 4*.

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 generators, 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 roadway and generators at the MEI over a 30-year period. The project MEI is identified as the sensitive receptor that is most impacted by the project's construction and operation.

For this project, the sensitive receptor identified in Figure 1 as the construction MEI is also the project MEI. At this location, the MEI would be exposed to 3 years of construction cancer risks and 27 years of operational (includes traffic and stand-by generators) 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 *Mitigation Measure AQ-1 and AQ-2*, 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.

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

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	**42.39 (infant)**	0.26	0.04
	Mitigated*	3.58 – 7.31 (infant)	0.05	<0.01
Project Traffic on N. 4th Street (Years 4-30)		0.04	0.01	<0.01
Project Generator, Two 1,000-kW, 1,340-HP (Years 4-30)		0.11	<0.01	<0.01
Total/Maximum Project Impact (Years 0-30)	Unmitigated	**42.54 (infant)**	0.26	0.04
	Mitigated*	3.73 – 7.46 (infant)	0.05	<0.01
BAAQMD Single-Source Threshold		***10***	***0.3***	***1.0***
Exceed Threshold?	Unmitigated	***Yes***	*No*	*No*
	Mitigated*	*No*	*No*	*No*
Most Affected Nearby Child – Little Einstein's Montessori Preschool Child Receptor				
Project Construction (Years 0-3)	Unmitigated	1.86 (child)	0.03	0.01
Project Traffic (Years 0-4)		0.01	<0.01	<0.01
Project Generators (Years 0-4)		0.03	<0.01	<0.01
Unmitigated Total/Maximum Project (Years 0-4)		1.90 (child)	0.06	0.01
BAAQMD Single-Source Threshold		***>10.0***	***>0.3***	***>1.0***
Exceed Threshold?	Unmitigated	*No*	*No*	*No*

* Construction equipment with Tier 4 Final or Tier 4 interim engines, electric cranes and generators, and enhanced BMPs as Mitigation.

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 and based on provided traffic information indicates 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 three stationary sources with the potential to affect the project MEI. 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 MEI. Community risk impacts from these sources upon the MEI 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),[30] traffic mix assigned by CT-EMFAC2017 for the county, year of analysis (2023 – 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 2023 (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 2023 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 Santa Clara Street was based on AM and PM peak-hour background traffic volumes for the nearby roadway provided by the project's traffic consultant.[31] Assuming a 1 percent per year increase, the predicted ADT on E. Santa Clara Street would be 16,978 vehicles. Average hourly traffic distributions for Santa Clara County roadways were developed using the EMFAC model,[32] 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 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.[33] 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 2023

[30] 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

[31] Email correspondence with Fiona Phung, Project Manager, David J. Powers & Associates, Inc., May 6, 2021, Attachment: *ICON ECHO Volumes 5-5-21.xlsx.*

[32] 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.

[33] BAAQMD. *Recommended Methods for Screening and Modeling Local Risks and Hazards*. May 2012

from traffic on E. Santa Clara Street were calculated using the model. Concentrations were calculated at the project MEI 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*.

BAAQMD Permitted Stationary Sources

Permitted stationary sources of air pollution near the project site were identified using BAAQMD's *Permitted Stationary Sources 2018* GIS website,[34] 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. Three sources were identified using this tool with two 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. After further review, source #104124 would be removed as part of the project and would, therefore, no longer present any risk or hazard impacts.

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*. Community risk impacts from the stationary sources upon the MEI are reported in Table 7.

Construction Risk Impacts from Nearby Developments

From the City's website,[35] the following planned or approved projects are located within 1,000 feet of the proposed project:

- **Miro (SJSC Towers)** – this project is located at 39 North 5th Street, which is located just east of the project site, in the northeastern corner of the North 4th Street/East Santa Clara Street intersection. 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.

- **4th Street Housing** – this project is in the northeast corner of the N. 4th Street/E. St. John Street intersection, within 100 feet of the project site. This project has been approved and would consist of a 23-story mixed-use building with approximately 10,733 square feet of

[34] BAAQMD, https://baaqmd.maps.arcgis.com/apps/webappviewer/index.html?id=2387ae674013413f987b1071715daa65
[35] City of San Jose, Private / Key Economic Development Projects Map, Web: https://gis.sanjoseca.gov/maps/devprojects/

commercial uses and up to 316 residential units. While the construction schedule is unknown at this time, construction could occur simultaneously.

- **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 about 100 feet south of the project site. This project is in the planning review phase and would consist of a would consist of a six-story mixed-use building with ground-level retail/restaurant uses and office space on the upper floors. While the construction schedule is unknown at this time, construction could occur simultaneously.

- **Hotel Clariana** – this project is located at 27 S. 4th Street, which is about 190 feet south 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 last for more than one year, and construction could occur simultaneously.

- **Fountain Alley Mixed-Use** – this project is located at 35 South 2nd Street and 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 and not expected to start before March 2023. Therefore, construction could occur simultaneously with the proposed project.

- **Fountain Alley Office** – this project is located at 26 S. 1st Street and is approximately 725 feet from 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. While the construction schedule is unknown at this time, construction could occur simultaneously or concurrently.

- **19 N. 2nd Street** – this project is located approximately 535 feet west of the project site. This mixed-use project would include 210 residential units and 37,240-sf of commercial space. This project is currently in the planning review phase. While the construction schedule is unknown at this time, construction could occur simultaneously.

- **Park View Towers** – this project is located in the northeast corner of the intersection at N. 1st Street and E. St. James Street, approximately 875 feet northwest of the project site. This mixed-use project would include construction of two towers with 220 residential units and up to 18,000 square feet of commercial space. This project has been approved but not constructed. While the construction schedule is unknown at this time, construction could occur simultaneously.

- **6th Street Project** – this project is located at 73 North 6th Street, approximately 630 feet east of the project site. This 10-story mixed-use building would include up to 197 residential units and approximately 8,000 square feet of ground floor retail. This project has been approved but not constructed. While the construction schedule is unknown at this time, construction could occur simultaneously.

- **27 West** – this project is located at 27 S. 1st Street, which is about 925 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 has begun and some phases could occur simultaneously with the proposed project.

- **Eterna Tower** – this project is located at 17 E. Santa Clara Street, which is about 630 feet west of the project site. This project is currently under review and consists of a mixed-use building with approximately 2,500-sf of commercial space and 200 residential units. While the construction schedule is unknown at this time, construction could occur simultaneously.

The mitigated construction risks and hazard impact values for certain developments were available from their air quality technical reports either conducted by *Illingworth & Rodin, Inc*. or on the City of San José Environmental Review website for Active EIRs,[36] Completed EIRs,[37] or Negative Declaration / Initial Studies.[38] For developments that did not have available construction impact results at the time of this study, it was assumed the construction risks would be less than the BAAQMD single-source thresholds for community risks and hazards. If the nearby developments were more than 500 feet from the project site, the construction risks were assumed to be half of the BAAQMD single-source thresholds due to the distance and dispersion between the source and receptors. For the purpose of this analysis, it was conservatively assumed the entire construction period from the proposed project would overlap with the nearby developments' construction schedule. This approach likely provides an overestimate of the community risk and hazard levels because it assumes that maximum impacts from the nearby development occurs concurrently with the proposed project at the proposed project's MEIs. The mitigated construction risks reported in that air quality assessment were included in the cumulative risks Table 7.

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 MEI). 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. The combined unmitigated annual $PM_{2.5}$ concentration would also exceed the BAAQMD cumulative-source threshold. With the implementation of *Mitigation Measure AQ-1 and AQ-2*, the project's cancer risk would be lowered to a level below the single-source thresholds. However, the combined annual $PM_{2.5}$ concentration, which includes unmitigated and mitigated impacts, could exceed its cumulative thresholds due to the concentration from the simultaneous construction of nearby developments. The cumulative threshold would be exceeded in the case where all construction activity occurs simultaneously. The cancer risk and HI, unmitigated and mitigated, does not exceed the cumulative thresholds.

[36] City of San José, *Active EIRs*, https://www.sanjoseca.gov/your-government/departments/planning-building-code-enforcement/planning-division/environmental-planning/environmental-review/active-eirs
[37] City of San José, *Completed EIRs*, https://www.sanjoseca.gov/your-government/departments/planning-building-code-enforcement/planning-division/environmental-planning/environmental-review/completed-eirs
[38] City of San José, *Negative Declaration / Initial Studies,* https://www.sanjoseca.gov/your-government/departments/planning-building-code-enforcement/planning-division/environmental-planning/environmental-review/negative-declaration-initial-studies

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

Source		Maximum Cancer Risk (per million)	$PM_{2.5}$ Concentration ($\mu g/m^3$)	Hazard Index
Project Impacts				
Total/Maximum Project Impact	Unmitigated	**42.54 (infant)**	0.26	0.04
	Mitigated	3.73 -7.46 (infant)	0.05	<0.01
BAAQMD Single-Source Threshold		***10***	***0.3***	***1.0***
Exceed Threshold?	Unmitigated	***Yes***	*No*	*No*
	Mitigated	*No*	*No*	*No*
Cumulative Operational Sources				
E. Santa Clara Street, ADT 16,978		1.45	0.10	<0.01
San Jose New City Hall (Facility ID #15267, Generator), MEI at 400 feet		0.92	0.03	<0.01
V Towers Investments LLC, C/O Harvest Properties (Facility ID #23479, Generator), MEI at 500 feet		0.33	-	-
Cumulative Temporary Construction Sources				
4th Street Housing Mitigated Construction Emissions – 750 feet north		<4.30	<0.06	<0.01
BDG Mixed-Use Mitigated Construction Emissions – same location		<5.00	<0.15	<0.50
Hotel Clariana Mitigated Construction Emissions – 100 feet south		<8.80	<0.07	<0.01
Fountain Alley Mixed-use Mitigated Construction Emissions – 700 feet west		<5.11	<0.10	<0.01
Fountain Alley Office Mitigated Construction Emissions – 840 feet west		<4.50	<0.03	<0.01
19 N. 2nd Street Mitigated Construction Emissions – 720 feet west		<5.00	<0.15	<0.50
Park View Towers Mitigated Construction Emissions – +1,000 feet northwest		<5.00	<0.15	<0.50
6th Street Mitigated Construction Emissions – 800 feet northeast		<5.00	<0.15	<0.50
27 West Mitigated Construction Emissions – 1,000 feet west		<2.40	<0.05	<0.01
Eterna Tower Mitigated Construction Emissions – 800 feet west		<5.00	<0.15	<0.50
Combined Sources	Unmitigated	<95.35	**<1.45**	<2.61
	Mitigated	<56.54 – <60.27	**<1.24**	<2.58
BAAQMD Cumulative Source Threshold		***100***	***0.8***	***10.0***
Exceed Threshold?	Unmitigated	*No*	***Yes***	*No*
	Mitigated	*No*	***Yes***	*No*

Mitigation Measure AQ-2: 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 final or interim 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 77 percent reduction in particulate matter exhaust in comparison to uncontrolled equipment.

    b. Use of alternatively fueled or electric equipment.

2. Stationary cranes and construction generator sets shall be powered by electricity.

Alternatively, the applicant could develop a separate feasible plan that reduces on- and near-site construction diesel particulate matter emissions by a minimum of 77 percent or greater. Such a plan would have to be reviewed and approved by the City.

Effectiveness of Mitigation Measure AQ-1 and AQ-2

CalEEMod was used to compute emissions associated with this mitigation measure assuming that all equipment met U.S. EPA Tier 4 Final engines standards, electric stationary cranes and non-diesel-powered generator sets were used along with enhanced BAAQMD best management practices for construction were included. With these implemented, the project's construction cancer risk levels (assuming infant exposure) would be reduced by 91 percent to 3.73 chances per million using Tier 4 final engines or by 82 percent to 7.46 chances per million using Tier 4 interim engines. The project's annual $PM_{2.5}$ concentrations would be reduced by 81 percent to 0.05 $\mu g/m^3$. The project's risk impacts would no longer exceed the BAAQMD single-source significance thresholds. This would reduce the cumulative cancer risk and to less than 56.54 or 60.27 chances per million and the cumulative $PM_{2.5}$ concentration risk to less than 1.24 $\mu g/m^3$. The $PM_{2.5}$ concentration would still exceed the cumulative threshold due to the overwhelming contribution of non-project sources.

Mitigation Measure AQ-1 and *AQ-2* represent the best available measures to reduce project construction period emissions. The $PM_{2.5}$ concentration from existing sources alone exceeds the cumulative threshold at 1.06 $\mu g/m^3$. Cumulative risks exceed the $PM_{2.5}$ concentration threshold because of the overwhelming influence of the potentially simultaneous nearby developments at the MEIs. The project's mitigated $PM_{2.5}$ concentration only represents 4 percent of the total mitigated cumulative concentration. In addition, according to BAAQMD health risks would be

less-than-significant to the MEI if the risks from the project are reduced below the single-source thresholds.[39] Therefore, the project would not substantially contribute to the total cumulative $PM_{2.5}$ concentration. The project would not be cumulatively considerable and no additional mitigation would be required on the part of the project to mitigate the exceedance of the cumulative source threshold for annual $PM_{2.5}$ concentration. Note that the project would apply best practices in reducing construction emissions, including those of $PM_{2.5}$.

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.[40]

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 MEI. The project set of receptors were placed in the northern residential tower the project area and were spaced every 23 feet (7 meters). Project residences in the project site would be located on the third floor and higher of the proposed residential tower. Roadway impacts were modeled at receptor heights of 25 feet (7.6 meters) and 35 feet (10.6 meters) representing sensitive receptors on the third and fourth floors. Project sensitive receptors higher than the fourth floor would have roadway impacts less than those on the fourth 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 third-floor receptors of the unit in the southeast corner of the project's northern residential tower closest to the roadway. Cancer risks associated with E. Santa Clara 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*.

[39] Correspondence with Areana Flores, MSc, Environmental Planner, BAAQMD, February 23, 2021.
[40] 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.

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 MEI. Table 8 shows the health risk assessment results from the stationary sources.

Construction Risk Impacts from Nearby Developments

The same mitigated construction risks from the nearby developments were included in the cumulative table for the on-site project sensitive receptors. However, the on-site project sensitive receptors would only be exposed to a portion of the construction from the nearby developments, as opposed to the project MEI which could be exposed to the entire portion of the nearby developments' construction. Therefore, the construction risks from the nearby developments would be lower at the proposed on-site project sensitive receptors.

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 combined sources upon the project site are reported in Table 8. The TAC sources are compared against the BAAQMD single-source threshold and then combined and compared against the BAAQMD cumulative-source threshold. As shown, the maximum cancer risk, and annual $PM_{2.5}$ concentrations, and HI from the nearby fixed sources (roadways and stationary sources) do not exceed the single-source thresholds and the combined fixed group alone would not exceed the cumulative thresholds. The maximum cancer risk, annual $PM_{2.5}$ concentrations, and HI from nearby temporary sources (nearby developments construction) would not exceed the single-source thresholds, but the combined temporary group alone would exceed the $PM_{2.5}$ concentration threshold. Given that the construction of nearby developments is temporary, the construction schedule for many of these developments are unknown and may not overlap with this project, and the nearby developments impact results at the project site would be less than what is shown in the table, no additional project design features (i.e., air filtration) would be recommended since the project would comply with City policies over the lifetime of the project.

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
Fixed Operational Sources			
Santa Clara Street, ADT 16,978	0.59	0.04	<0.01
San Jose New City Hall (Facility ID #15267, Generator), Project Site at 450 feet	0.80	0.03	<0.01
V Towers Investments LLC, C/O Harvest Properties (Facility ID #23479, Generator), Project Site at 315 feet	0.60	-	-
Temporary Construction Sources			
4th Street Housing Mitigated Construction Emissions – 100 feet northeast	<4.30	<0.06	<0.01
BDG Mixed-Use Mitigated Construction Emissions – 100 feet south	<5.00	<0.15	<0.50
Hotel Clariana Mitigated Construction Emissions – 190 feet south	<8.80	<0.07	<0.01
Fountain Alley Mixed-use Mitigated Construction Emissions – 575 feet southwest	<5.11	<0.10	<0.01
Fountain Alley Office Mitigated Construction Emissions – 725 feet southwest	<4.50	<0.03	<0.01
19 N. 2nd Street Mitigated Construction Emissions – 535 feet west	<5.00	<0.15	<0.50
Park View Towers Mitigated Construction Emissions – 875 feet northwest	<5.00	<0.15	<0.50
6th Street Mitigated Construction Emissions – 630 feet east	<5.00	<0.15	<0.50
27 West Mitigated Construction Emissions – 925 feet southwest	<2.40	<0.05	<0.01
Eterna Tower Mitigated Construction Emissions – 630 feet west	<5.00	<0.15	<0.50
BAAQMD Single-Source Threshold	***10***	***0.3***	***1.0***
Exceed Threshold?	***Yes***	***Yes***	*No*
Cumulative Total	<52.10	**<1.13**	<2.57
BAAQMD Cumulative Source Threshold	***100***	***0.8***	***10.0***
Exceed Threshold?	*No*	***Yes***	*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 MEI 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.[41] 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.[42] 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.[43] 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.

[41] 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.
[42] CARB, 2015. *Risk Management Guidance for Stationary Sources of Air Toxics*. July 23.
[43] 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: Icon/ Echo

Complete ALL Portions in Yellow

See Equipment Type TAB for type, horsepower and load factor

Project Size

415 Dwelling Units

2.10 total project acres disturbed

400,101 s.f. residential

8,500 s.f. retail

525,000 s.f. office/commercial

0 s.f. other, specify:

470,000 s.f. parking garage — 1146 spaces

0 s.f. parking lot — 0 spaces

Construction Hours- Request for Saturday work days: 7 am to 7 pm

Pile Driving? Y/N? No

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

IF YES (if BOTH separate values) -->

Kilowatts/Horsepower: ___1,000 KW_____

Fuel Type: _____Diesel_____

Location in project (Plans Desired if Available):

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	Annual Hours	Comments
	Demolition	**Start Date:**	**1/3/2023**	**Total phase:**	**44**			**Overall Import/Export Volumes**
		End Date:	**3/4/2023**					
5	Concrete/Industrial Saws	81	0.73	10	11	2.5	550	**Demolition Volume**
2	Excavators	158	0.38	10	11	2.5	220	Square footage of buildings to be demolished
1	Rubber-Tired Dozers	247	0.4	10	11	2.5	110	(*or* total tons to be hauled)
1	Tractors/Loaders/Backhoes	97	0.37	10	11	2.5	110	_10,000_ square feet *or*
								_8,000_ Hauling volume (tons)
								Any pavement demolished and hauled? _2,500_ tons
	Site Preparation	**Start Date:**	**3/4/2023**	**Total phase:**	**22**			
		End Date:	**4/3/2023**					
1	Graders	187	0.41	10	7	3.3	73.3	
2	Rubber Tired Dozers	247	0.4	10	7	3.3	146.7	
2	Tractors/Loaders/Backhoes	97	0.37	10	7	3.3	146.7	
	Grading / Excavation	**Start Date:**	**4/3/2023**	**Total phase:**	**66**			
		End Date:	**7/2/2023**					**Soil Hauling Volume**
2	Excavators	158	0.38	10	13	2.0	264	Export volume = _18,000_ cubic yards?
1	Graders	187	0.41	10	13	2.0	132	Import volume = _3,500_ cubic yards?
1	Rubber Tired Dozers	247	0.4	10	13	2.0	132	
4	Concrete/Industrial Saws	81	0.73	10	13	2.0	528	
1	Tractors/Loaders/Backhoes	97	0.37	10	13	2.0	132	
	Trenching/Foundation	**Start Date:**	**7/2/2023**	**Total phase:**	**66**			
		End Date:	**9/30/2023**					
1	Tractor/Loader/Backhoe	97	0.37	10	33	5	330	
1	Excavators	158	0.38	10	33	5	330	
	Structure	**Start Date:**	**9/30/2023**	**Total phase:**	**264**			
		End Date:	**9/24/2024**					
1	Crane	97	0.37	12	264	12	3168	
	Building - Exterior	**Start Date:**	**9/24/2024**	**Total phase:**	**154**			**Cement Trucks? _3,000_ Total Round-Trips**
		End Date:	**4/22/2025**					
1	Cranes	231	0.29	12	139	10.8	1663.2	Electric? (Y/N) _Y__ Otherwise assumed diesel
10	Forklifts	89	0.2	12	123	9.6	14784	Liquid Propane (LPG)? (Y/N) _N__ Otherwise Assumed diesel
4	Generator Sets	84	0.74	12	154	12	7392	Or temporary line power? (Y/N) _Y__
3	Tractors/Loaders/Backhoes	97	0.37	12	77	6	2772	
8	Welders	46	0.45	12	39	3	3696	
	Building - Interior/Architectural Coating	**Start Date:**	**4/22/2025**	**Total phase:**	**143**			
		End Date:	**11/3/2025**					
10	Air Compressors	78	0.48	10	72	5	7150	
12	Aerial Lift	62	0.31	10	36	2.5	4290	
	Paving	**Start Date:**	**11/3/2025**	**Total phase:**	**44**			
		Start Date:	**1/2/2026**					
2	Cement and Mortar Mixers	9	0.56	10	9	2	176	
1	Pavers	130	0.42	10	9	2	88	**Asphalt? _350__ cubic yards or __15__ round trips?**
1	Paving Equipment	132	0.36	10	9	2	88	
1	Rollers	80	0.38	10	9	2	88	
1	Tractors/Loaders/Backhoes	97	0.37	10	9	2	88	

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 horepower or load factor, as appropriate

Complete one sheet for each project component

Traffic Consultant Trip Gen						CalEEMod Default			
Land Use	Units	Size	Daily Trips	New Trips	Weekday Trip Gen	Weekday	Sat	Sun
Apartmetns High Rise	DU	415	1847	1280	***3.08***	4.45	4.53	3.59
Residential & Office Mixed-Use Reduction	3%		*-55*			*Rev*	***3.14***	***2.49***
Residential & Retail Mixed-Use Reduction	15%		*-48*					
Location-Based Reduction5 A4	22%		*-384*					
VMT Reduction	5.87%		*-80*					
General Office Building	KSF	525	5114	3380	***6.44***	9.74	2.21	0.7
Residential & Office Mixed-Use Reduction	15%		*-55*			*Rev*	***1.46***	***0.46***
Office & Retail Mixed-Use Reduction	3%		*-161*					
Location-Based Reduction5 A4	31%		*-1518*					
Retail	KSF	8.5	321	93	***10.94***	44.32	42.04	20.43
Residential & Retail Mixed-Use Reduction	15%		*-48*			*Rev*	***10.38***	***5.04***
Office & Retail Mixed-Use Reduction	3%		*-161*					
Location-Based Reduction5 A4	17%		*-19*					
Existing Land Uses								
Gas Station & Store	el Positions	8	1643	723	***90.38***	322.5	322.5	322.5
Passby Reduction	56%		*-920*			*Rev*	***90.38***	***90.38***
Church	kSF	6.86	48	48	***6.95***	6.95	5.99	27.63
						Rev	***5.99***	***27.63***
Retail	kSF	13.5	510	493	***36.52***	44.32	42.04	20.43
Passby Reduction	56%		*-17*			*Rev*	***34.64***	***16.83***

ICON ECHO Mixed-Use Development VMT Trip Generation Estimates

				Daily		AM Peak Hour						PM Peak Hour					
						Pk-Hr	Split		Trip			Pk-Hr	Split		Trip		
Land Use	% of Vehicle Mode Share	% Reduction	Size	Rate	Trip	Rate	In	Out	In	Out	Total	Rate	In	Out	In	Out	Total
Proposed Land Uses																	
ITE LU # 222 - Multifamily Housing (High-Rise)[1]			415 Dwelling Units	4.45	1,847	0.31	24%	76%	31	98	129	0.36	61%	39%	91	58	149
- Residential & Office Mixed-Use Reduction [2]		3%			*-55*				*-1*	*-3*	*-4*				*-3*	*-2*	*-5*
- Residential & Retail Mixed-Use Reduction [3]		15%			*-48*				*0*	*-1*	*-1*				*-3*	*-2*	*-5*
- Location-Based Reduction [5]	*78%*	22%			*-384*				*-7*	*-21*	*-28*				*-19*	*-12*	*-31*
- VMT Reduction [6]		5.87%			*-80*				*-1*	*-4*	*-5*				*-4*	*-2*	*-6*
Residential Sub-Total					**1,280**				**22**	**69**	**91**				**62**	**40**	**102**
ITE LU # 710 - General Office Building [1]			525,000 Square Feet	9.74	5,114	1.16	86%	14%	524	85	609	1.15	16%	84%	97	507	604
- Residential & Office Mixed-Use Reduction [2]		15%			*-55*				*-3*	*-1*	*-4*				*-2*	*-3*	*-5*
- Office & Retail Mixed-Use Reduction [4]		3%			*-161*				*-2*	*-3*	*-5*				*-9*	*-8*	*-17*
- Location-Based Reduction [5]	*69%*	31%			*-1,518*				*-161*	*-25*	*-186*				*-27*	*-154*	*-181*
Office Sub-Total					**3,380**				**358**	**56**	**414**				**59**	**342**	**401**
ITE LU # 820 - Shopping Center [1]			8,500 Square Feet	37.75	321	0.94	62%	38%	5	3	8	3.81	48%	52%	15	17	32
- Residential & Retail Mixed-Use Reduction [3]		15%			*-48*				*-1*	*0*	*-1*				*-2*	*-3*	*-5*
- Office & Retail Mixed-Use Reduction [4]		3%			*-161*				*-3*	*-2*	*-5*				*-8*	*-9*	*-17*
- Location-Based Reduction [5]	*83%*	17%			*-19*				*0*	*0*	*0*				*-1*	*-1*	*-2*
Retail Sub-Total					**93**				**1**	**1**	**2**				**4**	**4**	**8**
Baseline Project Trips (Before Reductions)					7,282				560	186	746				203	582	785
Proposed Project Trips (After Reductions)					**4,753**				**381**	**126**	**507**				**125**	**386**	**511**
Existing Land Uses																	
ITE LU # 945 - Gas Station with Convenience Market [1]			8 Vehicle Fueling Pos	205.36	1,643	12.47	51%	49%	51	49	100	13.99	51%	49%	57	55	112
Passby Reduction [7]				*56%*	*-920*	*62%*			*-32*	*-30*	*-62*	*56%*			*-32*	*-31*	*-63*
ITE LU # 560 - Church[1]			6,860 Square Feet	6.95	48	0.33	60%	40%	1	1	2	0.49	45%	55%	1	2	3
ITE LU # 820 - Shopping Center [1]			13,500 Square Feet	37.75	510	0.94	62%	38%	8	5	13	3.81	48%	52%	24	27	51
Passby Reduction [7]					*-17*							*34%*			*-8*	*-9*	*-17*
Total Existing Trips					**1,264**				**28**	**25**	**53**				**42**	**44**	**86**
Net Project Trips (Proposed - Existing)					**3,489**				**353**	**101**	**454**				**83**	**342**	**425**

Notes:

[1] Source: *ITE Trip Generation Manual, 10th Edition 2017* , average trip generation rates.

[2] As prescribed by the Transportation Impact Analysis Guidelines from VTA (October 2014), the maximum trip reduction for a mixed-use development project with residential and office is equal to 3% off the smaller trip generator.

[3] As prescribed by the Transportation Impact Analysis Guidelines from VTA (October 2014), the maximum trip reduction for a mixed-use development project with residential and retail is equal to 15% off the smaller trip generator.

[4] As prescribed by the Transportation Impact Analysis Guidelines from VTA (October 2014), the maximum trip reduction for a mixed-use development project with employment and employee-serving retail uses is equal to 3% off the office component. However, a 3% reduction of office trips would exceed the total number of trips generated by the retail use during the AM peak hour. Therefore, a conservative 50% reduction off the retail trips was applied.

[5] The project site is located within an urban high-transit area based on the City of San Jose VMT Evaluation Tool (February 29, 2019). The location-based vehicle mode shares are obtained from Table 6 of the City of San Jose Transportation Analysis Handbook (April 2018). The trip reductions are based on the percent of mode share for all of the other modes of travel besides vehicle.

[6] VMT per capita for residential use. Existing and project VMTs were estimated using the City of San Jose VMT Evaluation Tool. The existing VMT per capita is 7.66, and the project VMT per capita is 7.21. It is assumed that every percent reduction in VMT per-capita is equivalent to one percent reduction in peak-hour vehicle trips.

[7] AM and PM peak-hour passerby reduction rates obtained from the *ITE Trip Generation Handbook, Third Edition* .

Construction Criteria Air Pollutants						
Unmitigated	ROG	NOX	PM10 Exhaust	PM2.5 Exhaust	**CO2e**	
Year	Tons				MT	
Construction Equipment						
2023	0.08	0.74	0.03	0.03	122.61	
2024	0.20	1.87	0.08	0.08	321.09	
2025	5.98	2.33	0.10	0.09	485.82	
EMFAC						
2023	0.17	0.78	0.05	0.02	747.82	
2024	0.16	0.75	0.06	0.02	742.77	
2025	0.16	0.72	0.05	0.02	728.87	
Total Construction Emissions by Year						
2023	0.25	1.52	0.09	0.05	870.44	
2024	0.37	2.62	0.14	0.10	1063.86	
2025	6.13	3.05	0.15	0.12	1214.68	
	Total Construction Emissions					
Tons	6.75	7.19	0.38	0.27	3148.97	
Pounds/Workdays	*Average Daily Emissions*				Workdays	
2023	1.61	9.75	0.57	0.35		**311**
2024	2.34	16.70	0.89	0.65		**314**
2025	39.17	19.45	0.97	0.75		**313**
Threshold - lbs/day	**54.0**	**54.0**	**82.0**	**54.0**		
	Total Construction Emissions					
Pounds	43.12	45.90	2.43	1.74	0.00	
Average	14.38	15.31	0.81	0.58	0.00	939
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	6.46	1.92	3.16	0.82		
	Existing Use Emissions					
Total	0.74	0.64	1.14	0.29		
	Net Annual Operational Emissions					
Tons/year	5.72	1.28	2.02	0.53		
Threshold - Tons/year	**10.0**	**10.0**	**15.0**	**10.0**		
	Average Daily Emissions					
Pounds Per Day	31.34	7.03	11.06	2.90		
Threshold - lbs/day	**54.0**	**54.0**	**82.0**	**54.0**		

Category	**CO2e**			
	Project	Existing	Project 2030	Existing
Area	21.86			
Energy	1084.21			
Mobile	3370.68			
Waste	346.04			
Water	149.00			
TOTAL	4971.79	0.00	0.00	0.00
Net GHG Emissions		4971.79		0.00
Service Population	0.00			
Per Capita Emissions		#DIV/0!		#DIV/0!
	0 units			
CA DOF 2019 =	0 pphh			

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

Icon-Echo MU Towers, San Jose - Construction Emissions

Santa Clara County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	525.00	1000sqft	0.00	525,000.00	0
Enclosed Parking with Elevator	1,146.00	Space	0.00	470,000.00	0
Apartments High Rise	415.00	Dwelling Unit	2.10	400,101.00	1187
Strip Mall	8.50	1000sqft	0.00	8,500.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	58
Climate Zone	4			**Operational Year**	2026
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**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, traffic, project description

Construction Phase - Provided construction scheudle

Off-road Equipment - Provided construction equip & hours

Off-road Equipment - Provided construction equip & hours

Off-road Equipment - Provided construction equip & hours

Off-road Equipment - Provided construction equip & hours

Off-road Equipment - Provided construction equip & hours

Off-road Equipment - Provided construction equip & hours

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Off-road Equipment - Provided construction equip & hours

Off-road Equipment - Provided construction equip & hours

Trips and VMT - EMFAC2021 0 trips, pavement demo = 2,500 tons, building const = 3,000 round cement truck trips, paving = 15 round asphalt trips

Demolition - existing demo hauling = 8,000 tons

Grading - grading = 3,500-cy import, 18,000-cy export

Vehicle Trips - Traffic provided trip gen w/ reductions

Woodstoves - No wood burning fire places, natural gas

Energy Use - San Jose Natural Gas Ban effective dec 2021, convert natural gas to electricity

Water And Wastewater - WWTP 100% aerobic no septic tanks or lagoons in downtown San Jose

Construction Off-road Equipment Mitigation - enhacned BMPs, Tier 4 final engines, electric cranes and generators mitigation

Energy Mitigation - SJCE 100% renewable no carbon electricity

Fleet Mix - EMFAC2021 Fleet Mix Santa Clara County 2026

Stationary Sources - Emergency Generators and Fire Pumps - two, 1,000-kw generators with 1,340-hp diesel engines, 50 hrs/yr

Stationary Sources - Emergency Generators and Fire Pumps EF - >1,000-hp generator requires BACT mitigation, NOx = 0.5, PM = 0.02

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Parking	0.00	28,200.00
tblAreaCoating	Area_Parking	0	28200
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	12
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	FuelType	Diesel	Electrical
tblConstEquipMitigation	FuelType	Diesel	Electrical
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	12.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	10.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	9.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	10.00

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tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
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	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	9.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	8.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	10.00	143.00
tblConstructionPhase	NumDays	220.00	264.00
tblConstructionPhase	NumDays	220.00	154.00
tblConstructionPhase	NumDays	20.00	44.00
tblConstructionPhase	NumDays	6.00	66.00
tblConstructionPhase	NumDays	10.00	43.00
tblConstructionPhase	NumDays	3.00	22.00

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

tblEnergyUse	NT24E	3,054.10	3,055.00
tblEnergyUse	NT24NG	3,155.00	0.00
tblEnergyUse	NT24NG	0.06	0.00
tblEnergyUse	T24E	70.89	72.42
tblEnergyUse	T24NG	5,226.68	0.00
tblEnergyUse	T24NG	16.14	0.00
tblEnergyUse	T24NG	2.34	0.00
tblFireplaces	FireplaceWoodMass	228.80	0.00
tblFireplaces	NumberGas	62.25	132.80
tblFireplaces	NumberWood	70.55	0.00
tblFleetMix	HHD	0.00	0.02
tblFleetMix	HHD	0.00	0.02
tblFleetMix	HHD	0.00	0.02
tblFleetMix	HHD	0.00	0.02
tblFleetMix	LDA	0.00	0.54
tblFleetMix	LDA	0.00	0.54
tblFleetMix	LDA	0.00	0.54
tblFleetMix	LDA	0.00	0.54
tblFleetMix	LDT1	0.00	0.03
tblFleetMix	LDT1	0.00	0.03
tblFleetMix	LDT1	0.00	0.03
tblFleetMix	LDT1	0.00	0.03
tblFleetMix	LDT2	0.00	0.23
tblFleetMix	LDT2	0.00	0.23
tblFleetMix	LDT2	0.00	0.23
tblFleetMix	LDT2	0.00	0.23
tblFleetMix	LHD1	0.00	0.02
tblFleetMix	LHD1	0.00	0.02
tblFleetMix	LHD1	0.00	0.02

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tblFleetMix	LHD1	0.00	0.02
tblFleetMix	LHD2	0.00	6.1120e-003
tblFleetMix	LHD2	0.00	6.1120e-003
tblFleetMix	LHD2	0.00	6.1120e-003
tblFleetMix	LHD2	0.00	6.1120e-003
tblFleetMix	MCY	0.00	3.5210e-003
tblFleetMix	MCY	0.00	3.5210e-003
tblFleetMix	MCY	0.00	3.5210e-003
tblFleetMix	MCY	0.00	3.5210e-003
tblFleetMix	MDV	0.00	0.12
tblFleetMix	MDV	0.00	0.12
tblFleetMix	MDV	0.00	0.12
tblFleetMix	MDV	0.00	0.12
tblFleetMix	MH	0.00	6.4900e-004
tblFleetMix	MH	0.00	6.4900e-004
tblFleetMix	MH	0.00	6.4900e-004
tblFleetMix	MH	0.00	6.4900e-004
tblFleetMix	MHD	0.00	0.01
tblFleetMix	MHD	0.00	0.01
tblFleetMix	MHD	0.00	0.01
tblFleetMix	MHD	0.00	0.01
tblFleetMix	OBUS	0.00	1.7230e-003
tblFleetMix	OBUS	0.00	1.7230e-003
tblFleetMix	OBUS	0.00	1.7230e-003
tblFleetMix	OBUS	0.00	1.7230e-003
tblFleetMix	SBUS	0.00	5.3000e-004
tblFleetMix	SBUS	0.00	5.3000e-004
tblFleetMix	SBUS	0.00	5.3000e-004
tblFleetMix	SBUS	0.00	5.3000e-004

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tblFleetMix	UBUS	0.00	1.2470e-003
tblFleetMix	UBUS	0.00	1.2470e-003
tblFleetMix	UBUS	0.00	1.2470e-003
tblFleetMix	UBUS	0.00	1.2470e-003
tblGrading	MaterialExported	0.00	18,000.00
tblGrading	MaterialImported	0.00	3,500.00
tblStationaryGeneratorsPumpsEF	NOX_EF	4.56	0.50
tblStationaryGeneratorsPumpsEF	PM10_EF	0.15	0.02
tblStationaryGeneratorsPumpsEF	PM2_5_EF	0.15	0.02
tblStationaryGeneratorsPumpsUse	HorsePowerValue	0.00	1,340.00
tblStationaryGeneratorsPumpsUse	HoursPerYear	0.00	50.00
tblStationaryGeneratorsPumpsUse	NumberOfEquipment	0.00	2.00
tblTripsAndVMT	HaulingTripNumber	791.00	0.00
tblTripsAndVMT	HaulingTripNumber	2,688.00	0.00
tblTripsAndVMT	WorkerTripNumber	133.00	0.00
tblTripsAndVMT	WorkerTripNumber	667.00	0.00
tblTripsAndVMT	WorkerTripNumber	667.00	0.00
tblTripsAndVMT	WorkerTripNumber	23.00	0.00
tblTripsAndVMT	WorkerTripNumber	23.00	0.00
tblTripsAndVMT	WorkerTripNumber	15.00	0.00
tblTripsAndVMT	WorkerTripNumber	13.00	0.00
tblTripsAndVMT	WorkerTripNumber	5.00	0.00
tblVehicleTrips	ST_TR	4.53	3.14
tblVehicleTrips	ST_TR	2.21	1.46
tblVehicleTrips	ST_TR	42.04	10.38
tblVehicleTrips	SU_TR	3.59	2.49
tblVehicleTrips	SU_TR	0.70	0.46
tblVehicleTrips	SU_TR	20.43	5.04
tblVehicleTrips	WD_TR	4.45	3.08

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tblVehicleTrips	WD_TR	9.74	6.44
tblVehicleTrips	WD_TR	44.32	10.94
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
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	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	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					
2023	0.0775	0.7397	0.6984	1.4000e-003	0.2071	0.0334	0.2405	0.0722	0.0314	0.1036	0.0000	121.8736	121.8736	0.0295	0.0000	122.6108
2024	0.2029	1.8721	1.9714	3.7100e-003	0.0000	0.0844	0.0844	0.0000	0.08	0.0800	0.0000	319.4654	319.4654	0.0648	0.0000	321.0859
2025	5.9779	2.3296	3.4119	5.6400e-003	0.0000	0.0979	0.0979	0.0000	0.0949	0.0949	0.0000	484.0687	484.0687	0.0699	0.0000	485.8157

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

Maximum	**5.9779**	**2.3296**	**3.4119**	**5.6400e-003**	**0.2071**	**0.0979**	**0.2405**	**0.0722**	**0.0949**	**0.1036**	**0.0000**	**484.0687**	**484.0687**	**0.0699**	**0.0000**	**485.8157**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	0.0127	0.0551	0.6951	1.1200e-003	0.0808	1.70E-03	0.0825	0.0141	1.7000e-003	0.0158	0.0000	97.1596	97.1596	0.0215	0.0000	97.6969
2024	0.0157	0.1548	0.8413	1.1700e-003	0.0000	1.79E-03	1.7900e-003	0.0000	1.7900e-003	1.7900e-003	0.0000	99.1199	99.1199	0.0276	0.0000	99.8104
2025	5.7445	0.5149	2.4761	3.6800e-003	0.0000	5.31E-03	5.3100e-003	0.0000	5.3100e-003	5.3100e-003	0.0000	314.9294	314.9294	0.0555	0.0000	316.3166
Maximum	**5.7445**	**0.5149**	**2.4761**	**3.6800e-003**	**0.0808**	**5.3100e-003**	**0.0825**	**0.0141**	**5.3100e-003**	**0.0158**	**0.0000**	**314.9294**	**314.9294**	**0.0555**	**0.0000**	**316.3166**

	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	**7.76**	**85.33**	**34.02**	**44.47**	**61.00**	**95.92**	**78.82**	**80.50**	**95.73**	**91.78**	**0.00**	**44.76**	**44.76**	**36.29**	**0.00**	**44.72**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**1-3-2023**	**4-2-2023**	0.2908	0.0294
2	**4-3-2023**	**7-2-2023**	0.2490	0.0267
3	**7-3-2023**	**10-2-2023**	0.0797	0.0114
4	**10-3-2023**	**1-2-2024**	0.2050	0.0000
5	**1-3-2024**	**4-2-2024**	0.1870	0.0000
6	**4-3-2024**	**7-2-2024**	0.1870	0.0000

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7	**7-3-2024**	**10-2-2024**	0.3251	0.0154
8	**10-3-2024**	**1-2-2025**	1.3906	0.1579
9	**1-3-2025**	**4-2-2025**	1.2704	0.1544
10	**4-3-2025**	**7-2-2025**	2.7088	2.2171
11	**7-3-2025**	**9-30-2025**	2.9802	2.7220
		Highest	2.9802	2.7220

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/3/2023	3/3/2023	5	44	
2	Site Preparation	Site Preparation	3/4/2023	4/4/2023	5	22	
3	Grading	Grading	4/3/2023	7/3/2023	5	66	
4	Trenching	Trenching	7/2/2023	10/2/2023	5	66	
5	Structure	Building Construction	9/30/2023	10/3/2024	5	264	
6	Building Construction	Building Construction	9/24/2024	4/25/2025	5	154	
7	Architectural Coating	Architectural Coating	4/22/2025	11/6/2025	5	143	
8	Paving	Paving	11/3/2025	12/31/2025	5	43	

Acres of Grading (Site Preparation Phase): 13.61

Acres of Grading (Grading Phase): 16.5

Acres of Paving: 0

Residential Indoor: 810,205; Residential Outdoor: 270,068; Non-Residential Indoor: 800,250; Non-Residential Outdoor: 266,750; Striped Parking Area:

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor

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Demolition	Concrete/Industrial Saws	5	2.50	81	0.73
Demolition	Excavators	2	2.50	158	0.38
Demolition	Rubber Tired Dozers	1	2.50	247	0.40
Demolition	Tractors/Loaders/Backhoes	1	2.50	97	0.37
Site Preparation	Graders	1	3.30	187	0.41
Site Preparation	Rubber Tired Dozers	2	3.30	247	0.40
Site Preparation	Scrapers	0	0.00	367	0.48
Site Preparation	Tractors/Loaders/Backhoes	2	3.30	97	0.37
Grading	Concrete/Industrial Saws	4	2.00	81	0.73
Grading	Excavators	2	2.00	158	0.38
Grading	Graders	1	2.00	187	0.41
Grading	Rubber Tired Dozers	1	2.00	247	0.40
Grading	Tractors/Loaders/Backhoes	1	2.00	97	0.37
Trenching	Excavators	1	5.00	158	0.38
Trenching	Tractors/Loaders/Backhoes	1	5.00	97	0.37
Structure	Cranes	1	12.00	231	0.29
Structure	Forklifts	0	0.00	89	0.20
Structure	Generator Sets	0	0.00	84	0.74
Structure	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Structure	Welders	0	0.00	46	0.45
Building Construction	Cranes	1	10.80	231	0.29
Building Construction	Forklifts	10	9.60	89	0.20
Building Construction	Generator Sets	4	12.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	6.00	97	0.37
Building Construction	Welders	8	3.00	46	0.45
Architectural Coating	Aerial Lifts	12	2.50	63	0.31
Architectural Coating	Air Compressors	10	5.00	78	0.48
Paving	Cement and Mortar Mixers	2	2.00	9	0.56
Paving	Pavers	1	2.00	130	0.42

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Paving	Paving Equipment	1	2.00	132	0.36
Paving	Rollers	1	2.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	2.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	9	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	5	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	9	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
Structure	1	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	26	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	22	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Alternative Fuel for Construction Equipment

Use Cleaner Engines for Construction Equipment

Use Soil Stabilizer

Replace Ground Cover

Water Exposed Area

Water Unpaved Roads

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - 2023

Unmitigated Construction On-Site

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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					
Fugitive Dust					0.0856	0.0000	0.0856	0.0130	0.0000	0.0130	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0198	0.1697	0.2072	3.7000e-004		8.1800e-003	8.1800e-003		7.8800e-003	7.8800e-003	0.0000	31.7590	31.7590	5.2000e-003	0.0000	31.8891
Total	**0.0198**	**0.1697**	**0.2072**	**3.7000e-004**	**0.0856**	**8.1800e-003**	**0.0938**	**0.0130**	**7.8800e-003**	**0.0208**	**0.0000**	**31.7590**	**31.7590**	**5.2000e-003**	**0.0000**	**31.8891**

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

Icon-Echo MU Towers, 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					
Fugitive Dust					0.0334	0.0000	0.0334	2.5300e-003	0.0000	2.5300e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.0000e-003	0.0174	0.2290	3.7000e-004		5.3000e-004	5.3000e-004		5.3000e-004	5.3000e-004	0.0000	31.7590	31.7590	5.2000e-003	0.0000	31.8891
Total	**4.0000e-003**	**0.0174**	**0.2290**	**3.7000e-004**	**0.0334**	**5.3000e-004**	**0.0339**	**2.5300e-003**	**5.3000e-004**	**3.0600e-003**	**0.0000**	**31.7590**	**31.7590**	**5.2000e-003**	**0.0000**	**31.8891**

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 - 2023

Unmitigated Construction On-Site

Icon-Echo MU Towers, 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					
Fugitive Dust					0.0619	0.0000	0.0619	0.0308	0.0000	0.0308	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.3300e-003	0.0997	0.0561	1.4000e-004		4.2800e-003	4.2800e-003		3.9400e-003	3.9400e-003	0.0000	11.9292	11.9292	3.8600e-003	0.0000	12.0257
Total	**9.3300e-003**	**0.0997**	**0.0561**	**1.4000e-004**	**0.0619**	**4.2800e-003**	**0.0662**	**0.0308**	**3.9400e-003**	**0.0348**	**0.0000**	**11.9292**	**11.9292**	**3.8600e-003**	**0.0000**	**12.0257**

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

Icon-Echo MU Towers, 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					
Fugitive Dust					0.0241	0.0000	0.0241	6.0100e-003	0.0000	6.0100e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.6600e-003	7.2000e-003	0.0695	1.4000e-004		2.2000e-004	2.2000e-004		2.2000e-004	2.2000e-004	0.0000	11.9292	11.9292	3.8600e-003	0.0000	12.0257
Total	**1.6600e-003**	**7.2000e-003**	**0.0695**	**1.4000e-004**	**0.0241**	**2.2000e-004**	**0.0244**	**6.0100e-003**	**2.2000e-004**	**6.2300e-003**	**0.0000**	**11.9292**	**11.9292**	**3.8600e-003**	**0.0000**	**12.0257**

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 - 2023

Unmitigated Construction On-Site

Icon-Echo MU Towers, 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					
Fugitive Dust					0.0597	0.0000	0.0597	0.0284	0.0000	0.0284	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0242	0.2207	0.2325	4.4000e-004		0.0100	0.0100		9.5400e-003	9.5400e-003	0.0000	38.4715	38.4715	7.5800e-003	0.0000	38.6609
Total	**0.0242**	**0.2207**	**0.2325**	**4.4000e-004**	**0.0597**	**0.0100**	**0.0697**	**0.0284**	**9.5400e-003**	**0.0380**	**0.0000**	**38.4715**	**38.4715**	**7.5800e-003**	**0.0000**	**38.6609**

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

Icon-Echo MU Towers, 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					
Fugitive Dust					0.0233	0.0000	0.0233	5.5500e-003	0.0000	5.5500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.9600e-003	0.0215	0.2675	4.4000e-004		6.6000e-004	6.6000e-004		6.6000e-004	6.6000e-004	0.0000	38.4714	38.4714	7.5800e-003	0.0000	38.6609
Total	**4.9600e-003**	**0.0215**	**0.2675**	**4.4000e-004**	**0.0233**	**6.6000e-004**	**0.0239**	**5.5500e-003**	**6.6000e-004**	**6.2100e-003**	**0.0000**	**38.4714**	**38.4714**	**7.5800e-003**	**0.0000**	**38.6609**

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 Trenching - 2023

Unmitigated Construction On-Site

Icon-Echo MU Towers, 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					
Off-Road	7.0100e-003	0.0636	0.1132	1.7000e-004		3.1300e-003	3.1300e-003		2.8800e-003	2.8800e-003	0.0000	15.0000	15.0000	4.8500e-003	0.0000	15.1213
Total	**7.0100e-003**	**0.0636**	**0.1132**	**1.7000e-004**		**3.1300e-003**	**3.1300e-003**		**2.8800e-003**	**2.8800e-003**	**0.0000**	**15.0000**	**15.0000**	**4.8500e-003**	**0.0000**	**15.1213**

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

Icon-Echo MU Towers, San Jose - Santa Clara County, Annual

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

Category	tons/yr										MT/yr					
Off-Road	2.0900e-003	9.0700e-003	0.1291	1.7000e-004		2.8000e-004	2.8000e-004		2.8000e-004	2.8000e-004	0.0000	15.0000	15.0000	4.8500e-003	0.0000	15.1213
Total	**2.0900e-003**	**9.0700e-003**	**0.1291**	**1.7000e-004**		**2.8000e-004**	**2.8000e-004**		**2.8000e-004**	**2.8000e-004**	**0.0000**	**15.0000**	**15.0000**	**4.8500e-003**	**0.0000**	**15.1213**

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**

3.6 Structure - 2023

Unmitigated Construction On-Site

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

Icon-Echo MU Towers, San Jose - Santa Clara County, Annual

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

Off-Road	0.0171	0.1860	0.0894	2.8000e-004		7.7700e-003	7.7700e-003		7.1500e-003	7.1500e-003	0.0000	24.7139	24.7139	7.9900e-003	0.0000	24.9138
Total	**0.0171**	**0.1860**	**0.0894**	**2.8000e-004**		**7.7700e-003**	**7.7700e-003**		**7.1500e-003**	**7.1500e-003**	**0.0000**	**24.7139**	**24.7139**	**7.9900e-003**	**0.0000**	**24.9138**

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	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Icon-Echo MU Towers, 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	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction Off-Site

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

3.6 Structure - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0495	0.5230	0.2649	8.6000e-004		0.0218	0.0218		0.0200	0.0200	0.0000	75.6610	75.6610	0.0245	0.0000	76.2728
Total	**0.0495**	**0.5230**	**0.2649**	**8.6000e-004**		**0.0218**	**0.0218**		**0.0200**	**0.0200**	**0.0000**	**75.6610**	**75.6610**	**0.0245**	**0.0000**	**76.2728**

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Icon-Echo MU Towers, San Jose - Santa Clara County, Annual

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	0.0000	0.0000	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**

Icon-Echo MU Towers, 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**

3.7 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1534	1.3490	1.7066	2.8500e-003		0.0627	0.0627		0.0600	0.0600	0.0000	243.8044	243.8044	0.0404	0.0000	244.8131
Total	**0.1534**	**1.3490**	**1.7066**	**2.8500e-003**		**0.0627**	**0.0627**		**0.0600**	**0.0600**	**0.0000**	**243.8044**	**243.8044**	**0.0404**	**0.0000**	**244.8131**

Unmitigated Construction Off-Site

Date: 6/8/2021 3:41 PM

Icon-Echo MU Towers, 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	0.0157	0.1548	0.8413	1.1700e-003		1.7900e-003	1.7900e-003		1.7900e-003	1.7900e-003	0.0000	99.1199	99.1199	0.0276	0.0000	99.8104
Total	**0.0157**	**0.1548**	**0.8413**	**1.1700e-003**		**1.7900e-003**	**1.7900e-003**		**1.7900e-003**	**1.7900e-003**	**0.0000**	**99.1199**	**99.1199**	**0.0276**	**0.0000**	**99.8104**

Mitigated Construction Off-Site

Icon-Echo MU Towers, 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**

3.7 Building Construction - 2025

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	0.1668	1.4733	1.9869	3.3300e-003		0.0633	0.0633		0.0605	0.0605	0.0000	285.0362	285.0362	0.0465	0.0000	286.1992
Total	**0.1668**	**1.4733**	**1.9869**	**3.3300e-003**		**0.0633**	**0.0633**		**0.0605**	**0.0605**	**0.0000**	**285.0362**	**285.0362**	**0.0465**	**0.0000**	**286.1992**

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

Icon-Echo MU Towers, San Jose - Santa Clara County, Annual

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

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	0.0184	0.1810	0.9835	1.3700e-003		2.0900e-003	2.0900e-003		2.0900e-003	2.0900e-003	0.0000	115.8971	115.8971	0.0321	0.0000	116.7004
Total	**0.0184**	**0.1810**	**0.9835**	**1.3700e-003**		**2.0900e-003**	**2.0900e-003**		**2.0900e-003**	**2.0900e-003**	**0.0000**	**115.8971**	**115.8971**	**0.0321**	**0.0000**	**116.7004**

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					

Icon-Echo MU Towers, San Jose - Santa Clara County, Annual

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**

3.8 Architectural Coating - 2025

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	5.6964					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1109	0.8221	1.3705	2.2200e-003		0.0331	0.0331		0.0329	0.0329	0.0000	191.6868	191.6868	0.0211	0.0000	192.2141
Total	**5.8073**	**0.8221**	**1.3705**	**2.2200e-003**		**0.0331**	**0.0331**		**0.0329**	**0.0329**	**0.0000**	**191.6868**	**191.6868**	**0.0211**	**0.0000**	**192.2141**

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					

Icon-Echo MU Towers, San Jose - Santa Clara County, Annual

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**

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	5.6964					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0288	0.3298	1.4335	2.2200e-003		3.1000e-003	3.1000e-003		3.1000e-003	3.1000e-003	0.0000	191.6866	191.6866	0.0211	0.0000	192.2139
Total	**5.7252**	**0.3298**	**1.4335**	**2.2200e-003**		**3.1000e-003**	**3.1000e-003**		**3.1000e-003**	**3.1000e-003**	**0.0000**	**191.6866**	**191.6866**	**0.0211**	**0.0000**	**192.2139**

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					

Icon-Echo MU Towers, San Jose - Santa Clara County, Annual

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**

3.9 Paving - 2025

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	3.8000e-003	0.0342	0.0545	9.0000e-005		1.5700e-003	1.5700e-003		1.4600e-003	1.4600e-003	0.0000	7.3457	7.3457	2.2700e-003	0.0000	7.4024
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**3.8000e-003**	**0.0342**	**0.0545**	**9.0000e-005**		**1.5700e-003**	**1.5700e-003**		**1.4600e-003**	**1.4600e-003**	**0.0000**	**7.3457**	**7.3457**	**2.2700e-003**	**0.0000**	**7.4024**

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					

Icon-Echo MU Towers, San Jose - Santa Clara County, Annual

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**

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	9.6000e-004	4.1500e-003	0.0591	9.0000e-005		1.3000e-004	1.3000e-004		1.3000e-004	1.3000e-004	0.0000	7.3457	7.3457	2.2700e-003	0.0000	7.4024
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**9.6000e-004**	**4.1500e-003**	**0.0591**	**9.0000e-005**		**1.3000e-004**	**1.3000e-004**		**1.3000e-004**	**1.3000e-004**	**0.0000**	**7.3457**	**7.3457**	**2.2700e-003**	**0.0000**	**7.4024**

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					

Icon-Echo MU Towers, San Jose - Santa Clara County, Annual

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**

Icon-Echo MU Towers, San Jose - Santa Clara County, Annual

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

Icon-Echo MU Towers, San Jose - Operational Emissions

Santa Clara County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	525.00	1000sqft	0.00	525,000.00	0
Enclosed Parking with Elevator	1,146.00	Space	0.00	470,000.00	0
Apartments High Rise	415.00	Dwelling Unit	2.10	400,101.00	1187
Strip Mall	8.50	1000sqft	0.00	8,500.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	58
Climate Zone	4			**Operational Year**	2026
Utility Company	San Jose Clean Energy				
CO2 Intensity (lb/MWhr)	178	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - SJCE 2020 Rates

Land Use - Provided land uses - construction worksheet, traffic, project description

Construction Phase - Provided construction scheudle

Off-road Equipment - Provided construction equip & hours

Off-road Equipment - Provided construction equip & hours

Off-road Equipment - Provided construction equip & hours

Off-road Equipment - Provided construction equip & hours

Off-road Equipment - Provided construction equip & hours

Off-road Equipment - Provided construction equip & hours

Date: 3/30/2022 1:57 PM

Icon-Echo MU Towers, San Jose - Santa Clara County, Annual

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

Off-road Equipment - Provided construction equip & hours

Off-road Equipment - Provided construction equip & hours

Trips and VMT - EMFAC2021 0 trips, pavement demo = 2,500 tons, building const = 3,000 round cement truck trips, paving = 15 round asphalt trips

Demolition - existing demo hauling = 8,000 tons

Grading - grading = 3,500-cy import, 18,000-cy export

Vehicle Trips - Traffic provided trip gen w/ reductions

Vehicle Emission Factors - EMFAC2021 Vehicle Emissions Factors Santa Clara County 2026

Woodstoves - No wood burning fire places, natural gas

Energy Use - San Jose Natural Gas Ban effective dec 2021, convert natural gas to electricity, retail still use natural gas

Water And Wastewater - WWTP 100% aerobic no septic tanks or lagoons in downtown San Jose

Construction Off-road Equipment Mitigation - enhacned BMPs, Tier 4 final engines, electric cranes and generators mitigation

Energy Mitigation -

Fleet Mix - EMFAC2021 Fleet Mix Santa Clara County 2026

Stationary Sources - Emergency Generators and Fire Pumps - two, 1,000-kw generators with 1,340-hp diesel engines, 50 hrs/yr

Stationary Sources - Emergency Generators and Fire Pumps EF - >1,000-hp generator requires BACT mitigation, NOx = 0.5, PM = 0.02

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	12
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	FuelType	Diesel	Electrical
tblConstEquipMitigation	FuelType	Diesel	Electrical
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	12.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	10.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	9.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	10.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00

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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	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	9.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	8.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	20.00	44.00
tblConstructionPhase	NumDays	3.00	22.00
tblConstructionPhase	NumDays	6.00	66.00
tblConstructionPhase	NumDays	220.00	264.00
tblConstructionPhase	NumDays	220.00	154.00
tblConstructionPhase	NumDays	10.00	143.00
tblConstructionPhase	NumDays	10.00	43.00
tblEnergyUse	NT24E	3,054.10	3,055.00

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tblEnergyUse	NT24NG	3,155.00	0.00
tblEnergyUse	NT24NG	0.06	0.00
tblEnergyUse	T24E	70.89	72.42
tblEnergyUse	T24NG	5,226.68	0.00
tblEnergyUse	T24NG	16.14	0.00
tblFireplaces	FireplaceWoodMass	228.80	0.00
tblFireplaces	NumberGas	62.25	132.80
tblFireplaces	NumberWood	70.55	0.00
tblFleetMix	HHD	6.3120e-003	0.02
tblFleetMix	HHD	6.3120e-003	0.02
tblFleetMix	HHD	6.3120e-003	0.02
tblFleetMix	HHD	6.3120e-003	0.02
tblFleetMix	LDA	0.57	0.54
tblFleetMix	LDA	0.57	0.54
tblFleetMix	LDA	0.57	0.54
tblFleetMix	LDA	0.57	0.54
tblFleetMix	LDT1	0.06	0.03
tblFleetMix	LDT1	0.06	0.03
tblFleetMix	LDT1	0.06	0.03
tblFleetMix	LDT1	0.06	0.03
tblFleetMix	LDT2	0.19	0.23
tblFleetMix	LDT2	0.19	0.23
tblFleetMix	LDT2	0.19	0.23
tblFleetMix	LDT2	0.19	0.23
tblFleetMix	LHD1	0.02	0.02
tblFleetMix	LHD1	0.02	0.02
tblFleetMix	LHD1	0.02	0.02
tblFleetMix	LHD1	0.02	0.02
tblFleetMix	LHD2	5.2090e-003	6.1120e-003

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tblFleetMix	LHD2	5.2090e-003	6.1120e-003
tblFleetMix	LHD2	5.2090e-003	6.1120e-003
tblFleetMix	LHD2	5.2090e-003	6.1120e-003
tblFleetMix	MCY	0.02	3.5210e-003
tblFleetMix	MCY	0.02	3.5210e-003
tblFleetMix	MCY	0.02	3.5210e-003
tblFleetMix	MCY	0.02	3.5210e-003
tblFleetMix	MDV	0.12	0.12
tblFleetMix	MDV	0.12	0.12
tblFleetMix	MDV	0.12	0.12
tblFleetMix	MDV	0.12	0.12
tblFleetMix	MH	2.6680e-003	6.4900e-004
tblFleetMix	MH	2.6680e-003	6.4900e-004
tblFleetMix	MH	2.6680e-003	6.4900e-004
tblFleetMix	MH	2.6680e-003	6.4900e-004
tblFleetMix	MHD	8.0910e-003	0.01
tblFleetMix	MHD	8.0910e-003	0.01
tblFleetMix	MHD	8.0910e-003	0.01
tblFleetMix	MHD	8.0910e-003	0.01
tblFleetMix	OBUS	8.8400e-004	1.7230e-003
tblFleetMix	OBUS	8.8400e-004	1.7230e-003
tblFleetMix	OBUS	8.8400e-004	1.7230e-003
tblFleetMix	OBUS	8.8400e-004	1.7230e-003
tblFleetMix	SBUS	8.8700e-004	5.3000e-004
tblFleetMix	SBUS	8.8700e-004	5.3000e-004
tblFleetMix	SBUS	8.8700e-004	5.3000e-004
tblFleetMix	SBUS	8.8700e-004	5.3000e-004
tblFleetMix	UBUS	3.6400e-004	1.2470e-003
tblFleetMix	UBUS	3.6400e-004	1.2470e-003

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tblFleetMix	UBUS	3.6400e-004	1.2470e-003
tblFleetMix	UBUS	3.6400e-004	1.2470e-003
tblGrading	MaterialExported	0.00	18,000.00
tblGrading	MaterialImported	0.00	3,500.00
tblLandUse	LandUseSquareFeet	458,400.00	470,000.00
tblLandUse	LandUseSquareFeet	415,000.00	400,101.00
tblLandUse	LotAcreage	12.05	0.00
tblLandUse	LotAcreage	10.31	0.00
tblLandUse	LotAcreage	6.69	2.10
tblLandUse	LotAcreage	0.20	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	10.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	5.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	10.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	8.00
tblOffRoadEquipment	UsageHours	6.00	5.00
tblOffRoadEquipment	UsageHours	8.00	2.00
tblOffRoadEquipment	UsageHours	8.00	2.50

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tblOffRoadEquipment	UsageHours	8.00	12.00
tblOffRoadEquipment	UsageHours	8.00	10.80
tblOffRoadEquipment	UsageHours	7.00	0.00
tblOffRoadEquipment	UsageHours	7.00	9.60
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	12.00
tblOffRoadEquipment	UsageHours	8.00	2.00
tblOffRoadEquipment	UsageHours	8.00	3.30
tblOffRoadEquipment	UsageHours	8.00	2.00
tblOffRoadEquipment	UsageHours	8.00	2.00
tblOffRoadEquipment	UsageHours	8.00	2.00
tblOffRoadEquipment	UsageHours	8.00	2.50
tblOffRoadEquipment	UsageHours	8.00	2.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	8.00	2.50
tblOffRoadEquipment	UsageHours	7.00	2.00
tblOffRoadEquipment	UsageHours	8.00	2.00
tblOffRoadEquipment	UsageHours	7.00	3.30
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	3.00
tblProjectCharacteristics	CO2IntensityFactor	807.98	178
tblStationaryGeneratorsPumpsEF	NOX_EF	4.56	0.50
tblStationaryGeneratorsPumpsEF	PM10_EF	0.15	0.02
tblStationaryGeneratorsPumpsEF	PM2_5_EF	0.15	0.02
tblStationaryGeneratorsPumpsUse	HorsePowerValue	0.00	1,340.00
tblStationaryGeneratorsPumpsUse	HoursPerYear	0.00	50.00
tblStationaryGeneratorsPumpsUse	NumberOfEquipment	0.00	2.00
tblTripsAndVMT	HaulingTripNumber	791.00	0.00

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tblTripsAndVMT	HaulingTripNumber	2,688.00	0.00
tblTripsAndVMT	VendorTripNumber	209.00	0.00
tblTripsAndVMT	VendorTripNumber	209.00	0.00
tblTripsAndVMT	WorkerTripNumber	23.00	0.00
tblTripsAndVMT	WorkerTripNumber	13.00	0.00
tblTripsAndVMT	WorkerTripNumber	23.00	0.00
tblTripsAndVMT	WorkerTripNumber	5.00	0.00
tblTripsAndVMT	WorkerTripNumber	667.00	0.00
tblTripsAndVMT	WorkerTripNumber	667.00	0.00
tblTripsAndVMT	WorkerTripNumber	133.00	0.00
tblTripsAndVMT	WorkerTripNumber	15.00	0.00
tblVehicleEF	HHD	0.02	0.22
tblVehicleEF	HHD	0.05	0.11
tblVehicleEF	HHD	6.31	5.15
tblVehicleEF	HHD	0.41	0.73
tblVehicleEF	HHD	5.9100e-003	7.3800e-004
tblVehicleEF	HHD	1,010.86	795.67
tblVehicleEF	HHD	1,358.12	1,554.97
tblVehicleEF	HHD	0.05	0.01
tblVehicleEF	HHD	0.16	0.13
tblVehicleEF	HHD	0.22	0.25
tblVehicleEF	HHD	5.0000e-006	8.0000e-006
tblVehicleEF	HHD	5.31	4.01
tblVehicleEF	HHD	2.65	1.70
tblVehicleEF	HHD	2.32	2.76
tblVehicleEF	HHD	2.4220e-003	2.0130e-003
tblVehicleEF	HHD	0.06	0.08
tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	0.02	0.02

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tblVehicleEF	HHD	1.0000e-006	0.00
tblVehicleEF	HHD	2.3170e-003	1.9190e-003
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.8910e-003	8.7830e-003
tblVehicleEF	HHD	0.02	0.02
tblVehicleEF	HHD	1.0000e-006	0.00
tblVehicleEF	HHD	2.0000e-006	1.0600e-004
tblVehicleEF	HHD	7.9000e-005	3.4000e-005
tblVehicleEF	HHD	0.43	0.32
tblVehicleEF	HHD	1.0000e-006	1.0600e-004
tblVehicleEF	HHD	0.03	0.02
tblVehicleEF	HHD	3.5000e-005	3.0300e-004
tblVehicleEF	HHD	2.0000e-006	0.00
tblVehicleEF	HHD	9.4050e-003	6.9240e-003
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	2.0000e-006	1.0600e-004
tblVehicleEF	HHD	7.9000e-005	3.4000e-005
tblVehicleEF	HHD	0.49	0.58
tblVehicleEF	HHD	1.0000e-006	1.0600e-004
tblVehicleEF	HHD	0.08	0.13
tblVehicleEF	HHD	3.5000e-005	3.0300e-004
tblVehicleEF	HHD	3.0000e-006	0.00
tblVehicleEF	LDA	1.3660e-003	1.6750e-003
tblVehicleEF	LDA	0.04	0.06
tblVehicleEF	LDA	0.47	0.58
tblVehicleEF	LDA	1.94	2.58
tblVehicleEF	LDA	228.80	244.37
tblVehicleEF	LDA	48.59	63.17
tblVehicleEF	LDA	3.5660e-003	3.6780e-003

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tblVehicleEF	LDA	0.02	0.03
tblVehicleEF	LDA	0.02	0.03
tblVehicleEF	LDA	0.15	0.21
tblVehicleEF	LDA	0.04	7.1220e-003
tblVehicleEF	LDA	1.1900e-003	1.0810e-003
tblVehicleEF	LDA	1.5810e-003	1.7910e-003
tblVehicleEF	LDA	0.02	2.4930e-003
tblVehicleEF	LDA	1.0960e-003	9.9500e-004
tblVehicleEF	LDA	1.4540e-003	1.6470e-003
tblVehicleEF	LDA	0.03	0.26
tblVehicleEF	LDA	0.08	0.07
tblVehicleEF	LDA	0.03	0.26
tblVehicleEF	LDA	4.9190e-003	6.2200e-003
tblVehicleEF	LDA	0.03	0.19
tblVehicleEF	LDA	0.16	0.25
tblVehicleEF	LDA	2.1780e-003	2.3240e-003
tblVehicleEF	LDA	4.6300e-004	6.0100e-004
tblVehicleEF	LDA	0.03	0.26
tblVehicleEF	LDA	0.08	0.07
tblVehicleEF	LDA	0.03	0.26
tblVehicleEF	LDA	7.1490e-003	9.0640e-003
tblVehicleEF	LDA	0.03	0.19
tblVehicleEF	LDA	0.18	0.28
tblVehicleEF	LDT1	2.7310e-003	5.0100e-003
tblVehicleEF	LDT1	0.05	0.09
tblVehicleEF	LDT1	0.71	1.22
tblVehicleEF	LDT1	2.09	4.55
tblVehicleEF	LDT1	275.31	328.89
tblVehicleEF	LDT1	59.08	85.96

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tblVehicleEF	LDT1	4.8810e-003	7.9710e-003
tblVehicleEF	LDT1	0.02	0.04
tblVehicleEF	LDT1	0.05	0.10
tblVehicleEF	LDT1	0.19	0.34
tblVehicleEF	LDT1	0.04	9.2110e-003
tblVehicleEF	LDT1	1.4440e-003	1.7220e-003
tblVehicleEF	LDT1	1.8990e-003	2.6150e-003
tblVehicleEF	LDT1	0.02	3.2240e-003
tblVehicleEF	LDT1	1.3280e-003	1.5850e-003
tblVehicleEF	LDT1	1.7460e-003	2.4040e-003
tblVehicleEF	LDT1	0.06	0.53
tblVehicleEF	LDT1	0.12	0.15
tblVehicleEF	LDT1	0.05	0.53
tblVehicleEF	LDT1	0.01	0.02
tblVehicleEF	LDT1	0.07	0.41
tblVehicleEF	LDT1	0.22	0.46
tblVehicleEF	LDT1	2.6210e-003	3.1280e-003
tblVehicleEF	LDT1	5.6300e-004	8.1800e-004
tblVehicleEF	LDT1	0.06	0.53
tblVehicleEF	LDT1	0.12	0.15
tblVehicleEF	LDT1	0.05	0.53
tblVehicleEF	LDT1	0.02	0.03
tblVehicleEF	LDT1	0.07	0.41
tblVehicleEF	LDT1	0.24	0.50
tblVehicleEF	LDT2	2.4210e-003	2.4020e-003
tblVehicleEF	LDT2	0.05	0.07
tblVehicleEF	LDT2	0.66	0.75
tblVehicleEF	LDT2	2.54	3.27
tblVehicleEF	LDT2	291.90	339.66

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tblVehicleEF	LDT2	63.24	86.57
tblVehicleEF	LDT2	4.9510e-003	5.3470e-003
tblVehicleEF	LDT2	0.03	0.03
tblVehicleEF	LDT2	0.05	0.06
tblVehicleEF	LDT2	0.21	0.29
tblVehicleEF	LDT2	0.04	8.8560e-003
tblVehicleEF	LDT2	1.2670e-003	1.2550e-003
tblVehicleEF	LDT2	1.6290e-003	2.0020e-003
tblVehicleEF	LDT2	0.02	3.1000e-003
tblVehicleEF	LDT2	1.1670e-003	1.1540e-003
tblVehicleEF	LDT2	1.4980e-003	1.8410e-003
tblVehicleEF	LDT2	0.06	0.28
tblVehicleEF	LDT2	0.11	0.08
tblVehicleEF	LDT2	0.05	0.28
tblVehicleEF	LDT2	9.5470e-003	9.2510e-003
tblVehicleEF	LDT2	0.06	0.21
tblVehicleEF	LDT2	0.24	0.33
tblVehicleEF	LDT2	2.7790e-003	3.2300e-003
tblVehicleEF	LDT2	6.0200e-004	8.2300e-004
tblVehicleEF	LDT2	0.06	0.28
tblVehicleEF	LDT2	0.11	0.08
tblVehicleEF	LDT2	0.05	0.28
tblVehicleEF	LDT2	0.01	0.01
tblVehicleEF	LDT2	0.06	0.21
tblVehicleEF	LDT2	0.27	0.36
tblVehicleEF	LHD1	4.6670e-003	5.0240e-003
tblVehicleEF	LHD1	6.7660e-003	6.5110e-003
tblVehicleEF	LHD1	0.01	0.02
tblVehicleEF	LHD1	0.18	0.19

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tblVehicleEF	LHD1	0.61	0.77
tblVehicleEF	LHD1	0.99	2.16
tblVehicleEF	LHD1	8.66	8.48
tblVehicleEF	LHD1	749.59	747.67
tblVehicleEF	LHD1	11.02	17.34
tblVehicleEF	LHD1	7.4200e-004	6.3000e-004
tblVehicleEF	LHD1	0.04	0.04
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	0.05	0.04
tblVehicleEF	LHD1	0.50	0.52
tblVehicleEF	LHD1	0.27	0.40
tblVehicleEF	LHD1	8.7200e-004	6.8700e-004
tblVehicleEF	LHD1	0.08	0.08
tblVehicleEF	LHD1	9.8310e-003	9.4180e-003
tblVehicleEF	LHD1	8.5970e-003	0.01
tblVehicleEF	LHD1	2.3200e-004	1.9000e-004
tblVehicleEF	LHD1	8.3400e-004	6.5700e-004
tblVehicleEF	LHD1	0.03	0.03
tblVehicleEF	LHD1	2.4580e-003	2.3550e-003
tblVehicleEF	LHD1	8.1790e-003	0.01
tblVehicleEF	LHD1	2.1300e-004	1.7400e-004
tblVehicleEF	LHD1	1.7170e-003	0.12
tblVehicleEF	LHD1	0.06	0.03
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	9.0400e-004	0.12
tblVehicleEF	LHD1	0.08	0.07
tblVehicleEF	LHD1	0.19	0.17
tblVehicleEF	LHD1	0.06	0.10
tblVehicleEF	LHD1	8.4000e-005	8.3000e-005

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tblVehicleEF	LHD1	7.3150e-003	7.3000e-003
tblVehicleEF	LHD1	1.0900e-004	1.7100e-004
tblVehicleEF	LHD1	1.7170e-003	0.12
tblVehicleEF	LHD1	0.06	0.03
tblVehicleEF	LHD1	0.03	0.03
tblVehicleEF	LHD1	9.0400e-004	0.12
tblVehicleEF	LHD1	0.10	0.09
tblVehicleEF	LHD1	0.19	0.17
tblVehicleEF	LHD1	0.07	0.11
tblVehicleEF	LHD2	2.8270e-003	2.9010e-003
tblVehicleEF	LHD2	6.0420e-003	5.9100e-003
tblVehicleEF	LHD2	6.5340e-003	0.01
tblVehicleEF	LHD2	0.14	0.14
tblVehicleEF	LHD2	0.54	0.49
tblVehicleEF	LHD2	0.55	1.18
tblVehicleEF	LHD2	13.60	13.61
tblVehicleEF	LHD2	727.00	794.48
tblVehicleEF	LHD2	7.15	9.38
tblVehicleEF	LHD2	1.7170e-003	1.6800e-003
tblVehicleEF	LHD2	0.07	0.08
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	0.09	0.09
tblVehicleEF	LHD2	0.60	0.73
tblVehicleEF	LHD2	0.15	0.22
tblVehicleEF	LHD2	1.4660e-003	1.4060e-003
tblVehicleEF	LHD2	0.09	0.09
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	1.1700e-004	8.1000e-005

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tblVehicleEF	LHD2	1.4020e-003	1.3460e-003
tblVehicleEF	LHD2	0.04	0.03
tblVehicleEF	LHD2	2.7000e-003	2.6660e-003
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	1.0800e-004	7.5000e-005
tblVehicleEF	LHD2	8.4300e-004	0.06
tblVehicleEF	LHD2	0.03	0.01
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	4.5700e-004	0.06
tblVehicleEF	LHD2	0.10	0.10
tblVehicleEF	LHD2	0.08	0.08
tblVehicleEF	LHD2	0.03	0.05
tblVehicleEF	LHD2	7.0160e-003	7.6510e-003
tblVehicleEF	LHD2	7.1000e-005	9.3000e-005
tblVehicleEF	LHD2	8.4300e-004	0.06
tblVehicleEF	LHD2	0.03	0.01
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	4.5700e-004	0.06
tblVehicleEF	LHD2	0.12	0.12
tblVehicleEF	LHD2	0.08	0.08
tblVehicleEF	LHD2	0.04	0.06
tblVehicleEF	MCY	0.32	0.15
tblVehicleEF	MCY	0.25	0.17
tblVehicleEF	MCY	18.17	11.99
tblVehicleEF	MCY	9.11	7.93
tblVehicleEF	MCY	209.94	186.84
tblVehicleEF	MCY	60.17	46.31
tblVehicleEF	MCY	0.07	0.04
tblVehicleEF	MCY	0.02	7.3810e-003

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tblVehicleEF	MCY	1.14	0.55
tblVehicleEF	MCY	0.27	0.12
tblVehicleEF	MCY	0.01	0.01
tblVehicleEF	MCY	2.0610e-003	1.9450e-003
tblVehicleEF	MCY	2.9290e-003	3.4700e-003
tblVehicleEF	MCY	5.0400e-003	4.2000e-003
tblVehicleEF	MCY	1.9240e-003	1.8180e-003
tblVehicleEF	MCY	2.7480e-003	3.2560e-003
tblVehicleEF	MCY	0.90	3.85
tblVehicleEF	MCY	0.66	3.56
tblVehicleEF	MCY	0.48	3.85
tblVehicleEF	MCY	2.16	0.99
tblVehicleEF	MCY	0.51	3.77
tblVehicleEF	MCY	1.91	1.27
tblVehicleEF	MCY	2.0780e-003	1.8470e-003
tblVehicleEF	MCY	5.9500e-004	4.5800e-004
tblVehicleEF	MCY	0.90	0.09
tblVehicleEF	MCY	0.66	3.56
tblVehicleEF	MCY	0.48	0.09
tblVehicleEF	MCY	2.70	1.20
tblVehicleEF	MCY	0.51	3.77
tblVehicleEF	MCY	2.08	1.38
tblVehicleEF	MDV	2.6580e-003	2.9620e-003
tblVehicleEF	MDV	0.06	0.08
tblVehicleEF	MDV	0.68	0.81
tblVehicleEF	MDV	2.69	3.42
tblVehicleEF	MDV	352.05	408.07
tblVehicleEF	MDV	75.02	103.20
tblVehicleEF	MDV	6.5120e-003	6.9830e-003

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tblVehicleEF	MDV	0.03	0.04
tblVehicleEF	MDV	0.05	0.07
tblVehicleEF	MDV	0.24	0.35
tblVehicleEF	MDV	0.04	8.9510e-003
tblVehicleEF	MDV	1.3160e-003	1.2580e-003
tblVehicleEF	MDV	1.6770e-003	1.9840e-003
tblVehicleEF	MDV	0.02	3.1330e-003
tblVehicleEF	MDV	1.2140e-003	1.1600e-003
tblVehicleEF	MDV	1.5420e-003	1.8240e-003
tblVehicleEF	MDV	0.06	0.32
tblVehicleEF	MDV	0.12	0.08
tblVehicleEF	MDV	0.06	0.32
tblVehicleEF	MDV	0.01	0.01
tblVehicleEF	MDV	0.06	0.25
tblVehicleEF	MDV	0.28	0.41
tblVehicleEF	MDV	3.3510e-003	3.8790e-003
tblVehicleEF	MDV	7.1400e-004	9.8200e-004
tblVehicleEF	MDV	0.06	0.32
tblVehicleEF	MDV	0.12	0.08
tblVehicleEF	MDV	0.06	0.32
tblVehicleEF	MDV	0.02	0.02
tblVehicleEF	MDV	0.06	0.25
tblVehicleEF	MDV	0.31	0.45
tblVehicleEF	MH	7.6660e-003	9.9190e-003
tblVehicleEF	MH	0.02	0.03
tblVehicleEF	MH	0.68	0.93
tblVehicleEF	MH	1.87	2.26
tblVehicleEF	MH	1,445.75	1,674.32
tblVehicleEF	MH	17.15	21.62

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tblVehicleEF	MH	0.06	0.07
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.21	1.44
tblVehicleEF	MH	0.24	0.30
tblVehicleEF	MH	0.13	0.04
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.02	0.03
tblVehicleEF	MH	2.4000e-004	2.8100e-004
tblVehicleEF	MH	0.06	0.02
tblVehicleEF	MH	3.2870e-003	3.3150e-003
tblVehicleEF	MH	0.02	0.03
tblVehicleEF	MH	2.2100e-004	2.5800e-004
tblVehicleEF	MH	0.52	28.55
tblVehicleEF	MH	0.04	7.36
tblVehicleEF	MH	0.19	28.55
tblVehicleEF	MH	0.05	0.07
tblVehicleEF	MH	0.01	0.18
tblVehicleEF	MH	0.08	0.10
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	1.7000e-004	2.1400e-004
tblVehicleEF	MH	0.52	28.55
tblVehicleEF	MH	0.04	7.36
tblVehicleEF	MH	0.19	28.55
tblVehicleEF	MH	0.07	0.09
tblVehicleEF	MH	0.01	0.18
tblVehicleEF	MH	0.09	0.11
tblVehicleEF	MHD	3.6600e-003	0.01
tblVehicleEF	MHD	1.3680e-003	9.5250e-003
tblVehicleEF	MHD	8.6830e-003	7.9190e-003

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tblVehicleEF	MHD	0.40	0.66
tblVehicleEF	MHD	0.19	0.26
tblVehicleEF	MHD	0.97	0.93
tblVehicleEF	MHD	69.63	156.70
tblVehicleEF	MHD	1,051.19	1,196.53
tblVehicleEF	MHD	8.85	7.91
tblVehicleEF	MHD	0.01	0.02
tblVehicleEF	MHD	0.13	0.15
tblVehicleEF	MHD	7.3550e-003	5.6890e-003
tblVehicleEF	MHD	0.38	0.84
tblVehicleEF	MHD	1.45	0.91
tblVehicleEF	MHD	1.70	1.39
tblVehicleEF	MHD	2.7700e-004	1.4450e-003
tblVehicleEF	MHD	0.13	0.05
tblVehicleEF	MHD	7.0640e-003	9.6350e-003
tblVehicleEF	MHD	1.1200e-004	9.6000e-005
tblVehicleEF	MHD	2.6500e-004	1.3820e-003
tblVehicleEF	MHD	0.06	0.02
tblVehicleEF	MHD	6.7520e-003	9.2100e-003
tblVehicleEF	MHD	1.0300e-004	8.9000e-005
tblVehicleEF	MHD	3.3400e-004	0.02
tblVehicleEF	MHD	0.02	5.1060e-003
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	1.8000e-004	0.02
tblVehicleEF	MHD	0.01	0.03
tblVehicleEF	MHD	0.02	0.04
tblVehicleEF	MHD	0.04	0.04
tblVehicleEF	MHD	6.6100e-004	1.4520e-003
tblVehicleEF	MHD	0.01	0.01

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tblVehicleEF	MHD	8.8000e-005	7.8000e-005
tblVehicleEF	MHD	3.3400e-004	0.02
tblVehicleEF	MHD	0.02	5.1060e-003
tblVehicleEF	MHD	0.02	0.04
tblVehicleEF	MHD	1.8000e-004	0.02
tblVehicleEF	MHD	0.02	0.04
tblVehicleEF	MHD	0.02	0.04
tblVehicleEF	MHD	0.05	0.05
tblVehicleEF	OBUS	7.0720e-003	7.5520e-003
tblVehicleEF	OBUS	2.9940e-003	9.8650e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.61	0.53
tblVehicleEF	OBUS	0.35	0.40
tblVehicleEF	OBUS	1.73	1.78
tblVehicleEF	OBUS	95.34	88.16
tblVehicleEF	OBUS	1,283.24	1,344.05
tblVehicleEF	OBUS	14.49	14.24
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.13	0.16
tblVehicleEF	OBUS	0.02	0.01
tblVehicleEF	OBUS	0.40	0.36
tblVehicleEF	OBUS	1.45	0.93
tblVehicleEF	OBUS	1.11	0.99
tblVehicleEF	OBUS	1.3100e-004	3.9000e-004
tblVehicleEF	OBUS	0.13	0.05
tblVehicleEF	OBUS	7.5500e-003	0.01
tblVehicleEF	OBUS	1.4900e-004	1.2900e-004
tblVehicleEF	OBUS	1.2600e-004	3.7300e-004
tblVehicleEF	OBUS	0.06	0.02

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tblVehicleEF	OBUS	7.2100e-003	0.01
tblVehicleEF	OBUS	1.3700e-004	1.1800e-004
tblVehicleEF	OBUS	1.0720e-003	0.07
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.05	0.04
tblVehicleEF	OBUS	4.8300e-004	0.07
tblVehicleEF	OBUS	0.02	0.04
tblVehicleEF	OBUS	0.04	0.08
tblVehicleEF	OBUS	0.08	0.09
tblVehicleEF	OBUS	9.0500e-004	8.3300e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	1.4300e-004	1.4100e-004
tblVehicleEF	OBUS	1.0720e-003	0.07
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.06	0.05
tblVehicleEF	OBUS	4.8300e-004	0.07
tblVehicleEF	OBUS	0.03	0.06
tblVehicleEF	OBUS	0.04	0.08
tblVehicleEF	OBUS	0.09	0.09
tblVehicleEF	SBUS	0.06	0.08
tblVehicleEF	SBUS	5.4710e-003	0.09
tblVehicleEF	SBUS	5.3640e-003	4.9930e-003
tblVehicleEF	SBUS	2.48	1.73
tblVehicleEF	SBUS	0.45	0.84
tblVehicleEF	SBUS	0.76	0.68
tblVehicleEF	SBUS	344.98	188.59
tblVehicleEF	SBUS	1,025.26	1,007.35
tblVehicleEF	SBUS	4.41	3.84
tblVehicleEF	SBUS	0.05	0.02

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tblVehicleEF	SBUS	0.13	0.12
tblVehicleEF	SBUS	5.3260e-003	4.5020e-003
tblVehicleEF	SBUS	3.24	1.31
tblVehicleEF	SBUS	4.17	2.24
tblVehicleEF	SBUS	0.95	0.50
tblVehicleEF	SBUS	3.0570e-003	1.1130e-003
tblVehicleEF	SBUS	0.74	0.04
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	5.4000e-005	4.2000e-005
tblVehicleEF	SBUS	2.9250e-003	1.0640e-003
tblVehicleEF	SBUS	0.32	0.02
tblVehicleEF	SBUS	2.7030e-003	2.6360e-003
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	5.0000e-005	3.9000e-005
tblVehicleEF	SBUS	6.4100e-004	0.03
tblVehicleEF	SBUS	6.2050e-003	8.3130e-003
tblVehicleEF	SBUS	0.27	0.19
tblVehicleEF	SBUS	2.9200e-004	0.03
tblVehicleEF	SBUS	0.08	0.05
tblVehicleEF	SBUS	0.01	0.02
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	3.2860e-003	1.7120e-003
tblVehicleEF	SBUS	9.7970e-003	9.3590e-003
tblVehicleEF	SBUS	4.4000e-005	3.8000e-005
tblVehicleEF	SBUS	6.4100e-004	0.03
tblVehicleEF	SBUS	6.2050e-003	8.3130e-003
tblVehicleEF	SBUS	0.39	0.31
tblVehicleEF	SBUS	2.9200e-004	0.03

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tblVehicleEF	SBUS	0.09	0.15
tblVehicleEF	SBUS	0.01	0.02
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	UBUS	1.74	0.53
tblVehicleEF	UBUS	1.7570e-003	3.7120e-003
tblVehicleEF	UBUS	13.20	6.31
tblVehicleEF	UBUS	0.14	0.50
tblVehicleEF	UBUS	1,654.13	1,064.85
tblVehicleEF	UBUS	1.40	3.15
tblVehicleEF	UBUS	0.28	0.16
tblVehicleEF	UBUS	1.1340e-003	6.0350e-003
tblVehicleEF	UBUS	0.71	0.29
tblVehicleEF	UBUS	0.01	0.04
tblVehicleEF	UBUS	0.07	0.13
tblVehicleEF	UBUS	0.03	0.04
tblVehicleEF	UBUS	5.1700e-003	5.5470e-003
tblVehicleEF	UBUS	1.5000e-005	1.2000e-005
tblVehicleEF	UBUS	0.03	0.04
tblVehicleEF	UBUS	8.3320e-003	0.01
tblVehicleEF	UBUS	4.9450e-003	5.3030e-003
tblVehicleEF	UBUS	1.4000e-005	1.1000e-005
tblVehicleEF	UBUS	2.7000e-005	0.01
tblVehicleEF	UBUS	2.5800e-004	3.7810e-003
tblVehicleEF	UBUS	1.3000e-005	0.01
tblVehicleEF	UBUS	0.03	0.06
tblVehicleEF	UBUS	5.2000e-005	7.9860e-003
tblVehicleEF	UBUS	7.3620e-003	0.01
tblVehicleEF	UBUS	0.01	8.5860e-003
tblVehicleEF	UBUS	1.4000e-005	3.1000e-005

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tblVehicleEF	UBUS	2.7000e-005	0.01
tblVehicleEF	UBUS	2.5800e-004	3.7810e-003
tblVehicleEF	UBUS	1.3000e-005	0.01
tblVehicleEF	UBUS	1.78	0.60
tblVehicleEF	UBUS	5.2000e-005	7.9860e-003
tblVehicleEF	UBUS	8.0600e-003	0.01
tblVehicleTrips	ST_TR	4.53	3.14
tblVehicleTrips	ST_TR	2.21	1.46
tblVehicleTrips	ST_TR	42.04	10.38
tblVehicleTrips	SU_TR	3.59	2.49
tblVehicleTrips	SU_TR	0.70	0.46
tblVehicleTrips	SU_TR	20.43	5.04
tblVehicleTrips	WD_TR	4.45	3.08
tblVehicleTrips	WD_TR	9.74	6.44
tblVehicleTrips	WD_TR	44.32	10.94
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
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	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWoodstoves	WoodstoveWoodMass	582.40	0.00

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2.0 Emissions Summary

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	4.3417	0.0499	3.1000	2.6000e-004		0.0183	0.0183		0.0183	0.0183	0.0000	21.6421	21.6421	5.2200e-003	3.0000e-004	21.8631
Energy	1.1000e-004	9.7000e-004	8.2000e-004	1.0000e-005		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	1,072.0654	1,072.0654	0.1986	0.0241	1,084.21
Mobile	2.0115	1.8186	11.8415	0.0346	3.1100	0.0255	3.1355	0.7769	0.0239	0.8007	0.0000	3,315.1815	3,315.1815	0.1520	0.1735	3,370.68
Stationary	0.1100	0.0539	0.2804	5.3000e-004		2.1600e-003	2.1600e-003		2.1600e-003	2.1600e-003	0.0000	51.0268	51.0268	7.1500e-003	0.0000	51.2057
Waste						0.0000	0.0000		0.0000	0.0000	139.6740	0.0000	139.6740	8.2545	0.0000	346.0365
Water						0.0000	0.0000		0.0000	0.0000	42.8025	73.9407	116.7432	0.1610	0.0947	149.0023
Total	**6.4632**	**1.9234**	**15.2226**	**0.0354**	**3.1100**	**0.0460**	**3.156**	**0.7769**	**0.0444**	**0.8213**	**182.4765**	**4,533.8565**	**4,716.3330**	**8.7784**	**0.2926**	**5,022.9988**

Mitigated Operational

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

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Area	4.3417	0.0499	3.1000	2.6000e-004		0.0183	0.0183		0.0183	0.0183	0.0000	21.6421	21.6421	5.2200e-003	3.0000e-004	21.8631
Energy	1.1000e-004	9.7000e-004	8.2000e-004	1.0000e-005		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	1,072.0654	1,072.0654	0.1986	0.0241	1,084.2078
Mobile	2.0115	1.8186	11.8415	0.0346	3.1100	0.0255	3.1355	0.7769	0.0239	0.8007	0.0000	3,315.1815	3,315.1815	0.1520	0.1735	3,370.6834
Stationary	0.1100	0.0539	0.2804	5.3000e-004		2.1600e-003	2.1600e-003		2.1600e-003	2.1600e-003	0.0000	51.0268	51.0268	7.1500e-003	0.0000	51.2057
Waste						0.0000	0.0000		0.0000	0.0000	139.6740	0.0000	139.6740	8.2545	0.0000	346.0365
Water						0.0000	0.0000		0.0000	0.0000	42.8025	73.9407	116.7432	0.1610	0.0947	149.0023
Total	**6.4632**	**1.9234**	**15.2226**	**0.0354**	**3.1100**	**0.0460**	**3.1560**	**0.7769**	**0.0444**	**0.8213**	**182.4765**	**4,533.8565**	**4,716.3330**	**8.7784**	**0.2926**	**5,022.9988**

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

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	2.0115	1.8186	11.8415	0.0346	3.1100	0.0255	3.1355	0.7769	0.0239	0.8007	0.0000	3,315.1815	3,315.1815	0.1520	0.1735	3,370.6834
Unmitigated	2.0115	1.8186	11.8415	0.0346	3.1100	0.0255	3.1355	0.7769	0.0239	0.8007	0.0000	3,315.1815	3,315.1815	0.1520	0.1735	3,370.6834

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

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments High Rise	1,278.20	1,303.10	1033.35	2,879,569	2,879,569
Enclosed Parking with Elevator	0.00	0.00	0.00		
General Office Building	3,381.00	766.50	241.50	6,115,377	6,115,377
Strip Mall	92.99	88.23	42.84	131,127	131,127
Total	4,752.19	2,157.83	1,317.69	9,126,074	9,126,074

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
Enclosed Parking with Elevator	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
General Office Building	9.50	7.30	7.30	33.00	48.00	19.00	77	19	4
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	0.541057	0.034611	0.227949	0.124011	0.024753	0.006112	0.010991	0.022846	0.001723	0.001247	0.003521	0.000530	0.000649
Enclosed Parking with Elevator	0.541057	0.034611	0.227949	0.124011	0.024753	0.006112	0.010991	0.022846	0.001723	0.001247	0.003521	0.000530	0.000649
General Office Building	0.541057	0.034611	0.227949	0.124011	0.024753	0.006112	0.010991	0.022846	0.001723	0.001247	0.003521	0.000530	0.000649
Strip Mall	0.541057	0.034611	0.227949	0.124011	0.024753	0.006112	0.010991	0.022846	0.001723	0.001247	0.003521	0.000530	0.000649

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

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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					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	1,071.0040	1,071.0040	0.1986	0.0241	1,083.1401
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	1,071.0040	1,071.0040	0.1986	0.0241	1,083.1401
NaturalGas Mitigated	1.1000e-004	9.7000e-004	8.2000e-004	1.0000e-005		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	1.0614	1.0614	2.0000e-005	2.0000e-005	1.0677
NaturalGas Unmitigated	1.1000e-004	9.7000e-004	8.2000e-004	1.0000e-005		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	1.0614	1.0614	2.0000e-005	2.0000e-005	1.0677

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
Enclosed Parking with Elevator	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
General Office Building	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	19890	1.1000e-004	9.7000e-004	8.2000e-004	1.0000e-005		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	1.0614	1.0614	2.0000e-005	2.0000e-005	1.0677
Total		**1.1000e-004**	**9.7000e-004**	**8.2000e-004**	**1.0000e-005**		**7.0000e-005**	**7.0000e-005**		**7.0000e-005**	**7.0000e-005**	**0.0000**	**1.0614**	**1.0614**	**2.0000e-005**	**2.0000e-005**	**1.0677**

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

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
Enclosed Parking with Elevator	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
General Office Building	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	19890	1.1000e-004	9.7000e-004	8.2000e-004	1.0000e-005		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	1.0614	1.0614	2.0000e-005	2.0000e-005	1.0677
Total		**1.1000e-004**	**9.7000e-004**	**8.2000e-004**	**1.0000e-005**		**7.0000e-005**	**7.0000e-005**		**7.0000e-005**	**7.0000e-005**	**0.0000**	**1.0614**	**1.0614**	**2.0000e-005**	**2.0000e-005**	**1.0677**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments High Rise	1.60558e+006	129.6334	0.0240	2.9100e-003	131.1023
Enclosed Parking with Elevator	2.5568e+006	206.4346	0.0383	4.6400e-003	208.7738

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

General Office Building	9.01425e+006	727.8055	0.1349	0.0164	736.0526
Strip Mall	88315	7.1305	1.3200e-003	1.6000e-004	7.2113
Total		**1,071.0040**	**0.1986**	**0.0241**	**1,083.1400**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments High Rise	1.60558e+006	129.6334	0.0240	2.9100e-003	131.1023
Enclosed Parking with Elevator	2.5568e+006	206.4346	0.0383	4.6400e-003	208.7738
General Office Building	9.01425e+006	727.8055	0.1349	0.0164	736.0526
Strip Mall	88315	7.1305	1.3200e-003	1.6000e-004	7.2113
Total		**1,071.0040**	**0.1986**	**0.0241**	**1,083.1400**

6.0 Area Detail

6.1 Mitigation Measures Area

Icon-Echo MU Towers, 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					
Mitigated	4.3417	0.0499	3.1000	2.6000e-004		0.0183	0.0183		0.0183	0.0183	0.0000	21.6421	21.6421	5.2200e-003	3.0000e-004	21.8631
Unmitigated	4.3417	0.0499	3.1000	2.6000e-004		0.0183	0.0183		0.0183	0.0183	0.0000	21.6421	21.6421	5.2200e-003	3.0000e-004	21.8631

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	0.5696					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.6766					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	1.6800e-003	0.0143	6.0900e-003	9.0000e-005		1.1600e-003	1.1600e-003		1.1600e-003	1.1600e-003	0.0000	16.5787	16.5787	3.2000e-004	3.0000e-004	16.6772
Landscaping	0.0939	0.0356	3.0939	1.6000e-004		0.0171	0.0171		0.0171	0.0171	0.0000	5.0635	5.0635	4.9000e-003	0.0000	5.1859
Total	**4.3417**	**0.0499**	**3.1000**	**2.5000e-004**		**0.0183**	**0.0183**		**0.0183**	**0.0183**	**0.0000**	**21.6421**	**21.6421**	**5.2200e-003**	**3.0000e-004**	**21.8631**

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

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	0.5696					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.6766					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	1.6800e-003	0.0143	6.0900e-003	9.0000e-005		1.1600e-003	1.1600e-003		1.1600e-003	1.1600e-003	0.0000	16.5787	16.5787	3.2000e-004	3.0000e-004	16.6772
Landscaping	0.0939	0.0356	3.0939	1.6000e-004		0.0171	0.0171		0.0171	0.0171	0.0000	5.0635	5.0635	4.9000e-003	0.0000	5.1859
Total	**4.3417**	**0.0499**	**3.1000**	**2.5000e-004**		**0.0183**	**0.0183**		**0.0183**	**0.0183**	**0.0000**	**21.6421**	**21.6421**	**5.2200e-003**	**3.0000e-004**	**21.8631**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	116.7432	0.1610	0.0947	149.0023
Unmitigated	116.7432	0.1610	0.0947	149.0023

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

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments High Rise	27.0389 / 17.0463	26.1963	0.0360	0.0212	33.4074
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
General Office Building	93.3102 / 57.1901	89.9400	0.1242	0.0731	114.8202
Strip Mall	0.629616 / 0.385894	0.6069	8.4000e-004	4.9000e-004	0.7748
Total		**116.7432**	**0.1610**	**0.0947**	**149.0023**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments High Rise	27.0389 / 17.0463	26.1963	0.0360	0.0212	33.4074
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000

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

General Office Building	93.3102 / 57.1901	89.9400	0.1242	0.0731	114.8202
Strip Mall	0.629616 / 0.385894	0.6069	8.4000e-004	4.9000e-004	0.7748
Total		**116.7432**	**0.1610**	**0.0947**	**149.0023**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	139.6740	8.2545	0.0000	346.0365
Unmitigated	139.6740	8.2545	0.0000	346.0365

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			

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

Apartments High Rise	190.9	38.7510	2.2901	0.0000	96.0039
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
General Office Building	488.25	99.1103	5.8573	0.0000	245.5417
Strip Mall	8.93	1.8127	0.1071	0.0000	4.4909
Total		**139.6740**	**8.2545**	**0.0000**	**346.0365**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments High Rise	190.9	38.7510	2.2901	0.0000	96.0039
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
General Office Building	488.25	99.1103	5.8573	0.0000	245.5417
Strip Mall	8.93	1.8127	0.1071	0.0000	4.4909
Total		**139.6740**	**8.2545**	**0.0000**	**346.0365**

9.0 Operational Offroad

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

Icon-Echo MU Towers, San Jose - Santa Clara County, Annual

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	2	0	50	1340	0.73	Diesel

Boilers

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 - 9999 HP)	0.1100	0.0539	0.2804	5.3000e-004		2.1600e-003	2.1600e-003		2.1600e-003	2.1600e-003	0.0000	51.0268	51.0268	7.1500e-003	0.0000	51.2057
Total	**0.1100**	**0.0539**	**0.2804**	**5.3000e-004**		**2.1600e-003**	**2.1600e-003**		**2.1600e-003**	**2.1600e-003**	**0.0000**	**51.0268**	**51.0268**	**7.1500e-003**	**0.0000**	**51.2057**

11.0 Vegetation

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

Icon-Echo MU Towers, San Jose - Existing

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1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Convenience Market with Gas Pumps	8.00	Pump	0.03	1,129.40	0
Place of Worship	6.86	1000sqft	0.16	6,860.00	0
Strip Mall	13.50	1000sqft	0.31	13,500.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	58
Climate Zone	4			**Operational Year**	2026
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**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 existing land uses - traffic info

Construction Phase - Existing - no construction

Off-road Equipment - Existing - no construction

Grading -

Vehicle Trips - Traffic provided existing uses trip gen w/ reductions. 100% primary trips in CalEEMod to account for passby reduction in traffic

Fleet Mix - EMFAC2021 Fleet Mix Santa Clara County 2026

Energy Use - Historical energy usage

Vehicle Emission Factors - EMFAC2021 Vehicle Emission Factors Santa Clara County 2026

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

Table Name	Column Name	Default Value	New Value
tblEnergyUse	LightingElect	6.02	5.25
tblEnergyUse	LightingElect	3.80	3.08
tblEnergyUse	LightingElect	6.02	5.25
tblEnergyUse	T24E	3.55	2.46
tblEnergyUse	T24E	1.93	1.32
tblEnergyUse	T24E	3.55	2.46
tblEnergyUse	T24NG	2.92	2.34
tblEnergyUse	T24NG	22.58	19.51
tblEnergyUse	T24NG	2.92	2.34
tblFleetMix	HHD	0.00	0.02
tblFleetMix	HHD	0.00	0.02
tblFleetMix	HHD	0.00	0.02
tblFleetMix	LDA	0.00	0.54
tblFleetMix	LDA	0.00	0.54
tblFleetMix	LDA	0.00	0.54
tblFleetMix	LDT1	0.00	0.03
tblFleetMix	LDT1	0.00	0.03
tblFleetMix	LDT1	0.00	0.03
tblFleetMix	LDT2	0.00	0.23
tblFleetMix	LDT2	0.00	0.23
tblFleetMix	LDT2	0.00	0.23
tblFleetMix	LHD1	0.00	0.02
tblFleetMix	LHD1	0.00	0.02
tblFleetMix	LHD1	0.00	0.02
tblFleetMix	LHD2	0.00	6.1120e-003
tblFleetMix	LHD2	0.00	6.1120e-003
tblFleetMix	LHD2	0.00	6.1120e-003
tblFleetMix	MCY	0.00	3.5210e-003

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tblFleetMix	MCY	0.00	3.5210e-003
tblFleetMix	MCY	0.00	3.5210e-003
tblFleetMix	MDV	0.00	0.12
tblFleetMix	MDV	0.00	0.12
tblFleetMix	MDV	0.00	0.12
tblFleetMix	MH	0.00	6.4900e-004
tblFleetMix	MH	0.00	6.4900e-004
tblFleetMix	MH	0.00	6.4900e-004
tblFleetMix	MHD	0.00	0.01
tblFleetMix	MHD	0.00	0.01
tblFleetMix	MHD	0.00	0.01
tblFleetMix	OBUS	0.00	1.7230e-003
tblFleetMix	OBUS	0.00	1.7230e-003
tblFleetMix	OBUS	0.00	1.7230e-003
tblFleetMix	SBUS	0.00	5.3000e-004
tblFleetMix	SBUS	0.00	5.3000e-004
tblFleetMix	SBUS	0.00	5.3000e-004
tblFleetMix	UBUS	0.00	1.2470e-003
tblFleetMix	UBUS	0.00	1.2470e-003
tblFleetMix	UBUS	0.00	1.2470e-003
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblVehicleTrips	DV_TP	21.00	0.00
tblVehicleTrips	DV_TP	40.00	0.00
tblVehicleTrips	PB_TP	65.00	0.00
tblVehicleTrips	PB_TP	15.00	0.00
tblVehicleTrips	PR_TP	14.00	100.00

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tblVehicleTrips	PR_TP	45.00	100.00
tblVehicleTrips	ST_TR	322.50	90.38
tblVehicleTrips	ST_TR	42.04	34.64
tblVehicleTrips	SU_TR	322.50	90.38
tblVehicleTrips	SU_TR	20.43	16.83
tblVehicleTrips	WD_TR	322.50	90.38
tblVehicleTrips	WD_TR	44.32	36.52

2.0 Emissions Summary

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	0.0952	0.0000	2.6000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	5.1000e-004	5.1000e-004	0.0000	0.0000	5.4000e-004
Energy	1.1500e-003	0.0105	8.8000e-003	6.0000e-005		8.0000e-004	8.0000e-004		8.0000e-004	8.0000e-004	0.0000	30.6154	30.6154	3.3300e-003	5.9000e-004	30.8731
Mobile	0.6482	0.6304	4.0943	0.0125	1.1283	9.1200e-003	1.1374	0.2818	8.5400e-003	0.2904	0.0000	1,197.0605	1,197.0605	0.0509	0.0609	1,216.4816
Waste						0.0000	0.0000		0.0000	0.0000	10.8154	0.0000	10.8154	0.6392	0.0000	26.7946
Water						0.0000	0.0000		0.0000	0.0000	0.4119	0.9738	1.3857	0.0425	1.0200e-003	2.7506
Total	**0.7445**	**0.6409**	**4.1034**	**0.0126**	**1.1283**	**9.9200e-003**	**1.1382**	**0.2818**	**9.3400e-003**	**0.2912**	**11.2272**	**1,228.6502**	**1,239.8774**	**0.7359**	**0.0625**	**1,276.9004**

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

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0952	0.0000	2.6000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	5.1000e-004	5.1000e-004	0.0000	0.0000	5.4000e-004
Energy	1.1500e-003	0.0105	8.8000e-003	6.0000e-005		8.0000e-004	8.0000e-004		8.0000e-004	8.0000e-004	0.0000	30.6154	30.6154	3.3300e-003	5.9000e-004	30.8731
Mobile	0.6482	0.6304	4.0943	0.0125	1.1283	9.1200e-003	1.1374	0.2818	8.5400e-003	0.2904	0.0000	1,197.0605	1,197.0605	0.0509	0.0609	1,216.4816
Waste						0.0000	0.0000		0.0000	0.0000	10.8154	0.0000	10.8154	0.6392	0.0000	26.7946
Water						0.0000	0.0000		0.0000	0.0000	0.4119	0.9738	1.3857	0.0425	1.0200e-003	2.7506
Total	**0.7445**	**0.6409**	**4.1034**	**0.0126**	**1.1283**	**9.9200e-003**	**1.1382**	**0.2818**	**9.3400e-003**	**0.2912**	**11.2272**	**1,228.6502**	**1,239.8774**	**0.7359**	**0.0625**	**1,276.9004**

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

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

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Category	tons/yr										MT/yr					
Mitigated	0.6482	0.6304	4.0943	0.0125	1.1283	9.1200e-003	1.1374	0.2818	8.5400e-003	0.2904	0.0000	1,197.0605	1,197.0605	0.0509	0.0609	1,216.4816
Unmitigated	0.6482	0.6304	4.0943	0.0125	1.1283	9.1200e-003	1.1374	0.2818	8.5400e-003	0.2904	0.0000	1,197.0605	1,197.0605	0.0509	0.0609	1,216.4816

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Convenience Market with Gas Pumps	723.04	723.04	723.04	1,925,894	1,925,894
Place of Worship	47.68	41.09	189.54	125,341	125,341
Strip Mall	493.02	467.64	227.21	1,259,524	1,259,524
Total	1,263.74	1,231.77	1,139.79	3,310,759	3,310,759

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
Convenience Market with Gas Pumps	9.50	7.30	7.30	0.80	80.20	19.00	100	0	0
Place of Worship	9.50	7.30	7.30	0.00	95.00	5.00	64	25	11
Strip Mall	9.50	7.30	7.30	16.60	64.40	19.00	100	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Convenience Market with Gas Pumps	0.541057	0.034611	0.227949	0.124011	0.024753	0.006112	0.010991	0.022846	0.001723	0.001247	0.003521	0.000530	0.000649
Place of Worship	0.541057	0.034611	0.227949	0.124011	0.024753	0.006112	0.010991	0.022846	0.001723	0.001247	0.003521	0.000530	0.000649
Strip Mall	0.541057	0.034611	0.227949	0.124011	0.024753	0.006112	0.010991	0.022846	0.001723	0.001247	0.003521	0.000530	0.000649

5.0 Energy Detail

Historical Energy Use: Y

5.1 Mitigation Measures Energy

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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					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	19.2047	19.2047	3.1100e-003	3.8000e-004	19.3946
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	19.2047	19.2047	3.1100e-003	3.8000e-004	19.3946
NaturalGas Mitigated	1.1500e-003	0.0105	8.8000e-003	6.0000e-005		8.0000e-004	8.0000e-004		8.0000e-004	8.0000e-004	0.0000	11.4107	11.4107	2.2000e-004	2.1000e-004	11.4785
NaturalGas Unmitigated	1.1500e-003	0.0105	8.8000e-003	6.0000e-005		8.0000e-004	8.0000e-004		8.0000e-004	8.0000e-004	0.0000	11.4107	11.4107	2.2000e-004	2.1000e-004	11.4785

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					
Convenience Market with Gas ...	2642.8	1.0000e-005	1.3000e-004	1.1000e-004	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	0.1410	0.1410	0.0000	0.0000	0.1419
Place of Worship	179595	9.7000e-004	8.8000e-003	7.4000e-003	5.0000e-005		6.7000e-004	6.7000e-004		6.7000e-004	6.7000e-004	0.0000	9.5839	9.5839	1.8000e-004	1.8000e-004	9.6408
Strip Mall	31590	1.7000e-004	1.5500e-003	1.3000e-003	1.0000e-005		1.2000e-004	1.2000e-004		1.2000e-004	1.2000e-004	0.0000	1.6858	1.6858	3.0000e-005	3.0000e-005	1.6958
Total		**1.1500e-003**	**0.0105**	**8.8100e-003**	**6.0000e-005**		**8.0000e-004**	**8.0000e-004**		**8.0000e-004**	**8.0000e-004**	**0.0000**	**11.4107**	**11.4107**	**2.1000e-004**	**2.1000e-004**	**11.4785**

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

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					
Convenience Market with Gas Pumps	2642.8	1.0000e-005	1.3000e-004	1.1000e-004	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	0.1410	0.1410	0.0000	0.0000	0.1419
Place of Worship	179595	9.7000e-004	8.8000e-003	7.4000e-003	5.0000e-005		6.7000e-004	6.7000e-004		6.7000e-004	6.7000e-004	0.0000	9.5839	9.5839	1.8000e-004	1.8000e-004	9.6408
Strip Mall	31590	1.7000e-004	1.5500e-003	1.3000e-003	1.0000e-005		1.2000e-004	1.2000e-004		1.2000e-004	1.2000e-004	0.0000	1.6858	1.6858	3.0000e-005	3.0000e-005	1.6958
Total		**1.1500e-003**	**0.0105**	**8.8100e-003**	**6.0000e-005**		**8.0000e-004**	**8.0000e-004**		**8.0000e-004**	**8.0000e-004**	**0.0000**	**11.4107**	**11.4107**	**2.1000e-004**	**2.1000e-004**	**11.4785**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Convenience Market with Gas Pumps	11734.5	1.0857	1.8000e-004	2.0000e-005	1.0965
Place of Worship	55566	5.1412	8.3000e-004	1.0000e-004	5.1920
Strip Mall	140265	12.9779	2.1000e-003	2.5000e-004	13.1062

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

Total		**19.2048**	**3.1100e-003**	**3.7000e-004**	**19.3946**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Convenience Market with Gas Pumps	11734.5	1.0857	1.8000e-004	2.0000e-005	1.0965
Place of Worship	55566	5.1412	8.3000e-004	1.0000e-004	5.1920
Strip Mall	140265	12.9779	2.1000e-003	2.5000e-004	13.1062
Total		**19.2048**	**3.1100e-003**	**3.7000e-004**	**19.3946**

6.0 Area Detail

6.1 Mitigation Measures Area

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

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

Mitigated	0.0952	0.0000	2.6000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	5.1000e-004	5.1000e-004	0.0000	0.0000	5.4000e-004
Unmitigated	0.0952	0.0000	2.6000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	5.1000e-004	5.1000e-004	0.0000	0.0000	5.4000e-004

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	0.0112					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0839					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.0000e-005	0.0000	2.6000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	5.1000e-004	5.1000e-004	0.0000	0.0000	5.4000e-004
Total	**0.0952**	**0.0000**	**2.6000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**5.1000e-004**	**5.1000e-004**	**0.0000**	**0.0000**	**5.4000e-004**

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	0.0112					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

Consumer Products	0.0839					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.0000e-005	0.0000	2.6000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	5.1000e-004	5.1000e-004	0.0000	0.0000	5.4000e-004
Total	**0.0952**	**0.0000**	**2.6000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**5.1000e-004**	**5.1000e-004**	**0.0000**	**0.0000**	**5.4000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	1.3857	0.0425	1.0200e-003	2.7506
Unmitigated	1.3857	0.0425	1.0200e-003	2.7506

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			

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

Convenience Market with Gas Pumps	0.0836574 / 0.0510780	0.0850	2.7400e-003	7.0000e-005	0.1729
Place of Worship	0.214642 / 0.335722	0.2843	7.0300e-003	1.7000e-004	0.5105
Strip Mall	0.999979 / 0.61289	1.0164	0.0327	7.8000e-004	2.0672
Total		**1.3857**	**0.0425**	**1.0200e-003**	**2.7506**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Convenience Market with Gas Pumps	0.0836574 / 0.0510780	0.0850	2.7400e-003	7.0000e-005	0.1729
Place of Worship	0.214642 / 0.335722	0.2843	7.0300e-003	1.7000e-004	0.5105
Strip Mall	0.999979 / 0.61289	1.0164	0.0327	7.8000e-004	2.0672
Total		**1.3857**	**0.0425**	**1.0200e-003**	**2.7506**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

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

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	10.8154	0.6392	0.0000	26.7946
Unmitigated	10.8154	0.6392	0.0000	26.7946

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Place of Worship	39.1	7.9370	0.4691	0.0000	19.6635
Strip Mall	14.18	2.8784	0.1701	0.0000	7.1311
Total		**10.8154**	**0.6392**	**0.0000**	**26.7946**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e

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

Land Use	tons	MT/yr			
Place of Worship	39.1	7.9370	0.4691	0.0000	19.6635
Strip Mall	14.18	2.8784	0.1701	0.0000	7.1311
Total		**10.8154**	**0.6392**	**0.0000**	**26.7946**

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Attachment 3: EMFAC2021 Emissions and CARB SAFE Off-Model 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	23	0	1012	0	1,291	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT	10929.6	0	25820
Site Preparation	13	0	286	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT	3088.8	0	0
Grading	23	0	1518	0	2,688	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT	16394.4	0	53760
Trenching	5	0	330	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT	3564	0	0
Structure	667	209	176088	55176	0	10.8	7.3	7.3	LD_Mix	HDT_Mix	HHDT	1901750	402784.8	0
Building Construction	667	209	102718	32186	6,000	10.8	7.3	7.3	LD_Mix	HDT_Mix	HHDT	1109354	234957.8	43800
Architectural Coating	133	0	19019	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT	205405.2	0	0
Paving	15	0	645	0	30	10.8	7.3	7.3	LD_Mix	HDT_Mix	HHDT	6966	0	219

Number of Days Per Year					
2023	1/3/23	12/31/23	363	311	
2024	1/1/24	12/31/24	366	314	
2025	1/1/25	12/31/25	365	313	
			1094	**939**	***Total Workdays***

Phase	Start Date	End Date	Days/Week	Workdays
Demolition	1/3/2023	3/3/2023	6	44
Site Preparation	3/4/2023	4/4/2023	6	22
Grading	4/3/2023	7/3/2023	6	66
Trenching	7/2/2023	10/2/2023	6	66
Structure	9/30/2023	10/3/2024	6	264
Building Construction	9/24/2024	4/25/2025	6	154
Architectural Coating	4/22/2025	11/6/2025	6	143
Paving	11/3/2025	12/31/2025	6	43

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														
2023	0.1728	0.7787	1.6652	0.0075	0.4395	0.0550	0.4945	0.0661	0.0224	0.0886	725.4747	0.0399	0.0717	747.8250
2024	0.1643	0.7508	1.5791	0.0074	0.4431	0.0551	0.4982	0.0667	0.0223	0.0890	720.7103	0.0387	0.0708	742.7702
2025	0.1560	0.7163	1.4888	0.0073	0.4419	0.0546	0.4965	0.0665	0.0219	0.0884	707.3696	0.0370	0.0690	728.8654
Toxic Air Contaminants (0.5 Mile Trip Length)														
2023	0.1535	0.2618	0.5845	0.0007	0.0218	0.0034	0.0252	0.0033	0.0016	0.0049	67.4277	0.0148	0.0108	71.0083
2024	0.1469	0.2597	0.5607	0.0007	0.0220	0.0034	0.0254	0.0033	0.0016	0.0049	66.8803	0.0144	0.0106	70.4003
2025	0.1404	0.2545	0.5336	0.0007	0.0219	0.0034	0.0253	0.0033	0.0015	0.0048	65.5507	0.0137	0.0103	68.9698

CalEEMod EMFAC2021 Emission Factors Input — Year 2026

Season	EmissionType	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
A	CH4_IDLEX	0	0	0	0	0.005024	0.002901	0.014329	0.224308568	0.007552	0	0	0.077545	0
A	CH4_RUNEX	0.001675	0.00501	0.002402	0.002962	0.006511	0.00591	0.009525	0.111846137	0.009865	0.533854641	0.154451	0.090415	0.009919
A	CH4_STREX	0.056959	0.091594	0.07317	0.0841	0.020518	0.010947	0.007919	7.49827E-08	0.016116	0.003711567	0.172746	0.004993	0.025168
A	CO_IDLEX	0	0	0	0	0.193382	0.139764	0.664762	5.153655195	0.53297	0	0	1.729088	0
A	CO_RUNEX	0.577812	1.217819	0.748128	0.813785	0.767637	0.490256	0.257149	0.733099915	0.401188	6.307010922	11.99329	0.836984	0.927158
A	CO_STREX	2.57526	4.55299	3.265545	3.42337	2.163001	1.175504	0.934813	0.000737725	1.778436	0.497532984	7.931677	0.675054	2.264736
A	CO2_NBIO_IDLEX	0	0	0	0	8.476906	13.60976	156.6958	795.6699429	88.15791	0	0	188.587	0
A	CO2_NBIO_RUNEX	244.365	328.8861	339.6578	408.0688	747.6667	794.4808	1196.529	1554.973392	1344.054	1064.852599	186.8446	1007.354	1674.317
A	CO2_NBIO_STREX	63.16695	85.95778	86.56713	103.199	17.33995	9.379616	7.914622	0.013527798	14.24203	3.148221534	46.30646	3.836494	21.6173
A	NOX_IDLEX	0	0	0	0	0.04434	0.086409	0.837392	4.013652026	0.3605	0	0	1.308491	0
A	NOX_RUNEX	0.030445	0.103441	0.056133	0.074701	0.516639	0.725632	0.906229	1.701647234	0.930849	0.294278253	0.54585	2.244119	1.44219
A	NOX_STREX	0.208428	0.338338	0.292916	0.34788	0.400976	0.21716	1.391692	2.760133946	0.991531	0.038127875	0.123182	0.502734	0.298756
A	PM10_IDLEX	0	0	0	0	0.000687	0.001406	0.001445	0.002012959	0.00039	0	0	0.001113	0
A	PM10_PMBW	0.007122	0.009211	0.008856	0.008951	0.077204	0.090087	0.045088	0.081458247	0.049896	0.125580022	0.012	0.044699	0.044944
A	PM10_PMTW	0.008	0.008	0.008	0.008	0.009418	0.010663	0.012	0.035131691	0.012	0.044105924	0.004	0.010543	0.013261
A	PM10_RUNEX	0.001081	0.001722	0.001255	0.001258	0.012107	0.020463	0.009635	0.024769283	0.014798	0.005547054	0.001945	0.011633	0.027752
A	PM10_STREX	0.001791	0.002615	0.002002	0.001984	0.00019	8.13E-05	9.63E-05	3.29375E-07	0.000129	1.21095E-05	0.00347	4.23E-05	0.000281
A	PM25_IDLEX	0	0	0	0	0.000657	0.001346	0.001382	0.001919468	0.000373	0	0	0.001064	0
A	PM25_PMBW	0.002493	0.003224	0.0031	0.003133	0.027021	0.03153	0.015781	0.028510387	0.017464	0.043953008	0.0042	0.015645	0.01573
A	PM25_PMTW	0.002	0.002	0.002	0.002	0.002355	0.002666	0.003	0.008782923	0.003	0.011026481	0.001	0.002636	0.003315
A	PM25_RUNEX	0.000995	0.001585	0.001154	0.00116	0.011546	0.019561	0.00921	0.02369428	0.014149	0.005303299	0.001818	0.011114	0.026508
A	PM25_STREX	0.001647	0.002404	0.001841	0.001824	0.000174	7.48E-05	8.86E-05	3.02848E-07	0.000118	1.11343E-05	0.003256	3.89E-05	0.000258
A	ROG_DIURN	0.255064	0.530888	0.279706	0.323614	0.116726	0.060196	0.021313	0.000106002	0.073271	0.010212124	3.854231	0.032962	28.55295
A	ROG_HTSK	0.073852	0.147903	0.075456	0.084729	0.028726	0.014862	0.005106	3.36143E-05	0.016123	0.003780717	3.558543	0.008313	7.360966
A	ROG_IDLEX	0	0	0	0	0.020461	0.015058	0.024261	0.32445582	0.04037	0	0	0.189085	0
A	ROG_RESTL	0.255064	0.530888	0.279706	0.323614	0.116726	0.060196	0.021313	0.000106002	0.073271	0.010212124	3.854231	0.032962	28.55295
A	ROG_RUNEX	0.00622	0.02192	0.009251	0.012187	0.073128	0.102722	0.027662	0.017018907	0.041494	0.059153068	0.991178	0.051281	0.070828
A	ROG_RUNLS	0.191409	0.414819	0.208857	0.245046	0.165357	0.082688	0.042018	0.000302729	0.081242	0.00798618	3.769688	0.021611	0.176029
A	ROG_STREX	0.254766	0.459227	0.333189	0.409144	0.100626	0.053154	0.043043	4.06848E-07	0.08541	0.013136414	1.267526	0.028372	0.103602
A	SO2_IDLEX	0	0	0	0	8.25E-05	0.00013	0.001452	0.006923512	0.000833	0	0	0.001712	0
A	SO2_RUNEX	0.002324	0.003128	0.00323	0.003879	0.0073	0.007651	0.011344	0.014049606	0.012819	0.008586151	0.001847	0.009359	0.016412
A	SO2_STREX	0.000601	0.000818	0.000823	0.000982	0.000171	9.27E-05	7.82E-05	1.33736E-07	0.000141	3.11234E-05	0.000458	3.79E-05	0.000214
A	TOG_DIURN	0.255064	0.530888	0.279706	0.323614	0.116726	0.060196	0.021313	0.000106002	0.073271	0.010212124	0.085098	0.032962	28.55295
A	TOG_HTSK	0.073852	0.147903	0.075456	0.084729	0.028726	0.014862	0.005106	3.36143E-05	0.016123	0.003780717	3.558543	0.008313	7.360966
A	TOG_IDLEX	0	0	0	0	0.028987	0.020219	0.041853	0.579654551	0.053441	0	0	0.308305	0
A	TOG_RESTL	0.255064	0.530888	0.279706	0.323614	0.116726	0.060196	0.021313	0.000106002	0.073271	0.010212124	0.085098	0.032962	28.55295
A	TOG_RUNEX	0.009064	0.031971	0.013484	0.017736	0.08958	0.119	0.040924	0.131035808	0.057178	0.601092032	1.200425	0.149659	0.091829
A	TOG_RUNLS	0.191409	0.414819	0.208857	0.245046	0.165357	0.082688	0.042018	0.000302729	0.081242	0.00798618	3.769688	0.021611	0.176029
A	TOG_STREX	0.278937	0.502796	0.3648	0.447961	0.110173	0.058197	0.047127	4.45447E-07	0.093513	0.01438272	1.378329	0.031064	0.113431
A	N2O_IDLEX	0	0	0	0	0.00063	0.00168	0.024186	0.128345993	0.012682	0	0	0.024778	0
A	N2O_RUNEX	0.003678	0.007971	0.005347	0.006983	0.039725	0.080555	0.153578	0.248265947	0.156351	0.163683708	0.038475	0.124	0.068939
A	N2O_STREX	0.027983	0.036165	0.034432	0.036101	0.033064	0.017628	0.005689	8.0417E-06	0.013951	0.006034849	0.007381	0.004502	0.032161

CalEEMod EMFAC2021 Fleet Mix Input — Year 2026

FleetMixLandUseSubType	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments High Rise	0.541057	0.034611	0.227949	0.124011	0.024753	0.006112	0.010991	0.022846	0.001723	0.001247	0.003521	0.00053	0.000649
Enclosed Parking with Ele\	0.541057	0.034611	0.227949	0.124011	0.024753	0.006112	0.010991	0.022846	0.001723	0.001247	0.003521	0.00053	0.000649
General Office Building	0.541057	0.034611	0.227949	0.124011	0.024753	0.006112	0.010991	0.022846	0.001723	0.001247	0.003521	0.00053	0.000649
Strip Mall	0.541057	0.034611	0.227949	0.124011	0.024753	0.006112	0.010991	0.022846	0.001723	0.001247	0.003521	0.00053	0.000649

CalEEMod EMFAC2021 Fleet Mix Input — Year 2026

FleetMixLandUseSubType	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Convenience Market with	0.541057	0.034611	0.227949	0.124011	0.024753	0.006112	0.010991	0.022846	0.001723	0.001247	0.003521	0.00053	0.000649
Place of Worship	0.541057	0.034611	0.227949	0.124011	0.024753	0.006112	0.010991	0.022846	0.001723	0.001247	0.003521	0.00053	0.000649
Strip Mall	0.541057	0.034611	0.227949	0.124011	0.024753	0.006112	0.010991	0.022846	0.001723	0.001247	0.003521	0.00053	0.000649

Source: EMFAC2021 (v1.0.1) Emission Rates
Region Type: County
Region: Santa Clara
Calendar Year: 2023
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_PMI	CO2_RUNEX	CO2_IDLEX	CO2_STREX	CH4_RUNEX	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	2023	HHDT	Aggregate	Aggregate	Gasoline	3.454009	114.3093	114.3093	0	69.10781	0	8.107874	0	1.602501	0.00493	0	0.0017	0.005	0.035266	0.005362	0	0.001849	0.02	0.100759	2306.817	0	49.81185	0.340225	0	0.00018	0.208909	0	0.045697	2.104867	0	0.000979	0.158374	1.426645	10.65375	3.071416	0	0.001072	0.158374	1.426645	10.65375	0.040468	83.0074	0	1.02738	0.022805	0	0.000492
Santa Clara	2023	HHDT	Aggregate	Aggregate	Diesel	8235.059	991289	991289	0	120860.8	0	1.969368	63.40488	2.849455	0.025957	0.031631	0	0.008769	0.027531	0.027131	0.033061	0	0.035077	0.078661	1656.801	12241.32	0	0.000809	0.237446	0	0.26103	1.928625	0	0.017417	5.112156	0	0	0	0	0.019828	5.819801	0	0	0	0	0	0.214624	0.087393	74.20136	0	0.015689	0.115918	0
Santa Clara	2023	HHDT	Aggregate	Aggregate	Electricity	6.70171	411.5054	0	411.5054	103.2044	754.9233	0	0	0	0	0	0	0.00874	0.013383	0	0	0	0.03496	0.038238	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	2023	HHDT	Aggregate	Aggregate	Natural Ga	753.7366	53295.97	53295.97	0	6914.034	0	1.208844	13.92832	0	0.001774	0.024237	0	0.009	0.046729	0.001929	0.02636	0	0.036	0.133512	1398.51	10630.2	0	2.44811	37.44665	0	0.285095	2.167036	0	0.054572	0.572265	0	0	0	0	0.860105	13.78246	74.03965	0	0	0	0	0	0	0	0	0	0	0	0
Santa Clara	2023	LDA	Aggregate	Aggregate	Gasoline	601938.3	22370251	22370251	0	2795479	0	0.047412	0	0.27189	0.001217	0	0.001992	0.002	0.002656	0.001323	0	0.002167	0.008	0.007588	282.586	0	71.87767	0.002603	0	0.076449	0.004995	0	0.034134	0.01016	0	0.353794	0.094758	0.240611	1.480552	0.014823	0	0.387359	0.094758	0.240611	1.480552	0.033781	0.787617	0	3.436611	0.002794	0	0.000711
Santa Clara	2023	LDA	Aggregate	Aggregate	Diesel	1871.125	56220.8	56220.8	0	8000.531	0	0.238318	0	0	0.018559	0	0	0.002	0.002698	0.019399	0	0	0.008	0.007709	234.6327	0	0	0.001413	0	0	0.036966	0	0	0.030417	0	0	0	0	0	0.034627	0	0	0	0	0	0.0031	0.342459	0	0	0.002223	0	0
Santa Clara	2023	LDA	Aggregate	Aggregate	Electricity	53751.15	2268185	0	2268185	265250.1	875706.7	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	2023	LDA	Aggregate	Aggregate	Plug-in Hyb	15805.32	700610.9	356649.7	343961.3	65355	103886.6	0.00334	0	0.11551	0.000664	0	0.002171	0.002	0.001373	0.000722	0	0.002361	0.008	0.003922	141.9339	0	66.50966	0.000457	0	0.042604	0.000605	0	0.020916	0.001444	0	0.173285	0.040642	0.036088	0.447056	0.002108	0	0.189725	0.040642	0.036088	0.447056	0.019705	0.219019	0	1.339893	0.001403	0	0.000658
Santa Clara	2023	LDT1	Aggregate	Aggregate	Gasoline	53782.25	1744480	1744480	0	239737.9	0	0.143293	0	0.404336	0.00185	0	0.002837	0.002	0.003239	0.002012	0	0.003085	0.008	0.009253	333.6435	0	88.48953	0.006987	0	0.112557	0.010257	0	0.039834	0.031222	0	0.583212	0.174145	0.503091	2.807011	0.045546	0	0.638542	0.174145	0.503091	2.807011	0.035775	1.553409	0	5.660037	0.003298	0	0.000875
Santa Clara	2023	LDT1	Aggregate	Aggregate	Diesel	26.04714	391.8698	391.8698	0	75.17737	0	1.659056	0	0	0.24041	0	0	0.002	0.003728	0.25128	0	0	0.008	0.010651	415.6155	0	0	0.013928	0	0	0.06548	0	0	0.299852	0	0	0	0	0	0.341362	0	0	0	0	0	0.0031	1.601395	0	0	0.003938	0	0
Santa Clara	2023	LDT1	Aggregate	Aggregate	Electricity	194.8941	7068.184	0	7068.184	916.4832	2728.903	0	0	0	0	0	0	0.002	0.00154	0	0	0	0.008	0.0044	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	2023	LDT1	Aggregate	Aggregate	Plug-in Hyb	43.27677	2048.369	944.1579	1104.211	178.9495	333.5047	0.003025	0	0.11551	0.000387	0	0.00141	0.002	0.001383	0.000421	0	0.001534	0.008	0.003951	128.5161	0	72.39136	0.000412	0	0.042439	0.000544	0	0.020762	0.001308	0	0.173285	0.024584	0.021781	0.285922	0.001909	0	0.189725	0.024584	0.021781	0.285922	0.019359	0.198314	0	1.339893	0.001271	0	0.000716
Santa Clara	2023	LDT2	Aggregate	Aggregate	Gasoline	280180.4	10140967	10140967	0	1311796	0	0.077207	0	0.358346	0.001265	0	0.002003	0.002	0.003125	0.001375	0	0.002179	0.008	0.008929	351.1382	0	90.07377	0.003121	0	0.087759	0.006381	0	0.038646	0.012417	0	0.410727	0.085119	0.224187	1.404898	0.018118	0	0.449694	0.085119	0.224187	1.404898	0.035545	0.896823	0	3.892097	0.003471	0	0.00089
Santa Clara	2023	LDT2	Aggregate	Aggregate	Diesel	978.4967	36936.87	36936.87	0	4673.401	0	0.046157	0	0	0.005431	0	0	0.002	0.003102	0.005677	0	0	0.008	0.008863	315.6668	0	0	0.00065	0	0	0.049733	0	0	0.013984	0	0	0	0	0	0.015919	0	0	0	0	0	0.0031	0.132099	0	0	0.002991	0	0
Santa Clara	2023	LDT2	Aggregate	Aggregate	Electricity	1105.879	38931.7	0	38931.7	5663.051	15030.85	0	0	0	0	0	0	0.002	0.001525	0	0	0	0.008	0.004357	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	2023	LDT2	Aggregate	Aggregate	Plug-in Hyb	1696.55	77270.66	37142.68	40127.98	7015.234	12119.85	0.003154	0	0.11551	0.000504	0	0.001759	0.002	0.001378	0.000548	0	0.001913	0.008	0.003938	134.0231	0	78.93358	0.000429	0	0.042457	0.000568	0	0.020778	0.001364	0	0.173285	0.02624	0.024448	0.318232	0.00199	0	0.189725	0.02624	0.024448	0.318232	0.020144	0.206812	0	1.339893	0.001325	0	0.000778
Santa Clara	2023	LHDT1	Aggregate	Aggregate	Gasoline	19180.96	711085.5	711085.5	0	285767.8	0	0.197814	0.037373	0.6588	0.001595	0	0.000328	0.002	0.0273	0.001734	0	0.000356	0.008	0.078	889.7424	120.2664	25.83956	0.009485	0.115635	0.034516	0.011082	0.003012	0.051891	0.047656	0.428153	0.172233	0.050564	0.277601	2.913784	0.069539	0.62476	0.188574	0.050564	0.277601	2.913784	0.044872	1.225109	3.753425	3.080251	0.008796	0.001189	0.000255
Santa Clara	2023	LHDT1	Aggregate	Aggregate	Diesel	9807.465	384084.8	384084.8	0	123365.6	0	1.780633	2.029274	0	0.038253	0.026974	0	0.003	0.0273	0.039983	0.028193	0	0.012	0.078	635.427	132.908	0	0.008623	0.005098	0	0.100112	0.02094	0	0.185652	0.10976	0	0	0	0	0.211352	0.124954	0	0	0	0	0.16551	0.518876	0.909745	0	0.006021	0.001259	0
Santa Clara	2023	LHDT2	Aggregate	Aggregate	Gasoline	2494.382	90793.04	90793.04	0	37162.58	0	0.187016	0.036817	0.642061	0.001446	0	0.00026	0.002	0.03185	0.001572	0	0.000283	0.008	0.091	997.3845	138.7974	25.72325	0.007074	0.114568	0.033461	0.01097	0.002967	0.050452	0.033047	0.42203	0.165607	0.046993	0.25097	2.676301	0.048222	0.615826	0.181319	0.046993	0.25097	2.676301	0.044967	0.961891	3.759407	3.119312	0.00986	0.001372	0.000254
Santa Clara	2023	LHDT2	Aggregate	Aggregate	Diesel	4479.532	176769.2	176769.2	0	56346.87	0	1.416942	1.998258	0	0.034177	0.027026	0	0.003	0.03185	0.035723	0.028248	0	0.012	0.091	764.5039	212.1206	0	0.007824	0.005098	0	0.120448	0.03342	0	0.168448	0.10976	0	0	0	0	0.191767	0.124954	0	0	0	0	0.178982	0.44054	0.909745	0	0.007244	0.00201	0
Santa Clara	2023	MCY	Aggregate	Aggregate	Gasoline	27894.5	164894.5	164894.5	0	55788.99	0	0.586927	0	0.142374	0.001778	0	0.003413	0.001	0.0042	0.001899	0	0.003626	0.004	0.012	188.3093	0	49.59811	0.167622	0	0.187482	0.040223	0	0.008379	1.105923	0	1.392636	3.5601	3.745685	3.947874	1.324135	0	1.513873	3.5601	3.745685	3.947874	0.00876	13.08956	0	8.051197	0.001862	0	0.00049
Santa Clara	2023	MDV	Aggregate	Aggregate	Gasoline	153799.1	5358084	5358084	0	712433.9	0	0.117759	0	0.470106	0.001289	0	0.002144	0.002	0.003187	0.001402	0	0.002331	0.008	0.009106	426.0995	0	109.7064	0.004406	0	0.110292	0.008479	0	0.043081	0.018826	0	0.559259	0.101975	0.285798	1.72733	0.02744	0	0.612315	0.101975	0.285798	1.72733	0.035428	1.067328	0	4.333252	0.004212	0	0.001085
Santa Clara	2023	MDV	Aggregate	Aggregate	Diesel	2374.918	86834.44	86834.44	0	11267.05	0	0.053096	0	0	0.00515	0	0	0.002	0.003181	0.005383	0	0	0.008	0.00909	413.3141	0	0	0.000529	0	0	0.065118	0	0	0.011397	0	0	0	0	0	0.012975	0	0	0	0	0	0.0031	0.202592	0	0	0.003916	0	0
Santa Clara	2023	MDV	Aggregate	Aggregate	Electricity	1130.115	40073.7	0	40073.7	5799.833	15471.76	0	0	0	0	0	0	0.002	0.001524	0	0	0	0.008	0.004354	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	2023	MDV	Aggregate	Aggregate	Plug-in Hyb	986.0895	41899.14	20787.35	21111.79	4077.48	6376.389	0.003256	0	0.11551	0.000638	0	0.002151	0.002	0.001376	0.000693	0	0.002339	0.008	0.00393	138.3296	0	98.37574	0.000441	0	0.042261	0.000581	0	0.020595	0.001408	0	0.173285	0.02985	0.028058	0.359617	0.002054	0	0.189725	0.02985	0.028058	0.359617	0.020837	0.213457	0	1.339893	0.001368	0	0.000973
Santa Clara	2023	MH	Aggregate	Aggregate	Gasoline	2522.745	22546.87	22546.87	0	252.3754	0	0.479133	0	0.412521	0.001781	0	0.000428	0.003	0.015756	0.001937	0	0.000466	0.012	0.045017	1948.243	0	31.87585	0.018146	0	0.038028	0.02809	0	0.042647	0.082252	0	0.163779	13.03985	0.30297	4.773625	0.120022	0	0.179318	13.03985	0.30297	4.773625	0.044742	2.111943	0	3.629376	0.01926	0	0.000315
Santa Clara	2023	MH	Aggregate	Aggregate	Diesel	959.1578	9344.849	9344.849	0	95.91578	0	4.269554	0	0	0.097907	0	0	0.004	0.015675	0.102334	0	0	0.016	0.044785	1081.435	0	0	0.005704	0	0	0.17038	0	0	0.122812	0	0	0	0	0	0.139813	0	0	0	0	0	0.150005	0.410284	0	0	0.010247	0	0
Santa Clara	2023	MHDT	Aggregate	Aggregate	Gasoline	1418.703	70785.86	70785.86	0	28385.41	0	0.562864	0.088304	0.453053	0.001386	0	0.000555	0.003	0.015756	0.001507	0	0.000603	0.012	0.045017	1792.411	536.9661	47.19918	0.018074	0.254589	0.049387	0.026381	0.007064	0.032566	0.09086	1.010025	0.279571	0.037187	0.302385	3.037923	0.132583	1.473826	0.306095	0.037187	0.302385	3.037923	0.04497	1.909686	15.08517	6.156285	0.01772	0.005308	0.000467
Santa Clara	2023	MHDT	Aggregate	Aggregate	Diesel	10273.55	431550.4	431550.4	0	122418.2	0	1.337342	13.57242	1.624162	0.016518	0.035742	0	0.003	0.015941	0.017265	0.037358	0	0.012	0.045546	1151.562	2263.789	0	0.010721	0.012298	0	0.181429	0.356661	0	0.037048	0.26478	0	0	0	0	0.042176	0.301431	0	0	0	0	0.209014	0.132571	7.583386	0	0.010905	0.021437	0
Santa Clara	2023	MHDT	Aggregate	Aggregate	Electricity	4.749835	101.8022	0	101.8022	59.6458	108.685	0	0	0	0	0	0	0.003	0.00799	0	0	0	0.012	0.022828	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	2023	MHDT	Aggregate	Aggregate	Natural Ga	83.841	4047.874	4047.874	0	762.81	0	0.141319	6.52743	0	0.001137	0.017647	0	0.003	0.016002	0.001236	0.019193	0	0.012	0.045721	989.385	5296.533	0	0.740055	17.59163	0	0.201693	1.079733	0	0.010574	0.25135	0	0	0	0	0.755281	17.95355	0	0	0	0	1.06	2.992708	33.64344	0	0	0	0
Santa Clara	2023	OBUS	Aggregate	Aggregate	Gasoline	458.8974	20830.08	20830.08	0	9181.619	0	0.553081	0.064991	0.405616	0.000893	0	0.000264	0.003	0.01568	0.000972	0	0.000287	0.012	0.044799	1784.092	381.8461	31.89445	0.015808	0.194938	0.036281	0.026177	0.005253	0.030766	0.078109	0.745234	0.192301	0.034706	0.154035	2.766253	0.113977	1.087444	0.210546	0.034706	0.154035	2.766253	0.044918	1.743956	5.768375	4.071703	0.017638	0.003775	0.000315
Santa Clara	2023	OBUS	Aggregate	Aggregate	Diesel	870.4209	61645.66	61645.66	0	8910.755	0	1.203188	7.410097	1.541404	0.020323	0.008632	0	0.003	0.018018	0.021242	0.009022	0	0.012	0.05148	1282.538	1552.949	0	0.001991	0.020568	0	0.202064	0.244668	0	0.04286	0.442828	0	0	0	0	0.048793	0.504126	0	0	0	0	0.215865	0.153454	7.510858	0	0.012145	0.014706	0
Santa Clara	2023	OBUS	Aggregate	Aggregate	Natural Ga	6.1456	409.5466	409.5466	0	54.69584	0	0.219315	1.549107	0	0.000923	0.00362	0	0.003	0.016148	0.001004	0.003937	0	0.012	0.046137	1017.405	1188.285	0	0.774069	4.381267	0	0.207405	0.24224	0	0.01106	0.0626	0	0	0	0	0.789994	4.471404	0	0	0	0	1.06	3.211954	6.724204	0	0	0	0
Santa Clara	2023	SBUS	Aggregate	Aggregate	Gasoline	166.9867	8309.308	8309.308	0	667.9468	0	0.519317	0.925703	0.7051	0.000862	0	0.000556	0.002	0.015721	0.000937	0	0.000609	0.008	0.044917	815.0909	2602.033	58.66947	0.011871	2.46208	0.074918	0.027733	0.086224	0.064904	0.057744	10.62943	0.427061	0.112221	0.259299	1.591441	0.084259	15.51043	0.467578	0.112221	0.259299	1.591441	0.045	1.469507	82.16746	10.56434	0.008058	0.025724	0.00058
Santa Clara	2023	SBUS	Aggregate	Aggregate	Diesel	667.1185	15392.68	15392.68	0	9659.876	0	4.028015	22.39863	0.467155	0.020908	0.02125	0	0.003	0.015721	0.021853	0.022211	0	0.012	0.044917	1148.524	2237.814	0	0.002748	0.008083	0	0.18095	0.352568	0	0.059161	0.174017	0	0	0	0	0.06735	0.198106	0	0	0	0	0.144154	0.181489	4.581854	0	0.010876	0.021191	0
Santa Clara	2023	SBUS	Aggregate	Aggregate	Electricity	0.302373	3.510494	0	3.510494	4.378365	3.69815	0	0	0	0	0	0	0.003	0.00786	0	0	0	0.012	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	2023	SBUS	Aggregate	Aggregate	Natural Ga	23.50762	595.8705	595.8705	0	340.3903	0	0.587321	5.282702	0	0.003378	0.011076	0	0.003	0.015721	0.003674	0.012046	0	0.012	0.044917	1271.127	4058.811	0	3.490611	15.40242	0	0.259128	0.827415	0	0.049874	0.22007	0	0	0	0	0.562424	15.7193	0	0	0	0	1.06	11.90284	20.11199	0	0	0	0
Santa Clara	2023	UBUS	Aggregate	Aggregate	Gasoline	45.94709	4798.244	4798.244	0	183.7884	0	0.026807	0	0.443444	0.001143	0	0.000128	0.002	0.03185	0.001243	0	0.00014	0.008	0.091	926.2924	0	36.84613	0.002031	0	0.041715	0.004215	0	0.070149	0.005614	0	0.147842	0.038144	0.09212	0.456803	0.008192	0	0.161868	0.038144	0.09212	0.456803	0.045	0.571128	0	6.073786	0.009157	0	0.000364
Santa Clara	2023	UBUS	Aggregate	Aggregate	Diesel	436.6681	48829.71	48829.71	0	1746.672	0	0.386256	0	0	0.007022	0	0	0.0083	0.0385	0.00734	0	0	0.0332	0.11	1100.965	0	0	0.003215	0	0	0.173457	0	0	0.069208	0	0	0	0	0	0.078788	0	0	0	0	0	0.18785	0.079368	0	0	0.010432	0	0
Santa Clara	2023	UBUS	Aggregate	Aggregate	Electricity	5.046757	199.0027	0	199.0027	20.18703	346.9103	0	0	0	0	0	0	0.009	0.01925	0	0	0	0.036	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	2023	UBUS	Aggregate	Aggregate	Natural Ga	42.26114	4829.673	4829.673	0	169.0446	0	0.05878	0	0	0.000282	0	0	0.008182	0.0385	0.000295	0	0	0.032727	0.11	1299.127	0	0	4.245742	0	0	0.264835	0	0	0.060663	0	0	0	0	0	4.333091	0	0	0	0	0	0.97	49.04231	0	0	0	0	0

Source: EMFAC2021 (v1.0.1) Emission Rates
Region Type: County
Region: Santa Clara
Calendar Year: 2024
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_RUNEX	CH4_IDLEX	CH4_STREX	N2O_RUNEX	N2O_IDLEX	N2O_STREX	ROG_RUNEX	ROG_IDLEX	ROG_STREX	ROG_HOTSO	ROG_RUNL	ROG_DIUR	TOG_RUNEX	TOG_IDLEX	TOG_STREX	TOG_HOTSO	TOG_RUNL	TOG_DIUR	NH3_RUNEX	CO_RUNEX	CO_IDLEX	CO_STREX	SOx_RUNE	SOx_IDLEX	SOx_STREX
Santa Clara	2024	HHDT	Aggregate	Aggregate	Gasoline	2.58E+08	115.1526	115.1526	0	0	51.79487	0	7.013725	0	0.003612	0	0.001433	0.005	0.03384	0.003929	0	0.001559	0.02	0.096686	2166.164	0	50.04419	0.246012	0	0.000205	0.192927	0	0.049797	1.47824	0	0.001115	0.149022	1.34233	10.02547	2.157045	0	0.001221	0.149022	1.34233	10.02547	0.04274	52.51903	0	1.60109	0.021415	0	0.000495
Santa Clara	2024	HHDT	Aggregate	Aggregate	Diesel	8486.693	1001095	1001095	0	0	124748.4	0	1.894567	62.88367	2.898867	0.025674	0.03017	0	0.00877	0.027454	0.026835	0.031534	0	0.035082	0.07844	1634.1	11997.01	0	0.000777	0.23663	0	0.257453	1.890134	0	0.016732	5.094584	0	0	0	0	0.019048	5.799796	0	0	0	0	0	0.215084	0.082524	74.10576	0	0.015474	0.113605	0
Santa Clara	2024	HHDT	Aggregate	Aggregate	Electricity	28.33039	2794.261	0	2794.261	378.7946	5152.341	0	0	0	0	0	0	0	0.008585	0.014055	0	0	0	0.034341	0.040158	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	2024	HHDT	Aggregate	Aggregate	Natural Ga	794.401	54591.27	54591.27	0	0	7249.717	0	1.128254	13.55515	0	0.001724	0.024776	0	0.009	0.047521	0.001875	0.026946	0	0.036	0.135775	1387.534	10583.64	0	2.344742	36.30276	0	0.282858	2.157544	0	0.050833	0.550696	0	0	0	0	2.412728	37.08609	0	0	0	0	0	0.85184	13.40196	74.43135	0	0	0	0
Santa Clara	2024	LDA	Aggregate	Aggregate	Gasoline	600108.2	22290344	22290344	0	0	2786617	0	0.042281	0	0.025793	0.001177	0	0.001931	0.002	0.002656	0.00128	0	0.0021	0.008	0.007587	277.9403	0	70.44944	0.002338	0	0.072036	0.004672	0	0.033228	0.008937	0	0.328953	0.090491	0.230394	1.422636	0.013041	0	0.360162	0.090491	0.230394	1.422636	0.034712	0.737516	0	3.233068	0.002748	0	0.000686
Santa Clara	2024	LDA	Aggregate	Aggregate	Diesel	1750.024	51573.48	51573.48	0	0	7442.61	0	0.213181	0	0	0.016747	0	0	0.002	0.002706	0.017504	0	0	0.008	0.00773	232.7849	0	0	0.001289	0	0	0.036675	0	0	0.027749	0	0	0	0.03159	0	0	0	0	0	0	0.0031	0.331109	0	0	0.002206	0	0
Santa Clara	2024	LDA	Aggregate	Aggregate	Electricity	57627.4	2472767	0	2472767	282733	954692.3	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	2024	LDA	Aggregate	Aggregate	Plug-in Hyb	17457.1	767059.2	381568.7	385490.5	72185.1	116429.6	0.003264	0	0.11551	0.000618	0	0.00207	0.002	0.001377	0.000672	0	0.002252	0.008	0.003935	138.6993	0	65.78653	0.000444	0	0.04244	0.000587	0	0.020762	0.001412	0	0.173285	0.041111	0.037292	0.447104	0.019502	0.214038	0	0.189725	0.041111	0.037292	0.447104	0.019502	0.214038	0	1.339893	0.001371	0	0.00065
Santa Clara	2024	LDT1	Aggregate	Aggregate	Gasoline	52693.37	1706864	1706864	0	0	234793.4	0	0.128357	0	0.381294	0.001737	0	0.002678	0.002	0.00324	0.001889	0	0.002913	0.008	0.009258	128.9675	0	86.69483	0.006261	0	0.105365	0.009424	0	0.03869	0.027741	0	0.539321	0.165332	0.472477	2.667158	0.040475	0	0.590488	0.165332	0.472477	2.667158	0.036079	1.427621	0	5.253053	0.003252	0	0.000857
Santa Clara	2024	LDT1	Aggregate	Aggregate	Diesel	23.46233	343.9308	343.9308	0	0	66.44459	0	1.651932	0	0	0.239373	0	0	0.002	0.003724	0.250196	0	0	0.008	0.01064	415.4307	0	0	0.013862	0	0	0.065451	0	0	0.298448	0	0	0	0	0	0.339763	0	0	0	0	0	0.0031	1.593665	0	0	0.003936	0	0
Santa Clara	2024	LDT1	Aggregate	Aggregate	Electricity	211.0028	8008.646	0	8008.646	994.4346	3091.998	0	0	0	0	0	0	0	0.002	0.001539	0	0	0	0.008	0.004397	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	2024	LDT1	Aggregate	Aggregate	Plug-in Hyb	67.64578	3164.46	1414.302	1750.158	279.7153	528.6	0.002933	0	0.11551	0.000367	0	0.001381	0.002	0.001389	0.0004	0	0.001502	0.008	0.003967	124.6157	0	71.36186	0.000397	0	0.042219	0.000522	0	0.020556	0.001268	0	0.173285	0.024153	0.020965	0.279628	0.001851	0	0.189725	0.024153	0.020965	0.279628	0.018771	0.192305	0	1.339893	0.001232	0	0.000705
Santa Clara	2024	LDT2	Aggregate	Aggregate	Gasoline	285585.4	10322758	10322758	0	0	1336438	0	0.069091	0	0.334237	0.001227	0	0.001959	0.002	0.003127	0.001334	0	0.00213	0.008	0.008936	344.6046	0	88.12796	0.002864	0	0.082985	0.005943	0	0.037254	0.011242	0	0.384216	0.081741	0.217688	1.368189	0.016404	0	0.420668	0.081741	0.217688	1.368189	0.036359	0.842122	0	3.673764	0.003407	0	0.000871
Santa Clara	2024	LDT2	Aggregate	Aggregate	Diesel	1015.453	37944.26	37944.26	0	0	4835.434	0	0.041515	0	0	0.004813	0	0	0.002	0.003113	0.005031	0	0	0.008	0.008895	311.1925	0	0	0.000609	0	0	0.049029	0	0	0.013105	0	0	0	0.014919	0	0	0	0	0	0	0.0031	0.129976	0	0	0.002949	0	0
Santa Clara	2024	LDT2	Aggregate	Aggregate	Electricity	1597.567	55532.59	0	55532.59	8150.927	21440.16	0	0	0	0	0	0	0	0.002	0.001526	0	0	0	0.008	0.004359	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	2024	LDT2	Aggregate	Aggregate	Plug-in Hyb	2116.58	94757.71	44376.61	50381.09	8752.056	15216.59	0.003073	0	0.11551	0.000467	0	0.001672	0.002	0.001383	0.000508	0	0.001819	0.008	0.003953	130.578	0	78.06	0.000416	0	0.042233	0.000547	0	0.020569	0.001329	0	0.173285	0.025949	0.023686	0.309385	0.001939	0	0.189725	0.025949	0.023686	0.309385	0.019635	0.201506	0	1.339893	0.001291	0	0.000772
Santa Clara	2024	LHDT1	Aggregate	Aggregate	Gasoline	19314.14	722529.3	722529.3	0	0	287751.9	0	0.17374	0.036221	0.636996	0.001534	0	0.000302	0.002	0.0273	0.001668	0	0.000328	0.008	0.078	871.4559	119.0993	25.78022	0.008358	0.112945	0.032997	0.009778	0.002977	0.050968	0.041718	0.415023	0.163611	0.047402	0.263136	2.768514	0.060875	0.605601	0.179134	0.047402	0.263136	2.768514	0.044898	1.142278	3.756209	3.123927	0.008615	0.001177	0.000255
Santa Clara	2024	LHDT1	Aggregate	Aggregate	Diesel	10107.74	398004.1	398004.1	0	0	127142.6	0	1.563015	1.92168	0	0.035058	0.026804	0	0.003	0.0273	0.036643	0.028016	0	0.012	0.078	631.4008	131.1503	0	0.008006	0.005098	0	0.099477	0.020663	0	0.172364	0.10976	0	0	0	0	0.196225	0.124954	0	0	0	0	0	0.172781	0.473594	0.909745	0	0.005983	0.001243	0
Santa Clara	2024	LHDT1	Aggregate	Aggregate	Electricity	70.82836	5110.544	0	5110.544	989.4273	3345.376	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	2024	LHDT2	Aggregate	Aggregate	Gasoline	2506.906	91452.57	91452.57	0	0	37349.16	0	0.16518	0.035604	0.621534	0.00139	0	0.000239	0.002	0.03185	0.001512	0	0.000259	0.008	0.091	980.0361	137.5922	25.51292	0.006183	0.111453	0.031983	0.009819	0.00291	0.049384	0.028613	0.40822	0.157242	0.04419	0.238167	2.558385	0.041752	0.595674	0.17216	0.04419	0.238167	2.558385	0.044971	0.899209	3.762546	3.129931	0.009689	0.00136	0.000252
Santa Clara	2024	LHDT2	Aggregate	Aggregate	Diesel	4663.455	183558.4	183558.4	0	0	58660.4	0	1.266102	1.895403	0	0.032055	0.027	0	0.003	0.03185	0.033504	0.028221	0	0.012	0.091	756.8682	209.5618	0	0.007406	0.005098	0	0.119245	0.033017	0	0.159439	0.10976	0	0	0	0	0.18151	0.124954	0	0	0	0	0	0.184132	0.411861	0.909745	0	0.007172	0.001986	0
Santa Clara	2024	LHDT2	Aggregate	Aggregate	Electricity	18.33259	1253.286	0	1253.286	242.668	808.0022	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	2024	MCY	Aggregate	Aggregate	Gasoline	28171.51	1660222.3	1660222.3	0	0	56343.02	0	0.571344	0	0.135477	0.001779	0	0.003248	0.001	0.0042	0.001902	0	0.003456	0.004	0.012	187.743	0	48.37697	0.162609	0	0.181972	0.039558	0	0.00802	1.062175	0	1.345317	3.559276	3.75283	3.900294	1.276951	0	1.462608	3.559276	3.75283	3.900294	0.088808	12.6697	0	8.002987	0.001856	0	0.000478
Santa Clara	2024	MDV	Aggregate	Aggregate	Gasoline	156642.4	5468054	5468054	0	0	726101.1	0	0.101279	0	0.42828	0.001229	0	0.002042	0.002	0.003184	0.001336	0	0.002221	0.008	0.009096	418.13	0	107.2801	0.003873	0	0.10186	0.007628	0	0.040967	0.01626	0	0.508806	0.097051	0.275722	1.677059	0.023715	0	0.557077	0.097051	0.275722	1.677059	0.036179	0.972241	0	4.022964	0.004134	0	0.001061
Santa Clara	2024	MDV	Aggregate	Aggregate	Diesel	2400.615	86292.69	86292.69	0	0	11318.82	0	0.048844	0	0	0.004909	0	0	0.002	0.003206	0.005131	0	0	0.008	0.009159	409.13	0	0	0.00051	0	0	0.064459	0	0	0.010978	0	0	0	0.012498	0	0	0	0	0	0	0.0031	0.201538	0	0	0.003877	0	0
Santa Clara	2024	MDV	Aggregate	Aggregate	Electricity	1678.684	58660.63	0	58660.63	8578.496	22647.84	0	0	0	0	0	0	0	0.002	0.001525	0	0	0	0.008	0.004358	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	2024	MDV	Aggregate	Aggregate	Plug-in Hyb	1250.857	52904.03	25301.52	27602.51	5172.294	8336.781	0.003138	0	0.11551	0.000561	0	0.001962	0.002	0.001382	0.00061	0	0.002134	0.008	0.003948	133.3485	0	96.65661	0.000423	0	0.042047	0.000554	0	0.020395	0.001357	0	0.173285	0.030318	0.026684	0.341695	0.00198	0	0.189725	0.030318	0.026684	0.341695	0.020087	0.205781	0	1.339893	0.001318	0	0.000956
Santa Clara	2024	MH	Aggregate	Aggregate	Gasoline	2420.57	22012.3	22012.3	0	0	242.1538	0	0.420938	0	0.419963	0.001679	0	0.000404	0.003	0.015756	0.001826	0	0.000439	0.012	0.045017	1947.501	0	31.65056	0.015478	0	0.037539	0.025731	0	0.04407	0.06827	0	0.159123	12.21143	0.286769	4.596479	0.09962	0	0.174219	12.21143	0.286769	4.596479	0.044846	1.682224	0	3.497247	0.019253	0	0.000313
Santa Clara	2024	MH	Aggregate	Aggregate	Diesel	977.3606	9498.302	9498.302	0	0	97.73606	0	4.117169	0	0	0.091772	0	0	0.004	0.015675	0.099921	0	0	0.016	0.044785	1081.931	0	0	0.005558	0	0	0.170459	0	0	0.11965	0	0	0	0.136214	0	0	0	0	0	0	0.155539	0.397281	0	0	0.010252	0	0
Santa Clara	2024	MHDT	Aggregate	Aggregate	Gasoline	1414.552	71600.35	71600.35	0	0	28302.35	0	0.470752	0.088485	0.440963	0.001362	0	0.000533	0.003	0.015756	0.001482	0	0.000579	0.012	0.045017	1768.687	531.8002	46.25227	0.015051	0.25808	0.047572	0.022913	0.00727	0.03271	0.074951	1.01271	0.265405	0.033945	0.276365	2.798712	0.109368	1.477744	0.290585	0.033945	0.276365	2.798712	0.04498	1.56073	15.11634	5.825814	0.017485	0.005257	0.000457
Santa Clara	2024	MHDT	Aggregate	Aggregate	Diesel	1039.53	4340443.6	4340443.6	0	0	123939	0	1.232824	13.14099	1.642732	0.014397	0.029902	0	0.003	0.015941	0.015048	0.031254	0	0.012	0.045546	1147.309	2248.547	0	0.001507	0.01158	0	0.180759	0.35426	0	0.032455	0.249319	0	0	0	0	0.036947	0.283831	0	0	0	0	0	0.210532	0.120871	7.556027	0	0.010864	0.021292	0
Santa Clara	2024	MHDT	Aggregate	Aggregate	Electricity	30.91601	1660.353	0	1660.353	407.4536	1841.064	0	0	0	0	0	0	0	0.003	0.007956	0	0	0	0.012	0.022732	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	2024	MHDT	Aggregate	Aggregate	Natural Ga	90.59449	4303.581	4303.581	0	0	827.6228	0	0.133415	6.499719	0	0.001179	0.018131	0	0.003	0.016007	0.001282	0.019719	0	0.012	0.045734	984.6917	5301.101	0	0.74573	17.31409	0	0.200736	1.080664	0	0.010655	0.247384	0	0	0	0	0.761072	17.6703	0	0	0	0	0	1.06	2.995842	34.7393	0	0	0	0
Santa Clara	2024	OBUS	Aggregate	Aggregate	Gasoline	443.1467	19894.31	19894.31	0	0	8866.48	0	0.49672	0.06506	0.408547	0.000907	0	0.000252	0.003	0.01568	0.000987	0	0.000274	0.012	0.044799	1764.001	379.4143	31.61308	0.013757	0.195733	0.03606	0.024018	0.005304	0.031028	0.067076	0.746281	0.190964	0.033873	0.154922	2.818385	0.097877	1.088971	0.209081	0.033873	0.154922	2.818385	0.044969	1.491576	5.774637	4.000641	0.017439	0.003751	0.000313
Santa Clara	2024	OBUS	Aggregate	Aggregate	Diesel	893.1376	61949.05	61949.05	0	0	9141.625	0	1.178643	7.363387	1.543157	0.019849	0.008167	0	0.003	0.018015	0.020746	0.008536	0	0.012	0.051472	1273.38	1538.564	0	0.001935	0.020479	0	0.200622	0.242401	0	0.04166	0.440905	0	0	0	0	0.047427	0.501937	0	0	0	0	0	0.216021	0.150181	7.500483	0	0.012058	0.014569	0
Santa Clara	2024	OBUS	Aggregate	Aggregate	Electricity	1.087481	92.50105	0	92.50105	21.75833	102.477	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	2024	OBUS	Aggregate	Aggregate	Natural Ga	7.05737	469.3876	469.3876	0	0	62.81059	0	0.190585	1.537414	0	0.00106	0.003899	0	0.003	0.016148	0.001153	0.004241	0	0.012	0.046137	1004.237	1191.581	0	0.789796	4.236895	0	0.20472	0.242912	0	0.011285	0.060537	0	0	0	0	0.806045	4.324062	0	0	0	0	0	1.06	3.254325	7.353064	0	0	0	0
Santa Clara	2024	SBUS	Aggregate	Aggregate	Gasoline	172.6948	8584.866	8584.866	0	0	690.7791	0	0.50288	0.925939	0.716801	0.000864	0	0.000567	0.002	0.015721	0.000939	0	0.000616	0.008	0.044917	810.6064	2589.131	58.1367	0.011135	2.464862	0.074893	0.027101	0.086311	0.065929	0.054059	10.63288	0.426367	0.113914	0.274691	1.686167	0.078883	15.51547	0.466819	0.113914	0.274691	1.686167	0.045	1.38705	82.18841	10.36621	0.008014	0.025596	0.000575
Santa Clara	2024	SBUS	Aggregate	Aggregate	Diesel	670.5958	15345.26	15345.26	0	0	9710.228	0	3.821388	21.90481	0.482851	0.019766	0.019703	0	0.003	0.015721	0.02066	0.020594	0	0.012	0.044917	1144.18	2229	0	0.002665	0.008001	0	0.180266	0.35118	0	0.057376	0.172257	0	0	0	0	0.065318	0.196101	0	0	0	0	0	0.148025	0.1775	4.677792	0	0.010835	0.021107	0
Santa Clara	2024	SBUS	Aggregate	Aggregate	Electricity	2.064666	64.35501	0	64.35501	23.64639	67.79515	0	0	0	0	0	0	0	0.002539	0.00786	0	0	0	0.010157	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	2024	SBUS	Aggregate	Aggregate	Natural Ga	24.3995	612.0941	612.0941	0	0	353.3048	0	0.567729	5.270895	0	0.003378	0.011357	0	0.003	0.015721	0.003674	0.012352	0	0.012	0.044917	1261.305	4066.736	0	3.436672	15.25665	0	0.257125	0.829031	0	0.049103	0.217987	0	0	0	0	3.507376	15.57053	0	0	0	0	0	1.06	11.64901	20.74693	0	0	0	0
Santa Clara	2024	UBUS	Aggregate	Aggregate	Gasoline	46.08313	4812.451	4812.451	0	0	1834.325	0	0.027483	0	0.457232	0.001143	0	0.000128	0.002	0.03185	0.001243	0	0.00014	0.008	0.091	926.0836	0	36.94783	0.002034	0	0.043067	0.004288	0	0.071717	0.005634	0	0.152979	0.038099	0.092116	0.456438	0.008221	0	0.167492	0.038099	0.092116	0.456438	0.045	0.581148	0	6.130495	0.009155	0	0.000365
Santa Clara	2024	UBUS	Aggregate	Aggregate	Diesel	437.4745	48917.61	48917.61	0	0	1749.898	0	0.386257	0	0	0.007023	0	0	0.0083	0.0385	0.00734	0	0	0.0332	0.11	1101.14	0	0	0.003215	0	0	0.173485	0	0	0.069208	0	0	0	0.078788	0	0	0	0	0	0	0.187908	0.079368	0	0	0.010434	0	0
Santa Clara	2024	UBUS	Aggregate	Aggregate	Electricity	5.347565	235.0626	0	235.0626	21.39026	409.7714	0	0	0	0	0	0	0	0.00888	0.01925	0	0	0	0.03552	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	2024	UBUS	Aggregate	Aggregate	Natural Ga	42.58696	4865.187	4865.187	0	0	170.3478	0	0.058788	0	0	0.000282	0	0	0.008183	0.0385	0.000295	0	0	0.032731	0.11	1299.206	0	0	4.246059	0	0	0.264852	0	0	0.060668	0	0	0	0	0	4.333415	0	0	0	0	0	0.97	49.04786	0	0	0	0	0

Source: EMFAC2021 (v1.0.1) Emission Rates
Region Type: County
Region: Santa Clara
Calendar Year: 2025
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_STF	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_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	2025	HHDT	Aggregate	Aggregate	Gasoline	2.330359	124.9448	124.9448	0	46.62582	0	5.556909	0	1.379041	0.003103	0	0.001399	0.005	0.033068	0.003375	0	0.001521	0.02	0.09448	2106.229	0	50.03138	0.207413	0	0.000226	0.167059	0	0.041557	1.222197	0	0.00123	0.140217	1.263022	9.434649	1.783427	0	0.001346	0.140217	1.263022	9.434649	0.043157	47.7242	0	2.001616	0.020822	0	0.000495
Santa Clara	2025	HHDT	Aggregate	Aggregate	Diesel	8692.575	1008964	1008964	0	127877.1	0	1.825194	62.42367	2.931995	0.025335	0.028938	0	0.008772	0.027421	0.02648	0.030247	0	0.035088	0.078345	1608.776	11755.34	0	0.00075	0.235891	0	0.253463	1.852058	0	0.016139	5.078674	0	0	0	0	0	0.018373	5.781684	0	0	0	0	0.215507	0.078083	74.00904	0	0.015234	0.111316	0
Santa Clara	2025	HHDT	Aggregate	Aggregate	Electricity	63.3712	6579.675	0	6579.675	825.9972	12135.66	0	0	0	0	0	0	0	0.008551	0.014281	0	0	0	0.034206	0.040802	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	2025	HHDT	Aggregate	Aggregate	Natural Ga	832.405	55779.38	55779.38	0	7555.504	0	1.049864	13.18492	0	0.00168	0.025258	0	0.009	0.048303	0.001827	0.02747	0	0.036	0.138007	1375.94	10529.31	0	2.235928	35.17609	0	0.280494	2.146469	0	0.047235	0.530122	0	0	0	0	0	2.299347	35.93114	0	0	0	0	0.843784	13.01274	74.75478	0	0	0	0
Santa Clara	2025	LDA	Aggregate	Aggregate	Gasoline	598860.3	22133915	22133915	0	2780384	0	0.038209	0	0.245539	0.001142	0	0.001188	0.002	0.002655	0.001242	0	0.002044	0.008	0.007587	273.2075	0	69.04168	0.002117	0	0.067825	0.004408	0	0.032293	0.007947	0	0.306311	0.087189	0.224301	1.384954	0.035611	0.6952	0	0.349452	0.002701	0	0.000683
Santa Clara	2025	LDA	Aggregate	Aggregate	Diesel	1620.04	46912.85	46912.85	0	6871.193	0	0.18842	0	0	0.015236	0	0	0.002	0.002712	0.015925	0	0	0.008	0.007748	230.5963	0	0	0.001193	0	0	0.036331	0	0	0.025693	0	0	0	0	0	0	0.02925	0	0	0	0	0.0031	0.319914	0	0	0.002185	0	0
Santa Clara	2025	LDA	Aggregate	Aggregate	Electricity	61443.19	2670452	0	2670452	299852.7	1031015	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	2025	LDA	Aggregate	Aggregate	Plug-in Hyb	19037.66	825567.7	401013	424554.8	78720.74	128228.2	0.003187	0	0.11551	0.000578	0	0.001985	0.002	0.001382	0.000629	0	0.002159	0.008	0.003948	135.4391	0	65.04608	0.000432	0	0.042249	0.000569	0	0.020584	0.001378	0	0.173285	0.041164	0.03735	0.440525	0.019241	0.209016	0	1.339893	0.001339	0	0.000643
Santa Clara	2025	LDT1	Aggregate	Aggregate	Gasoline	51680.86	1664706	1664706	0	230186	0	0.115355	0	0.35972	0.001639	0	0.002543	0.002	0.003241	0.001782	0	0.002766	0.008	0.00926	324.1276	0	84.93844	0.005621	0	0.098552	0.008687	0	0.037511	0.02471	0	0.498818	0.156963	0.442299	2.52236	0.036056	0	0.546143	0.156963	0.442299	2.52236	0.036453	1.317416	0	4.886115	0.003204	0	0.00084
Santa Clara	2025	LDT1	Aggregate	Aggregate	Diesel	21.28272	302.8258	302.8258	0	59.13231	0	1.64381	0	0	0.238169	0	0	0.002	0.00372	0.248938	0	0	0.008	0.010628	415.1682	0	0	0.013797	0	0	0.065141	0	0	0.297038	0	0	0	0	0	0	0.338158	0	0	0	0	0.0031	1.585068	0	0	0.003934	0	0
Santa Clara	2025	LDT1	Aggregate	Aggregate	Electricity	234.4578	9323.704	0	9323.704	1109.796	3599.719	0	0	0	0	0	0	0.002	0.001537	0	0	0	0.008	0.004392	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	2025	LDT1	Aggregate	Aggregate	Plug-in Hyb	98.13198	4519.182	1961.286	2557.896	405.7758	772.5609	0.002848	0	0.11551	0.000353	0	0.001365	0.002	0.001394	0.000383	0	0.001485	0.008	0.003982	121.0095	0	70.34635	0.000383	0	0.041987	0.000501	0	0.020339	0.001231	0	0.173285	0.023895	0.020384	0.276746	0.001797	0	0.189725	0.023895	0.020384	0.276746	0.018228	0.186748	0	1.339893	0.001196	0	0.000695
Santa Clara	2025	LDT2	Aggregate	Aggregate	Gasoline	290874.7	10447706	10447706	0	1360241	0	0.06257	0	0.314364	0.001192	0	0.001919	0.002	0.00313	0.001296	0	0.002087	0.008	0.008944	338.2713	0	86.2638	0.002642	0	0.078494	0.005588	0	0.036037	0.010244	0	0.360071	0.079452	0.214938	1.349256	0.037112	0.795621	0	3.47417	0.003344	0	0.000853
Santa Clara	2025	LDT2	Aggregate	Aggregate	Diesel	1049.952	38652.34	38652.34	0	4980.34	0	0.039332	0	0	0.004727	0	0	0.002	0.003123	0.004941	0	0	0.008	0.008921	306.7182	0	0	0.000603	0	0	0.048324	0	0	0.01298	0	0	0	0	0	0	0.014777	0	0	0	0	0.0031	0.129797	0	0	0.002906	0	0
Santa Clara	2025	LDT2	Aggregate	Aggregate	Electricity	2157.059	73663.77	0	73663.77	10962.38	28440.3	0	0	0	0	0	0	0.002	0.001527	0	0	0	0.008	0.004362	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	2025	LDT2	Aggregate	Aggregate	Plug-in Hyb	2561.885	112327.2	51267.44	61059.78	10593.4	18441.87	0.002995	0	0.11551	0.000438	0	0.00161	0.002	0.001388	0.000477	0	0.001751	0.008	0.003967	127.2609	0	77.17666	0.000403	0	0.041992	0.000528	0	0.020344	0.001295	0	0.173285	0.026071	0.023359	0.305362	0.00189	0	0.189725	0.026071	0.023359	0.305362	0.019143	0.196395	0	1.339893	0.001258	0	0.000763
Santa Clara	2025	LHDT1	Aggregate	Aggregate	Gasoline	19422.46	728337	728337	0	289365.8	0	0.152112	0.035118	0.61458	0.001478	0	0.000276	0.002	0.0273	0.001607	0	0.0003	0.008	0.078	855.4024	117.9783	25.70715	0.007214	0.110329	0.031611	0.008613	0.002941	0.049929	0.03557	0.40247	0.15588	0.044275	0.247775	2.616411	0.051904	0.587284	0.170669	0.044275	0.247775	2.616411	0.044934	1.05316	3.759094	3.16195	0.008457	0.001166	0.000254
Santa Clara	2025	LHDT1	Aggregate	Aggregate	Diesel	10387.1	408019.3	408019.3	0	130656.7	0	1.379237	1.823414	0	0.032347	0.026692	0	0.003	0.0273	0.03381	0.027899	0	0.012	0.078	628.07	129.5472	0	0.007468	0.005098	0	0.098953	0.02041	0	0.160779	0.10976	0	0	0	0	0	0.183036	0.124954	0	0	0	0	0.17898	0.435087	0.909745	0	0.005951	0.001228	0
Santa Clara	2025	LHDT1	Aggregate	Aggregate	Electricity	196.402	13079.06	0	13079.06	2746.629	8564.085	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	2025	LHDT2	Aggregate	Aggregate	Gasoline	2512.652	91345.05	91345.05	0	37434.78	0	0.146187	0.034452	0.600885	0.001346	0	0.00022	0.002	0.03185	0.001464	0	0.000239	0.008	0.091	964.5764	136.4471	25.31105	0.005467	0.108422	0.030581	0.008804	0.002854	0.048245	0.025115	0.395081	0.149459	0.041982	0.228581	2.471298	0.036648	0.576501	0.163639	0.041982	0.228581	2.471298	0.044974	0.850878	3.765161	3.139903	0.009536	0.001349	0.00025
Santa Clara	2025	LHDT2	Aggregate	Aggregate	Diesel	4837.236	188645	188645	0	60846.34	0	1.139289	1.802658	0	0.030296	0.027005	0	0.003	0.03185	0.031666	0.028226	0	0.012	0.091	750.3571	207.2396	0	0.007043	0.005098	0	0.118219	0.032651	0	0.151622	0.10976	0	0	0	0	0	0.172612	0.124954	0	0	0	0	0.188496	0.387904	0.909745	0	0.00711	0.001964	0
Santa Clara	2025	LHDT2	Aggregate	Aggregate	Electricity	50.46202	3193.251	0	3193.251	669.175	2059.665	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	2025	MCY	Aggregate	Aggregate	Gasoline	28484.89	166414.5	166414.5	0	56969.79	0	0.557882	0	0.129146	0.001799	0	0.003253	0.001	0.0042	0.001925	0	0.003464	0.004	0.012	187.2679	0	47.30784	0.158292	0	0.177199	0.038984	0	0.007691	1.024683	0	1.305157	3.558651	3.760078	3.860886	1.236542	0	1.419098	3.558651	3.760078	3.860886	0.008851	12.31202	0	7.965438	0.001851	0	0.000468
Santa Clara	2025	MDV	Aggregate	Aggregate	Gasoline	159532.2	5551044	5551044	0	739781.4	0	0.087905	0	0.391886	0.001179	0	0.001962	0.002	0.003182	0.001282	0	0.002134	0.008	0.009091	410.3223	0	104.9535	0.003431	0	0.094137	0.006921	0	0.039073	0.014165	0	0.463643	0.092515	0.265086	1.620407	0.020668	0	0.50763	0.092515	0.265086	1.620407	0.036883	0.895922	0	3.753621	0.004056	0	0.001038
Santa Clara	2025	MDV	Aggregate	Aggregate	Diesel	2421.364	85326.8	85326.8	0	11351.14	0	0.044948	0	0	0.004686	0	0	0.002	0.003225	0.004898	0	0	0.008	0.009216	404.5816	0	0	0.000492	0	0	0.063742	0	0	0.010592	0	0	0	0	0	0	0.012058	0	0	0	0	0.0031	0.199936	0	0	0.003834	0	0
Santa Clara	2025	MDV	Aggregate	Aggregate	Electricity	2274.547	77934.96	0	77934.96	11571.06	30089.33	0	0	0	0	0	0	0.002	0.001526	0	0	0	0.008	0.004361	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	2025	MDV	Aggregate	Aggregate	Plug-in Hyb	1542.366	64484.39	29833.21	34651.18	6377.683	10465.69	0.003036	0	0.11551	0.000507	0	0.00183	0.002	0.001388	0.000551	0	0.00199	0.008	0.003965	128.9983	0	95.11137	0.000407	0	0.041816	0.00053	0	0.02018	0.001313	0	0.173285	0.02949	0.025333	0.327899	0.001916	0	0.189725	0.02949	0.025333	0.327899	0.019431	0.199076	0	1.339893	0.001275	0	0.00094
Santa Clara	2025	MH	Aggregate	Aggregate	Gasoline	2337.876	21506.19	21506.19	0	233.8812	0	0.37652	0	0.425905	0.001612	0	0.000388	0.003	0.015756	0.001753	0	0.000422	0.012	0.045017	1947.057	0	31.4529	0.013722	0	0.036945	0.023864	0	0.045303	0.059455	0	0.154277	11.38549	0.268831	4.357209	0.086757	0	0.168914	11.38549	0.268831	4.357209	0.044879	1.426924	0	3.382931	0.019249	0	0.000311
Santa Clara	2025	MH	Aggregate	Aggregate	Diesel	994.5437	9603.893	9603.893	0	99.45437	0	3.976372	0	0	0.086098	0	0	0.004	0.015675	0.08999	0	0	0.016	0.044785	1082.401	0	0	0.005421	0	0	0.170533	0	0	0.116701	0	0	0	0	0	0	0.132856	0	0	0	0	0.160635	0.385118	0	0	0.010256	0	0
Santa Clara	2025	MHDT	Aggregate	Aggregate	Gasoline	1412.263	72039.87	72039.87	0	28256.55	0	0.394798	0.086175	0.424333	0.001347	0	0.000513	0.003	0.015756	0.001465	0	0.000558	0.012	0.045017	1746.959	526.7233	45.37618	0.012585	0.261076	0.04598	0.019987	0.007219	0.032398	0.061949	1.015127	0.253154	0.030988	0.250472	2.558011	0.090397	1.481271	0.277172	0.030988	0.250472	2.558011	0.044991	1.276089	15.1444	5.531626	0.01727	0.005207	0.000449
Santa Clara	2025	MHDT	Aggregate	Aggregate	Diesel	10548.06	435100.6	435100.6	0	125915.2	0	1.128155	12.74108	1.646559	0.012461	0.024792	0	0.003	0.015941	0.013024	0.025912	0	0.012	0.045545	1141.328	2229.374	0	0.00131	0.010957	0	0.179817	0.351239	0	0.028195	0.235896	0	0	0	0	0	0.032098	0.268549	0	0	0	0	0.211891	0.109646	7.535393	0	0.010808	0.021111	0
Santa Clara	2025	MHDT	Aggregate	Aggregate	Electricity	90.80851	4838.906	0	4838.906	1182.343	5314.414	0	0	0	0	0	0	0.003	0.007951	0	0	0	0.012	0.022718	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	2025	MHDT	Aggregate	Aggregate	Natural Ga	98.90628	4590.307	4590.307	0	911.9208	0	0.12435	6.45266	0	0.001226	0.018594	0	0.003	0.016009	0.001333	0.020223	0	0.012	0.045741	979.0142	5290.545	0	0.751438	16.97256	0	0.199578	1.078512	0	0.010737	0.242504	0	0	0	0	0	0.766898	17.32175	0	0	0	0	1.06	2.996166	35.80775	0	0	0	0
Santa Clara	2025	OBUS	Aggregate	Aggregate	Gasoline	430.7023	18962.49	18962.49	0	8617.491	0	0.460353	0.06398	0.405045	0.000939	0	0.000255	0.003	0.01568	0.001022	0	0.000278	0.012	0.044799	1744.286	377.0226	31.37018	0.012641	0.195762	0.035581	0.02242	0.005219	0.030806	0.061504	0.74652	0.188569	0.033827	0.158433	2.881145	0.089747	1.089321	0.206459	0.033827	0.158433	2.881145	0.044498	1.352776	5.776073	3.953891	0.017244	0.003727	0.00031
Santa Clara	2025	OBUS	Aggregate	Aggregate	Diesel	921.4116	62304.89	62304.89	0	9451.527	0	1.133246	7.151668	1.532624	0.018916	0.007596	0	0.003	0.018017	0.019772	0.007939	0	0.012	0.051478	1259.126	1532.11	0	0.001844	0.020685	0	0.198376	0.241385	0	0.039711	0.445333	0	0	0	0	0	0.045208	0.506978	0	0	0	0	0.216212	0.14449	7.587325	0	0.011923	0.014508	0
Santa Clara	2025	OBUS	Aggregate	Aggregate	Electricity	2.672031	221.771	0	221.771	53.46199	245.6884	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	2025	OBUS	Aggregate	Aggregate	Natural Ga	8.125306	537.7468	537.7468	0	72.31523	0	0.164816	1.526623	0	0.001183	0.004157	0	0.003	0.016148	0.001287	0.004521	0	0.012	0.046137	987.912	1189.826	0	0.803903	4.103659	0	0.201392	0.242554	0	0.011486	0.058633	0	0	0	0	0	0.820442	4.188085	0	0	0	0	1.06	3.29233	7.933419	0	0	0	0
Santa Clara	2025	SBUS	Aggregate	Aggregate	Gasoline	178.2436	8812.851	8812.851	0	712.9742	0	0.487257	0.905562	0.722985	0.000866	0	0.000573	0.002	0.015721	0.000942	0	0.000623	0.008	0.044917	806.3455	2576.863	57.67146	0.010523	2.465929	0.074733	0.026439	0.084425	0.066434	0.051046	10.63602	0.42511	0.118631	0.292211	1.797789	0.074486	15.52005	0.465442	0.118631	0.292211	1.797789	0.045	1.308927	82.20747	10.20511	0.007972	0.025475	0.00057
Santa Clara	2025	SBUS	Aggregate	Aggregate	Diesel	673.2048	15283.75	15283.75	0	9748.005	0	3.614242	21.38359	0.496308	0.018677	0.018235	0	0.003	0.015721	0.019521	0.019059	0	0.012	0.044917	1139.829	2219.616	0	0.002583	0.007936	0	0.179581	0.349701	0	0.055601	0.170862	0	0	0	0	0	0.063298	0.194514	0	0	0	0	0.151888	0.17348	4.777291	0	0.010794	0.021018	0
Santa Clara	2025	SBUS	Aggregate	Aggregate	Electricity	4.481168	145.0761	0	145.0761	51.24766	152.8312	0	0	0	0	0	0	0.002	0.00556	0.00786	0	0	0	0.010226	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	2025	SBUS	Aggregate	Aggregate	Natural Ga	25.28439	627.586	627.586	0	366.118	0	0.5494	5.260001	0	0.003378	0.011617	0	0.003	0.015721	0.003674	0.012635	0	0.012	0.044917	1252.115	4074.049	0	3.386209	15.12215	0	0.255252	0.830522	0	0.048382	0.216066	0	0	0	0	0	3.455875	15.43326	0	0	0	0	1.06	11.41153	21.33281	0	0	0	0
Santa Clara	2025	UBUS	Aggregate	Aggregate	Gasoline	46.21918	4826.658	4826.658	0	184.8767	0	0.027276	0	0.449893	0.001143	0	0.000128	0.002	0.03185	0.001243	0	0.00014	0.008	0.091	925.8676	0	36.64281	0.001993	0	0.043054	0.004259	0	0.070843	0.005515	0	0.152699	0.04366	0.092112	0.471505	0.008047	0	0.167186	0.04366	0.092112	0.471505	0.045	0.586139	0	5.942314	0.009153	0	0.000362
Santa Clara	2025	UBUS	Aggregate	Aggregate	Diesel	405.3675	44987.37	44987.37	0	1621.47	0	0.382968	0	0	0.006962	0	0	0.008	0.03238	0.0385	0.007277	0	0	0.032951	0.11	1121.875	0	0	0.003193	0	0	0.176752	0	0	0.06875	0	0	0	0	0	0.078266	0	0	0	0	0.22	0.0787	0	0	0.01063	0	0
Santa Clara	2025	UBUS	Aggregate	Aggregate	Electricity	23.31202	2427.54	0	2427.54	93.24809	4231.795	0	0	0	0	0	0	0.008	0.00977	0.01925	0	0	0	0.035907	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	2025	UBUS	Aggregate	Aggregate	Natural Ga	58.16247	6762.418	6762.418	0	232.6499	0	0.060506	0	0	0.000287	0	0	0.008	0.00408	0.0385	0.0003	0	0	0.033634	0.11	1317.877	0	0	4.320397	0	0	0.268658	0	0	0.06173	0	0	0	0	0	4.409282	0	0	0	0	0.97	50.3461	0	0	0	0	0

Source: EMFAC2021 (v1.0.1) Emission Rates
Region Type: County
Region: Santa Clara
Calendar Year: 2026
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	2026	HHDT	Aggregate	Aggregate	Gasoline	1.890208	133.7551	133.7551	0	37.81927	0	3.912832	0	0.833967	0.00242	0	0.001119	0.005	0.0327	0.002632	0	0.001218	0.02	0.093428	2030.337	0	50.00574	0.151681	0	0.000277	0.138602	0	0.029726	0.841165	0	0.001504	0.124256	1.119044	7.839877	1.227426	0	0.001647	0.124256	1.119044	7.839877	0.044272	33.21272	0	2.727013	0.020072	0	0.000494
Santa Clara	2026	HHDT	Aggregate	Aggregate	Diesel	8867.795	1016012	1016012	0	130549	0	1.761105	62.0312	2.955473	0.025195	0.027767	0	0.008774	0.027513	0.026334	0.029023	0	0.035095	0.07861	1583.151	11526.41	0	0.000725	0.23528	0	0.249426	1.815991	0	0.015602	5.065515	0	0	0	0	0	0.017762	5.766703	0	0	0	0	0	0.215914	0.07407	73.94194	0	0.014991	0.109148	0
Santa Clara	2026	HHDT	Aggregate	Aggregate	Electricity	110.5302	11535.57	0	11535.57	1443.078	21268.51	0	0	0	0	0	0	0.008558	0.014729	0	0	0	0.034232	0.042083	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	2026	HHDT	Aggregate	Aggregate	Natural Ga	863.4608	56635.39	56635.39	0	7769.707	0	0.976371	12.77067	0	0.001645	0.025604	0	0.0099	0.049192	0.001789	0.027847	0	0.036	0.140547	1365.074	10446.87	0	2.127999	33.90059	0	0.278279	2.129663	0	0.043949	0.508241	0	0	0	0	0	0.218721	34.62523	0	0	0	0	0	0.835034	12.62839	75.02016	0	0	0	0
Santa Clara	2026	LDA	Aggregate	Aggregate	Gasoline	598869.8	22031466	22031466	0	2780456	0	0.034968	0	0.23463	0.001102	0	0.001828	0.002	0.002655	0.001199	0	0.001988	0.008	0.007585	268.3766	0	67.64288	0.001934	0	0.063951	0.004196	0	0.031426	0.007138	0	0.285908	0.083161	0.217573	1.338275	0.019415	0	0.313033	0.083161	0.217573	1.338275	0.036474	0.693808	0	2.884139	0.002653	0	0.000669
Santa Clara	2026	LDA	Aggregate	Aggregate	Diesel	1478.944	42434.32	42434.32	0	6277.405	0	0.163286	0	0	0.013397	0	0	0	0.002717	0.014003	0	0	0.008	0.007761	228.026	0	0	0.001079	0	0	0.035926	0	0	0.023239	0	0	0.026457	0	0	0	0	0	0	0	0	0	0.0031	0.307439	0	0	0.002161	0	0
Santa Clara	2026	LDA	Aggregate	Aggregate	Electricity	64495.24	2739705	0	2739705	312996.4	1057752	0	0	0	0	0	0	0.002	0.001535	0	0	0	0.008	0.004385	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	2026	LDA	Aggregate	Aggregate	Plug-in Hyb	20380.43	866414.1	412496.8	453917.3	84273.1	137096.6	0.003124	0	0.11551	0.000542	0	0.001902	0.002	0.001386	0.000589	0	0.002068	0.008	0.00396	132.7519	0	64.33622	0.000421	0	0.042044	0.000552	0	0.020392	0.001351	0	0.173285	0.040391	0.037456	0.436203	0.019017	0.204877	0	0.189725	0.040391	0.037456	0.436203	0.019017	0.204877	0	1.339893	0.001312	0	0.000636
Santa Clara	2026	LDT1	Aggregate	Aggregate	Gasoline	50750.47	1625960	1625960	0	225981.5	0	0.104002	0	0.340042	0.001548	0	0.002421	0.002	0.003241	0.001684	0	0.002633	0.008	0.009261	319.1884	0	83.2086	0.005058	0	0.092241	0.008041	0	0.036412	0.022051	0	0.461638	0.148727	0.41724	2.377298	0.032177	0	0.505436	0.148727	0.41724	2.377298	0.036833	1.219346	0	4.549174	0.003156	0	0.000823
Santa Clara	2026	LDT1	Aggregate	Aggregate	Diesel	18.47771	256.5587	256.5587	0	50.46	0	1.626008	0	0	0.235786	0	0	0	0.003714	0.246448	0	0	0.008	0.010612	414.3219	0	0	0.013655	0	0	0.065277	0	0	0.293995	0	0	0	0	0	0	0.334693	0	0	0	0	0	0.0031	1.580267	0	0	0.003926	0	0
Santa Clara	2026	LDT1	Aggregate	Aggregate	Electricity	263.5822	10628.88	0	10628.88	1254.204	4103.625	0	0	0	0	0	0	0.002	0.001536	0	0	0	0.008	0.004388	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	2026	LDT1	Aggregate	Aggregate	Plug-in Hyb	130.6819	5898.082	2516.052	3382.03	540.3696	1021.474	0.002799	0	0.11551	0.000332	0	0.001311	0.002	0.001397	0.000362	0	0.001426	0.008	0.003992	118.9473	0	69.43161	0.000375	0	0.041793	0.000489	0	0.020158	0.00121	0	0.173285	0.023415	0.020044	0.275174	0.001766	0	0.189725	0.023415	0.020044	0.275174	0.017917	0.183572	0	1.339893	0.001176	0	0.000686
Santa Clara	2026	LDT2	Aggregate	Aggregate	Gasoline	296178.9	10561285	10561285	0	1383934	0	0.057197	0	0.297788	0.00115	0	0.001868	0.002	0.003134	0.00125	0	0.002032	0.008	0.008953	332.1248	0	84.47809	0.002453	0	0.074444	0.005294	0	0.035027	0.009395	0	0.338458	0.076755	0.212879	1.330363	0.013709	0	0.370569	0.076755	0.212879	1.330363	0.037798	0.757265	0	3.299571	0.003283	0	0.000835
Santa Clara	2026	LDT2	Aggregate	Aggregate	Diesel	1079.589	39200.14	39200.14	0	5104.36	0	0.037108	0	0	0.004598	0	0	0	0.002	0.00313	0.004806	0	0	0.008	0.008943	302.0718	0	0	0.000595	0	0	0.047592	0	0	0.012807	0	0	0	0	0	0	0.014558	0	0	0	0	0	0.0031	0.12935	0	0	0.002862	0	0
Santa Clara	2026	LDT2	Aggregate	Aggregate	Electricity	2705.079	90693.22	0	90693.22	13682.37	35015.07	0	0	0	0	0	0	0.002	0.001528	0	0	0	0.008	0.004365	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	2026	LDT2	Aggregate	Aggregate	Plug-in Hyb	2986.353	127896.3	57308.29	70587.98	12348.57	21319.68	0.00294	0	0.11551	0.000411	0	0.00154	0.002	0.001392	0.000447	0	0.001675	0.008	0.003978	124.9411	0	76.35739	0.000394	0	0.041776	0.000513	0	0.020142	0.001271	0	0.173285	0.025698	0.023308	0.30414	0.001855	0	0.189725	0.025698	0.023308	0.30414	0.018799	0.192822	0	1.339893	0.001235	0	0.000755
Santa Clara	2026	LHDT1	Aggregate	Aggregate	Gasoline	19567.35	734252.9	734252.9	0	291524.3	0	0.134825	0.034078	0.592259	0.00144	0	0.000258	0.002	0.0273	0.0015	0	0.00028	0.008	0.078	841.5517	116.9335	25.61185	0.00645	0.107779	0.030306	0.00767	0.002904	0.048837	0.03157	0.390607	0.14863	0.042429	0.244239	2.568634	0.046067	0.569973	0.162731	0.042429	0.244239	2.568634	0.044952	1.000325	3.761042	3.194844	0.00832	0.001156	0.000253
Santa Clara	2026	LHDT1	Aggregate	Aggregate	Diesel	10635.31	416619.3	416619.3	0	133778.8	0	1.219281	1.732484	0	0.030022	0.026603	0	0.003	0.0273	0.031379	0.027806	0	0.012	0.078	625.228	128.0664	0	0.006994	0.005098	0	0.098505	0.020177	0	0.150578	0.10976	0	0	0	0	0	0.171423	0.124954	0	0	0	0	0.184377	0.40172	0.909745	0	0.005924	0.001213	0
Santa Clara	2026	LHDT1	Aggregate	Aggregate	Electricity	378.0593	23974.57	0	23974.57	5290.738	15701.21	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	2026	LHDT2	Aggregate	Aggregate	Gasoline	2513.651	91174.03	91174.03	0	37449.66	0	0.127191	0.033359	0.581518	0.001301	0	0.0002	0.002	0.03185	0.001415	0	0.000218	0.008	0.091	950.6797	135.3583	25.11699	0.00457	0.105616	0.029314	0.007823	0.002803	0.047205	0.020413	0.382638	0.142338	0.039798	0.221425	2.401547	0.029786	0.558345	0.155842	0.039798	0.221425	2.401547	0.04499	0.781956	3.768092	3.147796	0.009398	0.001338	0.000248
Santa Clara	2026	LHDT2	Aggregate	Aggregate	Diesel	4995.258	193100.7	193100.7	0	62834.06	0	1.030069	1.717944	0	0.028773	0.027014	0	0.003	0.03185	0.030074	0.028235	0	0.012	0.091	744.6842	205.1133	0	0.00672	0.005098	0	0.117325	0.032316	0	0.146681	0.10976	0	0	0	0	0	0.16471	0.124954	0	0	0	0	0.19232	0.367309	0.909745	0	0.007056	0.001944	0
Santa Clara	2026	LHDT2	Aggregate	Aggregate	Electricity	96.38373	5822.064	0	5822.064	1278.565	3755.595	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	2026	MCY	Aggregate	Aggregate	Gasoline	28797.04	167092.5	167092.5	0	57594.08	0	0.54585	0	0.123182	0.001818	0	0.003256	0.001	0.0042	0.001945	0	0.00347	0.004	0.012	186.8446	0	46.30646	0.154451	0	0.172746	0.038475	0	0.007381	0.991178	0	1.267526	3.558543	3.769688	3.854231	1.200425	0	1.378329	3.558543	3.769688	3.854231	0.008889	11.99329	0	7.931677	0.001847	0	0.000458
Santa Clara	2026	MDV	Aggregate	Aggregate	Gasoline	162557.9	5631323	5631323	0	753924.4	0	0.077249	0	0.361249	0.00113	0	0.001888	0.002	0.003182	0.001228	0	0.002053	0.008	0.00909	402.7076	0	102.7358	0.003084	0	0.087398	0.006351	0	0.037495	0.012544	0	0.424623	0.087977	0.255029	1.559913	0.018304	0	0.464909	0.087977	0.255029	1.559913	0.037518	0.838043	0	3.531694	0.003981	0	0.001016
Santa Clara	2026	MDV	Aggregate	Aggregate	Diesel	2430.299	84111.54	84111.54	0	11337.22	0	0.040802	0	0	0.004381	0	0	0.002	0.003241	0.004579	0	0	0.008	0.009261	399.673	0	0	0.000469	0	0	0.062969	0	0	0.010103	0	0	0	0	0	0	0.011502	0	0	0	0	0	0.0031	0.197458	0	0	0.003787	0	0
Santa Clara	2026	MDV	Aggregate	Aggregate	Electricity	2850.956	95858.35	0	95858.35	14435.41	37009.23	0	0	0	0	0	0	0.002	0.001528	0	0	0	0.008	0.004365	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	2026	MDV	Aggregate	Aggregate	Plug-in Hyb	1813.351	74577.72	33714.26	40863.46	7498.208	12341.98	0.002966	0	0.11551	0.000463	0	0.001713	0.002	0.001392	0.000504	0	0.001863	0.008	0.003977	126.0521	0	93.79299	0.000396	0	0.041612	0.000513	0	0.019989	0.001283	0	0.173285	0.029908	0.026996	0.337381	0.001872	0	0.189725	0.029908	0.026996	0.337381	0.018987	0.194537	0	1.339893	0.001246	0	0.000927
Santa Clara	2026	MH	Aggregate	Aggregate	Gasoline	2263.186	21108.38	21108.38	0	226.4092	0	0.335195	0	0.432131	0.001549	0	0.000374	0.003	0.015756	0.001685	0	0.000406	0.012	0.045017	1946.632	0	31.26805	0.012049	0	0.036404	0.022132	0	0.046519	0.050974	0	0.149854	10.64717	0.254614	4.131655	0.074381	0	0.164071	10.64717	0.254614	4.131655	0.044921	1.181993	0	3.275797	0.019244	0	0.000309
Santa Clara	2026	MH	Aggregate	Aggregate	Diesel	1010.774	9718.417	9718.417	0	101.0774	0	3.846579	0	0	0.08072	0	0	0.004	0.015675	0.084369	0	0	0.016	0.044785	1082.849	0	0	0.005293	0	0	0.170603	0	0	0.11395	0	0	0	0	0	0	0.129725	0	0	0	0	0	0.16529	0.373655	0	0	0.010261	0	0
Santa Clara	2026	MHDT	Aggregate	Aggregate	Gasoline	1410.726	72468.64	72468.64	0	28225.8	0	0.333028	0.083566	0.407845	0.001339	0	0.000499	0.003	0.015756	0.001457	0	0.000542	0.012	0.045017	1727.179	521.8124	44.55752	0.010627	0.263675	0.044579	0.017598	0.007127	0.032029	0.051634	1.01721	0.242322	0.028744	0.236552	2.400687	0.073545	1.48431	0.265312	0.028744	0.236552	2.400687	0.044997	1.050142	15.1686	5.262786	0.017075	0.005159	0.00044
Santa Clara	2026	MHDT	Aggregate	Aggregate	Diesel	10675.11	435455.4	435455.4	0	127504.2	0	1.02886	12.38939	1.644141	0.010796	0.020382	0	0.003	0.015941	0.011284	0.021304	0	0.012	0.045545	1134.952	2210.329	0	0.001134	0.010419	0	0.178812	0.348238	0	0.024422	0.224312	0	0	0	0	0	0.027803	0.255363	0	0	0	0	0.213113	0.099563	7.520816	0	0.010747	0.02093	0
Santa Clara	2026	MHDT	Aggregate	Aggregate	Electricity	167.5841	8816.663	0	8816.663	2173.174	9651.078	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	2026	MHDT	Aggregate	Aggregate	Natural Ga	107.6314	4901.771	4901.771	0	1001.682	0	0.116472	6.407029	0	0.001266	0.018977	0	0.003	0.01601	0.001377	0.020639	0	0.012	0.045743	973.703	5277.958	0	0.755705	16.66564	0	0.198496	1.075946	0	0.010798	0.238119	0	0	0	0	0	0.771252	17.00851	0	0	0	0	1.06	2.995274	36.69576	0	0	0	0
Santa Clara	2026	OBUS	Aggregate	Aggregate	Gasoline	419.1997	18162.11	18162.11	0	8387.348	0	0.418185	0.062602	0.399155	0.00097	0	0.000258	0.003	0.01568	0.001055	0	0.000281	0.012	0.044799	1724.911	374.6239	31.08783	0.011431	0.195819	0.035179	0.020728	0.005108	0.030453	0.055331	0.746751	0.186435	0.035194	0.177337	3.200029	0.080739	1.089657	0.204123	0.035194	0.177337	3.200029	0.044499	1.215872	5.777453	3.882011	0.017053	0.003704	0.000307
Santa Clara	2026	OBUS	Aggregate	Aggregate	Diesel	949.0452	62674.48	62674.48	0	9750.025	0	1.092349	6.912226	1.518478	0.018173	0.007147	0	0.003	0.018049	0.018995	0.00747	0	0.012	0.05157	1245.043	1523.794	0	0.001766	0.020826	0	0.196157	0.240074	0	0.038011	0.448385	0	0	0	0	0	0.043273	0.510453	0	0	0	0	0.216379	0.139488	7.649271	0	0.01179	0.014429	0
Santa Clara	2026	OBUS	Aggregate	Aggregate	Electricity	4.484159	364.7881	0	364.7881	89.71906	404.1294	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	2026	OBUS	Aggregate	Aggregate	Natural Ga	9.101244	599.9791	599.9791	0	81.00107	0	0.145347	1.518344	0	0.001276	0.004354	0	0.003	0.016148	0.001388	0.004735	0	0.012	0.046137	975.0003	1187.914	0	0.81456	4.001439	0	0.19876	0.242164	0	0.011638	0.057173	0	0	0	0	0	0.831318	4.083762	0	0	0	0	1.06	3.321042	8.378673	0	0	0	0
Santa Clara	2026	SBUS	Aggregate	Aggregate	Gasoline	183.7933	9054.551	9054.551	0	735.1732	0	0.474165	0.887577	0.73371	0.000873	0	0.00058	0.002	0.015721	0.00095	0	0.000631	0.008	0.044917	802.4349	2565.528	57.27504	0.01005	2.4667	0.074539	0.025921	0.082658	0.067212	0.048718	10.63718	0.423572	0.1241	0.322638	1.96833	0.07109	15.52175	0.463758	0.1241	0.322638	1.96833	0.045	1.246814	82.21455	10.07789	0.007933	0.025363	0.000566
Santa Clara	2026	SBUS	Aggregate	Aggregate	Diesel	674.9981	15210.89	15210.89	0	9773.973	0	3.406071	20.83077	0.509343	0.017715	0.016839	0	0.003	0.015721	0.018516	0.017601	0	0.012	0.044917	1135.538	2209.663	0	0.002498	0.007888	0	0.178905	0.348133	0	0.053781	0.169828	0	0	0	0	0	0.061225	0.193336	0	0	0	0	0.155771	0.169257	4.880858	0	0.010753	0.020924	0
Santa Clara	2026	SBUS	Aggregate	Aggregate	Electricity	7.587222	244.2395	0	244.2395	87.39442	257.2955	0	0	0	0	0	0	0.002	0.00786	0	0	0	0.01027	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	2026	SBUS	Aggregate	Aggregate	Natural Ga	26.16468	642.5523	642.5523	0	378.8645	0	0.532059	5.249897	0	0.003378	0.011858	0	0.003	0.015721	0.003674	0.012897	0	0.012	0.044917	1243.421	4080.833	0	3.338467	14.99739	0	0.25348	0.831904	0	0.0477	0.214283	0	0	0	0	0	3.407151	15.30593	0	0	0	0	1.06	11.18687	21.87624	0	0	0	0
Santa Clara	2026	UBUS	Aggregate	Aggregate	Gasoline	46.35522	4840.865	4840.865	0	185.4209	0	0.026897	0	0.439741	0.001143	0	0.000128	0.002	0.03185	0.001243	0	0.00014	0.008	0.091	925.6516	0	36.30949	0.001945	0	0.042807	0.004209	0	0.069602	0.005374	0	0.151507	0.043604	0.092107	0.471119	0.007841	0	0.165881	0.043604	0.092107	0.471119	0.045	0.590355	0	5.738214	0.009151	0	0.000359
Santa Clara	2026	UBUS	Aggregate	Aggregate	Diesel	396.77	44084.04	44084.04	0	1587.08	0	0.382074	0	0	0.006946	0	0	0.002	0.03185	0.008221	0.0385	0.00726	0	0.032883	0.11	1310.339	0	0.003187	0	0	0.174934	0	0	0.068625	0	0	0	0	0	0	0.078125	0	0	0	0	0	0.22	0.078518	0	0	0.010521	0	0
Santa Clara	2026	UBUS	Aggregate	Aggregate	Electricity	28.65959	2995.558	0	2995.558	114.6384	5221.989	0	0	0	0	0	0	0.008972	0.01925	0	0	0	0.035887	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	2026	UBUS	Aggregate	Aggregate	Natural Ga	62.84535	7257.192	7257.192	0	251.3814	0	0.060787	0	0	0.000288	0	0	0.008445	0.0385	0.000301	0	0	0.033781	0.11	1320.935	0	0	4.332576	0	0	0.269281	0	0	0.061904	0	0	0	0	0	0	0.421712	0	0	0	0	0	0.97	50.5588	0	0	0	0	0

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

Construction Health Risk Assessment and Calculations

Icon-Echo MU, San Jose, CA

Year	Unmitigated DPM	DPM EMFAC2021	Unmitigated Emissions	Unmitigated Fug PM2.5	Fug PM2.5 EMFAC2021	Unmitigated Emissions
2023	0.0334	0.0034	0.0368	0.0722	0.0033	0.0755
2024	0.0844	0.0034	0.0878	0.0000	0.0033	0.0033
2025	0.0979	0.0034	0.1013	0.0000	0.0033	0.0033

Year	Mitigated DPM	DPM EMFAC2021	Mitigated Emissions	Mitigated Fug PM2.5	Fug PM2.5 EMFAC2021	Mitigated Emissions
2023	0.0017	0.0034	0.0051	0.0141	0.0033	0.0174
2024	0.0018	0.0034	0.0052	0.0000	0.0033	0.0033
2025	0.0053	0.0034	0.0087	0.0000	0.0033	0.0033

Icon-Echo MU, San Jose, CA

DPM Construction Emissions and Modeling Emission Rates

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)
2023	Construction	0.0368	Point	149	73.7	0.01967	2.48E-03	1.66E-05
2024	Construction	0.0878	Point	149	175.6	0.04691	5.91E-03	3.97E-05
2025	Construction	0.1013	Point	149	202.6	0.05410	6.82E-03	4.58E-05
Total		***0.2259***			***451.8***	***0.1207***	***0.0152***	

Emissions assumed to be evenly distributed over each construction areas

hr/day = 12 (7am - 7pm Mon-Sat)
days/yr = 312
hours/year = 3744

Icon-Echo MU, San Jose, CA

PM2.5 Fugitive Dust Construction Emissions for Modeling

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 $g/s/m^2$
2023	Construction	CON_FUG	0.0755	151.0	0.04032	5.08E-03	8369.3	6.07E-07
2024	Construction	CON_FUG	0.0033	6.6	0.00177	2.23E-04	8369.3	2.66E-08
2025	Construction	CON_FUG	0.0033	6.6	0.00176	2.22E-04	8369.3	2.65E-08
Total			***0.0821***	***164.2***	***0.0439***	***0.0055***		

Emissions assumed to be evenly distributed over each construction areas

hr/day = 12 (7am - 7pm Mon-Sat)
days/yr = 312
hours/year = 3744

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)
2023	Construction	0.0051	Point	149	10.3	0.00274	3.45E-04	2.32E-06
2024	Construction	0.0052	Point	149	10.4	0.00278	3.51E-04	2.35E-06
2025	Construction	0.0087	Point	149	17.4	0.00464	5.85E-04	3.92E-06
Total		***0.0190***			***38.0***	***0.0102***	***0.0013***	

Emissions assumed to be evenly distributed over each construction areas

hr/day = 12 (7am - 7pm Mon-Sat)
days/yr = 312
hours/year = 3744

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 $g/s/m^2$
2023	Construction	CON_FUG	0.0174	34.8	0.00929	1.17E-03	8369.3	1.40E-07
2024	Construction	CON_FUG	0.0033	6.6	0.00177	2.23E-04	8369.3	2.66E-08
2025	Construction	CON_FUG	0.0033	6.6	0.00176	2.22E-04	8369.3	2.65E-08
Total			***0.0240***	***48.0***	***0.0128***	***0.0016***		

Emissions assumed to be evenly distributed over each construction areas

hr/day = 12 (7am - 7pm Mon-Sat)
days/yr = 312
hours/year = 3744

Icon-Echo MU, 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

Icon-Echo MU, 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* ($\mu g/m^3$)
2023	0.0660	0.1920	11.74	0.19	0.01	0.26
2024	0.1579	0.0084	25.94	0.45	0.03	0.17
2025	0.1822	0.0084	4.71	0.52	0.04	0.19
Total	-	-	**42.39**	**1.2**	-	-
Maximum	0.1822	0.1920	**-**	**-**	**0.04**	**0.26**

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* ($\mu g/m^3$)
2023	0.0092	0.0443	1.64	0.03	0.002	0.05
2024	0.0094	0.0084	1.54	0.03	0.002	0.02
2025	0.0156	0.0084	0.40	0.04	0.003	0.02
Total	-	-	**3.58**	**0.1**	-	-
Maximum	0.0156	0.0443	**-**	**-**	**0.003**	**0.05**

- Tier 4 Final Engine, Electric Cranes and Generators, and Enhanced BMPs Mitigation

Maximum Impacts at Little Einstein's Montessori Preschool

Construction Year	Unmitigated Emissions: Maximum Concentrations: Exhaust PM2.5/DPM ($\mu g/m^3$)	Unmitigated Emissions: Maximum Concentrations: Fugitive PM2.5 ($\mu g/m^3$)	Child Cancer Risk (per million)	Hazard Index (-)	Maximum Annual PM2.5 Concentration ($\mu g/m^3$)
2023	0.0062	0.0243	0.30	0.001	0.03
2024	0.0148	0.0011	0.73	0.003	0.02
2025	0.0171	0.0011	0.84	0.003	0.02
Total	-	-	**1.86**	-	-
Maximum	0.0171	0.0243	**-**	**0.003**	**0.03**

Icon-Echo MU, San Jose, CA - Construction Impacts - Without Mitigation
Maximum DPM Cancer Risk and PM2.5 Calculations From Construction
Maximum Impacts at Off-Site 1st Floor MEI Location - 1.5 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

			Infant/Child - Exposure Information				Adult - Exposure Information				Maximum		
			DPM Conc (ug/m3)		Age	Infant/Child	Modeled		Age	Adult			
Exposure	Exposure Duration				Sensitivity	Cancer Risk	DPM Conc (ug/m3)		Sensitivity	Cancer Risk	Hazard	Fugitive	Total
Year	(years)	Age	Year	Annual	Factor	(per million)	Year	Annual	Factor	(per million)	Index	PM2.5	PM2.5
0	0.25	-0.25 - 0*	2023	0.0104	10	0.14	2023	0.0104	-	-			
1	1	0 - 1	2023	0.0104	10	1.70	2023	0.0104	1	0.03	0.0021	0.0413	0.0516
2	1	1 - 2	2024	0.0248	10	4.07	2024	0.0248	1	0.07	0.0050	0.0018	0.0266
3	1	2 - 3	2025	0.0286	3	0.74	2025	0.0286	1	0.08	0.0057	0.0018	0.0304
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						**6.65**				**0.18**			

* Third trimester of pregnancy

Icon-Echo MU, 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				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*	2023	0.0660	10	0.90	2023	0.0660	-	-			
1	1	0 - 1	2023	0.0660	10	10.85	2023	0.0660	1	0.19	0.0132	0.1920	0.2581
2	1	1 - 2	2024	0.1579	10	25.94	2024	0.1579	1	0.45	0.0316	0.0084	0.1664
3	1	2 - 3	2025	0.1822	3	4.71	2025	0.1822	1	0.52	0.0364	0.0084	0.1906
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						**42.39**				**1.17**			

* Third trimester of pregnancy

Icon-Echo MU, 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		Age	Adult			
Exposure	Exposure Duration				Sensitivity	Cancer Risk	DPM Conc (ug/m3)		Sensitivity	Cancer Risk	Hazard	Fugitive	Total
Year	(years)	Age	Year	Annual	Factor	(per million)	Year	Annual	Factor	(per million)	Index	PM2.5	PM2.5
0	0.25	-0.25 - 0*	2023	0.0641	10	0.87	2023	0.0641	-	-			
1	1	0 - 1	2023	0.0641	10	10.52	2023	0.0641	1	0.18	0.0128	0.1226	0.1867
2	1	1 - 2	2024	0.1532	10	25.17	2024	0.1532	1	0.44	0.0306	0.0053	0.1585
3	1	2 - 3	2025	0.1768	3	4.57	2025	0.1768	1	0.51	0.0354	0.0053	0.1821
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						**41.13**				**1.13**			

* Third trimester of pregnancy

Icon-Echo MU, 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*	2023	0.0092	10	0.13	2023	0.0092	-	-			
1	1	0 - 1	2023	0.0092	10	1.52	2023	0.0092	1	0.03	0.0018	0.0443	0.0535
2	1	1 - 2	2024	0.0094	10	1.54	2024	0.0094	1	0.03	0.0019	0.0084	0.0178
3	1	2 - 3	2025	0.0156	3	0.40	2025	0.0156	1	0.04	0.0031	0.0084	0.0240
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						**3.6**				**0.10**			

* Third trimester of pregnancy

Icon-Echo MU, San Jose, CA - Construction Impacts - Without Mitigation
Maximum DPM Cancer Risk and PM2.5 Calculations From Construction
Impacts at Little Einstein's Montessori Preschool (+2 years old) - 1 meter - Child Exposure

Student Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT 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)

Inhalation Dose = C_{air} x SAF x 8-Hr BR x A x (EF/365) x 10^{-6}

Where: C_{air} = concentration in air ($\mu g/m^3$)
SAF = Student Adjustment Factor (unitless)
= (24 hrs/12 hrs) x (7 days/6 days) x (10/8) = 2.92
8-Hr BR = Eight-hour breathing rate (L/kg body weight-per 8 hrs)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
10^{-6} = Conversion factor

Values

	Infant	School Child	Adult
Age -->	**0 - <2**	**2 - <16**	**16 - 30**
Parameter			
ASF =	10	3	1
CPF =	1.10E+00	1.10E+00	1.10E+00
8-Hr BR* =	1200	520	240
A =	1	1	1
EF =	250	250	250
AT =	70	70	70
SAF =	1.00	2.92	1.00

* 95th percentile 8-hr breathing rates for moderate intensity activities

Construction Cancer Risk by Year - Maximum Preschool Impact Receptor Location

Exposure Year	Exposure Duration (years)	Age	Child - Exposure Information: DPM Conc (ug/m3) Year	DPM Conc (ug/m3) Annual	Age* Sensitivity Factor	Child Cancer Risk (per million)
1	1	2 - 3	2023	0.0062	3	0.3
2	1	3 - 4	2024	0.0148	3	0.7
3	1	4 - 5	2025	0.0171	3	0.8
4	1			0.0000	3	0.0
5	1			0.0000	3	0.0
6	1			0.0000	3	0.0
7	1			0.0000	3	0.0
8	1			0.0000	3	0.0
9	1			0.0000	3	0.0
Total Increased Cancer Risk						**1.86**

* Children assumed to be 2 years of age or older with 3 years of Construction Exposure

Maximum		
Hazard Index	**Fugitive PM2.5**	**Total PM2.5**
0.0012	0.0243	0.0304
0.0030	0.00106	0.0159
0.0034	0.00106	0.0181

Icon-Echo MU, San Jose, CA - Construction Impacts - Without Mitigation
Maximum DPM Cancer Risk and PM2.5 Calculations From Construction
Impacts at Horace Mann Elementary School (+2 years old) - 1 meter - Child Exposure

Student Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT 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)

Inhalation Dose = C_{air} x SAF x 8-Hr BR x A x (EF/365) x 10^{-6}

Where: C_{air} = concentration in air ($\mu g/m^3$)
SAF = Student Adjustment Factor (unitless)
= (24 hrs/12 hrs) x (7 days/6 days) x (10/8) = 2.92
8-Hr BR = Eight-hour breathing rate (L/kg body weight-per 8 hrs)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
10^{-6} = Conversion factor

Values

	Infant	School Child	Adult
Age -->	**0 - <2**	**2 - <16**	**16 - 30**
Parameter			
ASF =	10	3	1
CPF =	1.10E+00	1.10E+00	1.10E+00
8-Hr BR* =	1200	520	240
A =	1	1	1
EF =	250	250	250
AT =	70	70	70
SAF =	1.00	2.92	1.00

* 95th percentile 8-hr breathing rates for moderate intensity activities

Construction Cancer Risk by Year - Maximum Elementary School Impact Receptor Location

Exposure Year	Exposure Duration (years)	Age	Child - Exposure Information: DPM Conc (ug/m3) Year	DPM Conc (ug/m3) Annual	Age* Sensitivity Factor	Child Cancer Risk (per million)
1	1	2 - 3	2023	0.0021	3	0.1
2	1	3 - 4	2024	0.0050	3	0.2
3	1	4 - 5	2025	0.0058	3	0.3
4	1			0.0000	3	0.0
5	1			0.0000	3	0.0
6	1			0.0000	3	0.0
7	1			0.0000	3	0.0
8	1			0.0000	3	0.0
9	1			0.0000	3	0.0
Total Increased Cancer Risk						**0.63**

* Children assumed to be 2 years of age or older with 3 years of Construction Exposure

Maximum		
Hazard Index	**Fugitive PM2.5**	**Total PM2.5**
0.0004	0.0074	0.0095
0.0010	0.00032	0.0053
0.0012	0.00032	0.0061

Project Traffic Health Risk Assessment and Calculations

CT-EMFAC2017 Emissions Factors for Project Traffic on N. 4th Street for 2026

File Name:	2026 Icon Echo MU - Santa Clara (SF) - 2026 - Annual.EF
CT-EMFAC2017 Version:	1.0.2.27401
Run Date:	6/8/2021 16:17
Area:	Santa Clara (SF)
Analysis Year:	2026
Season:	Annual

Vehicle Category	VMT Fraction Across Category	Diesel VMT Fraction Within Category	Gas VMT Fraction Within Category
Truck 1	0.015	0.508	0.492
Truck 2	0.02	0.935	0.049
Non-Truck	0.965	0.015	0.949

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	40 mph
PM2.5	0.008121	0.005263	0.003569	0.002552	0.001935	0.001561	0.001341	0.001228
TOG	0.164195	0.107707	0.072399	0.051278	0.038871	0.031092	0.026106	0.02299
Diesel PM	0.000735	0.000612	0.000478	0.000385	0.000334	0.000314	0.000317	0.000341

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

Pollutant Name	Emission Factor
TOG	1.210741

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

Pollutant Name	Emission Factor
PM2.5	0.002109

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

Pollutant Name	Emission Factor
PM2.5	0.016799

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

Pollutant Name	Emission Factor
PM2.5	0.014818

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

N. 4th Street Emissions and Health Risk Calculations

Icon-Echo MU, San Jose - Offsite Residential Roadway Modeling
Project Operation - 4th Street
DPM Modeling - Roadway Links, Traffic Volumes, and DPM Emissions
Year = 2026

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_4th	4th Street	SB	2	191.5	0.12	13.3	43.7	3.4	20	3,489

Emission Factors - DPM

Speed Category	1	2	3	4
Travel Speed (mph)	20			
Emissions per Vehicle (g/VMT)	0.00039			

Emisson Factors from CT-EMFAC2017

2026 Hourly Traffic Volumes and DPM Emissions - DPM_4th

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	3.98%	139	1.77E-06	9	6.44%	225	2.86E-06	17	5.53%	193	2.45E-06
2	2.67%	93	1.19E-06	10	7.40%	258	3.28E-06	18	3.14%	110	1.40E-06
3	2.84%	99	1.26E-06	11	6.32%	220	2.80E-06	19	2.35%	82	1.04E-06
4	3.30%	115	1.46E-06	12	6.88%	240	3.06E-06	20	0.86%	30	3.82E-07
5	2.16%	75	9.59E-07	13	6.27%	219	2.78E-06	21	3.08%	107	1.37E-06
6	3.30%	115	1.46E-06	14	6.21%	217	2.76E-06	22	4.21%	147	1.87E-06
7	6.03%	210	2.68E-06	15	5.13%	179	2.28E-06	23	2.62%	91	1.16E-06
8	4.56%	159	2.03E-06	16	3.88%	135	1.72E-06	24	0.85%	30	3.78E-07
								Total		3,489	

Icon-Echo MU, San Jose - Offsite Residential Roadway Modeling
Project Operation - 4th Street
PM2.5 Modeling - Roadway Links, Traffic Volumes, and PM2.5 Emissions
Year = 2026

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_4th	4th Street	SB	2	191.5	0.12	13.3	44	1.3	20	3,489

Emission Factors - PM2.5

Speed Category	1	2	3	4
Travel Speed (mph)	20			
Emissions per Vehicle (g/VMT)	0.002552			

Emisson Factors from CT-EMFAC2017

2026 Hourly Traffic Volumes and PM2.5 Emissions - PM25_4th

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	1.15%	40	3.38E-06	9	7.11%	248	2.09E-05	17	7.38%	258	2.17E-05
2	0.42%	15	1.24E-06	10	4.39%	153	1.29E-05	18	8.18%	285	2.41E-05
3	0.41%	14	1.19E-06	11	4.66%	163	1.37E-05	19	5.70%	199	1.68E-05
4	0.26%	9	7.67E-07	12	5.89%	205	1.73E-05	20	4.27%	149	1.26E-05
5	0.50%	17	1.47E-06	13	6.15%	215	1.81E-05	21	3.26%	114	9.59E-06
6	0.90%	32	2.66E-06	14	6.04%	211	1.78E-05	22	3.30%	115	9.71E-06
7	3.79%	132	1.11E-05	15	7.01%	245	2.06E-05	23	2.46%	86	7.25E-06
8	7.76%	271	2.28E-05	16	7.14%	249	2.10E-05	24	1.87%	65	5.49E-06
								Total		3,489	

Icon-Echo MU, San Jose - Offsite Residential Roadway Modeling
Project Operation - 4th Street
TOG Exhaust Modeling - Roadway Links, Traffic Volumes, and TOG Exhaust Emissions
Year = 2026

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_4th	4th Street	SB	2	191.5	0.12	13.3	44	1.3	20	3,489

Emission Factors - TOG Exhaust

Speed Category	1	2	3	4
Travel Speed (mph)	20			
Emissions per Vehicle (g/VMT)	0.05128			

Emisson Factors from CT-EMFAC2017

2026 Hourly Traffic Volumes and TOG Exhaust Emissions - TEXH_4th

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	1.15%	40	6.80E-05	9	7.11%	248	4.21E-04	17	7.38%	258	4.37E-04
2	0.42%	15	2.49E-05	10	4.39%	153	2.59E-04	18	8.18%	285	4.84E-04
3	0.41%	14	2.40E-05	11	4.66%	163	2.76E-04	19	5.70%	199	3.37E-04
4	0.26%	9	1.54E-05	12	5.89%	205	3.48E-04	20	4.27%	149	2.53E-04
5	0.50%	17	2.95E-05	13	6.15%	215	3.64E-04	21	3.26%	114	1.93E-04
6	0.90%	32	5.35E-05	14	6.04%	211	3.57E-04	22	3.30%	115	1.95E-04
7	3.79%	132	2.24E-04	15	7.01%	245	4.15E-04	23	2.46%	86	1.46E-04
8	7.76%	271	4.59E-04	16	7.14%	249	4.22E-04	24	1.87%	65	1.10E-04
								Total		3,489	

Icon-Echo MU, San Jose - Offsite Residential Roadway Modeling
Project Operation - 4th Street
TOG Evaporative Emissions Modeling - Roadway Links, Traffic Volumes, and TOG Evaporative Emissions
Year = 2026

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_4th	4th Street	SB	2	191.5	0.12	13.3	44	1.3	20	3,489

Emission Factors - PM2.5 - Evaporative TOG

Speed Category	1	2	3	4
Travel Speed (mph)	20			
Emissions per Vehicle per Hour (g/hour)	1.21074			
Emissions per Vehicle per Mile (g/VMT)	0.06054			

Emisson Factors from CT-EMFAC2017

2026 Hourly Traffic Volumes and TOG Evaporative Emissions - TEVAP_4th

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	1.15%	40	8.03E-05	9	7.11%	248	4.97E-04	17	7.38%	258	5.16E-04
2	0.42%	15	2.94E-05	10	4.39%	153	3.06E-04	18	8.18%	285	5.71E-04
3	0.41%	14	2.83E-05	11	4.66%	163	3.26E-04	19	5.70%	199	3.98E-04
4	0.26%	9	1.82E-05	12	5.89%	205	4.11E-04	20	4.27%	149	2.98E-04
5	0.50%	17	3.48E-05	13	6.15%	215	4.30E-04	21	3.26%	114	2.27E-04
6	0.90%	32	6.31E-05	14	6.04%	211	4.21E-04	22	3.30%	115	2.30E-04
7	3.79%	132	2.64E-04	15	7.01%	245	4.90E-04	23	2.46%	86	1.72E-04
8	7.76%	271	5.42E-04	16	7.14%	249	4.98E-04	24	1.87%	65	1.30E-04
								Total		3,489	

Icon-Echo MU, San Jose - Offsite Residential Roadway Modeling
Project Operation - 4th Street
Fugitive Road PM2.5 Modeling - Roadway Links, Traffic Volumes, and Fugitive Road PM2.5 Emissions
Year = 2026

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_4th	4th Street	SB	2	191.5	0.12	13.3	44	1.3	20	3,489

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)	0.01482			
Total Fugitive PM2.5 - Emissions per Vehicle (g/VMT)	0.03373			

Emisson Factors from CT-EMFAC2017

2026 Hourly Traffic Volumes and Fugitive PM2.5 Emissions - FUG_4th

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	1.15%	40	4.47E-05	9	7.11%	248	2.77E-04	17	7.38%	258	2.87E-04
2	0.42%	15	1.64E-05	10	4.39%	153	1.71E-04	18	8.18%	285	3.18E-04
3	0.41%	14	1.58E-05	11	4.66%	163	1.81E-04	19	5.70%	199	2.22E-04
4	0.26%	9	1.01E-05	12	5.89%	205	2.29E-04	20	4.27%	149	1.66E-04
5	0.50%	17	1.94E-05	13	6.15%	215	2.39E-04	21	3.26%	114	1.27E-04
6	0.90%	32	3.52E-05	14	6.04%	211	2.35E-04	22	3.30%	115	1.28E-04
7	3.79%	132	1.47E-04	15	7.01%	245	2.73E-04	23	2.46%	86	9.58E-05
8	7.76%	271	3.02E-04	16	7.14%	249	2.78E-04	24	1.87%	65	7.26E-05
								Total		3,489	

Icon-Echo MU, San Jose, CA - 4th Street Traffic - TACs & PM2.5
AERMOD Risk Modeling Parameters and Maximum Concentrations - Project Traffic at Construction MEI Receptor (6.1 m receptor height)

Emission Year	2026
Receptor Information	Construction MEI receptor
Number of Receptors	1
Receptor Height	6.1 meters
Receptor Distances	At Construction MEI location

Meteorological Conditions	
BAQMD San Jose Airport Met Data	2013-2017
Land Use Classification	Urban
Wind Speed	Variable
Wind Direction	Variable

Construction MEI Cancer Risk Maximum Concentrations

Meteorological Data Years	Concentration (µg/m3)			
	DPM	Exhaust TOG	Evaporative TOG	
2013-2017	0.00008	0.00848	0.01003	2nd Floor

Construction MEI PM2.5 Maximum Concentrations

Meteorological Data Years	PM2.5 Concentration (µg/m3)			
	Total PM2.5	Fugitive PM2.5	Vehicle PM2.5	
2013-2017	0.0060	0.00558	0.00042	2nd Floor

Icon-Echo MU, San Jose, CA - 4th Street Cancer Risk
Impacts at Construction MEI - 6.1 meter receptor height (2nd floor)
27 Year Residential Exposure - Project Traffic

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*	2023	10	0.00000	0.0000	0.0000	0.000	0.000	0.0000	0.00
1	1	0 - 1	2023	10	0.00000	0.0000	0.0000	0.000	0.000	0.0000	0.00
2	1	1 - 2	2024	10	0.00000	0.0000	0.0000	0.000	0.000	0.0000	0.00
3	1	2 - 3	2025	3	0.00000	0.0000	0.0000	0.000	0.000	0.0000	0.00
4	1	3 - 4	2026	3	0.00008	0.0085	0.0100	0.001	0.001	0.0001	0.00
5	1	4 - 5	2027	3	0.00008	0.0085	0.0100	0.001	0.001	0.0001	0.00
6	1	5 - 6	2028	3	0.00008	0.0085	0.0100	0.001	0.001	0.0001	0.00
7	1	6 - 7	2029	3	0.00008	0.0085	0.0100	0.001	0.001	0.0001	0.00
8	1	7 - 8	2030	3	0.00008	0.0085	0.0100	0.001	0.001	0.0001	0.00
9	1	8 - 9	2031	3	0.00008	0.0085	0.0100	0.001	0.001	0.0001	0.00
10	1	9 - 10	2032	3	0.00008	0.0085	0.0100	0.001	0.001	0.0001	0.00
11	1	10 - 11	2033	3	0.00008	0.0085	0.0100	0.001	0.001	0.0001	0.00
12	1	11 - 12	2034	3	0.00008	0.0085	0.0100	0.001	0.001	0.0001	0.00
13	1	12 - 13	2035	3	0.00008	0.0085	0.0100	0.001	0.001	0.0001	0.00
14	1	13 - 14	2036	3	0.00008	0.0085	0.0100	0.001	0.001	0.0001	0.00
15	1	14 - 15	2037	3	0.00008	0.0085	0.0100	0.001	0.001	0.0001	0.00
16	1	15 - 16	2038	3	0.00008	0.0085	0.0100	0.001	0.001	0.0001	0.00
17	1	16-17	2039	1	0.00008	0.0085	0.0100	0.000	0.000	0.0000	0.00
18	1	17-18	2040	1	0.00008	0.0085	0.0100	0.000	0.000	0.0000	0.00
19	1	18-19	2041	1	0.00008	0.0085	0.0100	0.000	0.000	0.0000	0.00
20	1	19-20	2042	1	0.00008	0.0085	0.0100	0.000	0.000	0.0000	0.00
21	1	20-21	2043	1	0.00008	0.0085	0.0100	0.000	0.000	0.0000	0.00
22	1	21-22	2044	1	0.00008	0.0085	0.0100	0.000	0.000	0.0000	0.00
23	1	22-23	2045	1	0.00008	0.0085	0.0100	0.000	0.000	0.0000	0.00
24	1	23-24	2046	1	0.00008	0.0085	0.0100	0.000	0.000	0.0000	0.00
25	1	24-25	2047	1	0.00008	0.0085	0.0100	0.000	0.000	0.0000	0.00
26	1	25-26	2048	1	0.00008	0.0085	0.0100	0.000	0.000	0.0000	0.00
27	1	26-27	2049	1	0.00008	0.0085	0.0100	0.000	0.000	0.0000	0.00
28	1	27-28	2050	1	0.00008	0.0085	0.0100	0.000	0.000	0.0000	0.00
29	1	28-29	2051	1	0.00008	0.0085	0.0100	0.000	0.000	0.0000	0.00
30	1	29-30	2052	1	0.00008	0.0085	0.0100	0.000	0.000	0.0000	0.00
Total Increased Cancer Risk								0.02	0.014	0.001	**0.04**

Maximum Hazard Index	Maximum Fugitive PM2.5	Total PM2.5
0.00002	0.006	0.006

* Third trimester of pregnancy

Icon-Echo MU, San Jose, CA - 4th Street Traffic - TACs & PM2.5
Maximum Cancer Risk and PM2.5 Concentration
AERMOD Risk Modeling Parameters and Maximum Concentrations
Impacts at Little Einstein's Montessori Preschool, 4-Year Child Exposure - 1 meter

Emissions Years	2026
Receptor Information	
Number of Receptors	1
Receptor Height =	1.0 meters
Receptor distances =	at preschool site

Meteorological Conditions

BAAQMD San Jose Airport Met Data	2013-2017
Land Use Classification	urban
Wind speed =	variable
Wind direction =	variable

Emission Years	Concentration (µg/m^3)		
	DPM	Exhaust TOG	Evaporative TOG
2026	0.00005	0.00723	0.00855

Emission Years	PM2.5 Concentrations (µg/m^3)		
	Total PM2.5	Fugitive PM2.5	Vehicle PM2.5
2026	0.0051	0.00476	0.00036

Maximum School Child PM2.5 Concentration (µg/m^3)* =	**0.001**

* Concentration adjusted for exposure duration at school

Icon-Echo MU, San Jose, CA - 4th Street Cancer Risk
Maximum Child Cancer Risk
Child Exposures (1.0 meter receptor heights)
Impacts at Little Einstein's Montessori Preschool, 4-Year Child Exposure - 1 meter

Cancer Risk Calculation Method

Student Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT 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)

Inhalation Dose = C_{air} x SAF x 8hr BR x A x (EF/365) x 10^{-6}

Where: C_{air} = concentration in air $(\mu g/m^3)$
SAF = School Adjustment Factor (unitless) for source operation and exposures different than 8 hours/day
= (24/SHR) x (7days/SDay) x (ScHR/8 hrs)
SHR = Hours of emission source operation
SDay = Modeled number of days per week of source operaion
ScHR = School operation hours while emission source in operation
8-Hr BR = Eight-hour breathing rate (L/kg body weight-per 8 hrs)
A = Inhalation absorption factor
10^{-6} = Conversion factor

Values

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

	Child
Age -->	2 - <16
Parameter	
ASF	3
8-Hr BR* =	520
ScHR** =	10.00
SHR =	24
SDay =	7
A =	1
EF =	250
AT =	70
SAF =	1.25

* 95th percentile 8-hr breathing rates for moderate intensity activities
** ScHR based on 10 hours school day

Road Traffic Cancer Risk by Year - Maximum Impact Receptor Location

Exposure Year	Year	Exposure Duration (years)	Age	Maximum - Exposure Information: Age Sensitivity Factor	Annual TAC Conc (ug/m3): DPM	Exhaust TOG	Evaporative TOG	Cancer Risk (per million): DPM	Exhaust TOG	Evaporative TOG	Total	Hazard Index
1	2026	1	2 - 3	3	0.0001	0.0072	0.0086	0.0010	0.0009	0.0001	0.0020	0.00001
2	2027	1	3 - 4	3	0.0001	0.0072	0.0086	0.0010	0.0009	0.0001	0.0020	
3	2028	1	4 - 5	3	0.0001	0.0072	0.0086	0.0010	0.0009	0.0001	0.0020	
4	2029	1	5 - 6	3	0.0001	0.0072	0.0086	0.0010	0.0009	0.0001	0.0020	
Total Increased Cancer Risk								0.0042	0.0078	0.0005	**0.013**	

Icon-Echo MU, San Jose, CA - 4th Street Traffic - TACs & PM2.5
Maximum Cancer Risk and PM2.5 Concentration
AERMOD Risk Modeling Parameters and Maximum Concentrations
Impacts at Horace Mann Elementary School, 9-Year Child Exposure - 1 meter

Emissions Years	2026
Receptor Information	
Number of Receptors	24
Receptor Height =	1.0 meters
Receptor distances =	receptors within in school area

Meteorological Conditions

BAAQMD San Jose Airport Met Data	2013-2017
Land Use Classification	urban
Wind speed =	variable
Wind direction =	variable

Emission Years	Concentration (µg/m^3)		
	DPM	Exhaust TOG	Evaporative TOG
2026	0.00002	0.00192	0.00227

Emission Years	PM2.5 Concentrations (µg/m^3)		
	Total PM2.5	Fugitive PM2.5	Vehicle PM2.5
2026	0.00136	0.00126	0.00010

Maximum School Child PM2.5 Concentration (µg/m^3)* =	**0.0004**

* Concentration adjusted for exposure duration at school

Icon-Echo MU, San Jose, CA - 4th Street Cancer Risk
Maximum Child Cancer Risk - Horace Mann Elementary School
Child Exposures (1.0 meter receptor heights)
Impacts at Horace Mann Elementary School, 9-Year Child Exposure - 1 meter

Cancer Risk Calculation Method

Student Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT 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)

Inhalation Dose = C_{air} x SAF x 8hr BR x A x (EF/365) x 10^{-6}

Where: C_{air} = concentration in air ($\mu g/m^3$)
SAF = School Adjustment Factor (unitless) for source operation and exposures different than 8 hours/day
= (24/SHR) x (7days/SDay) x (ScHR/8 hrs)
SHR = Hours of emission source operation
SDay = Modeled number of days per week of source operaion
ScHR = School operation hours while emission source in operation
8-Hr BR = Eight-hour breathing rate (L/kg body weight-per 8 hrs)
A = Inhalation absorption factor
10^{-6} = Conversion factor

Values

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

	Child
Age -->	2 - <16
Parameter	
ASF	3
8-Hr BR* =	520
ScHR** =	10
SDay =	7
SHR =	24
A =	1
EF =	250
AT =	70
SAF =	1.25

* 95th percentile 8-hr breathing rates for moderate intensity activities
** ScHR based on 10 hours at school

Road Traffic Cancer Risk by Year - Maximum Impact Receptor Location

Exposure Year	Year	Exposure Duration (years)	Age	Maximum - Exposure Information: Age Sensitivity Factor	Annual TAC Conc (ug/m3): DPM	Exhaust TOG	Evaporative TOG	Cancer Risk (per million): DPM	Exhaust TOG	Evaporative TOG	Total	Hazard Index
1	2026	1	2 - 3	3	0.00002	0.0019	0.0023	0.00042	0.00023	0.00002	0.00067	0.000004
2	2027	1	3 - 4	3	0.00002	0.0019	0.0023	0.00042	0.00023	0.00002	0.00067	
3	2028	1	4 - 5	3	0.00002	0.0019	0.0023	0.00042	0.00023	0.00002	0.00067	
4	2029	1	5 - 6	3	0.00002	0.0019	0.0023	0.00042	0.00023	0.00002	0.00067	
5	2025	1	6-7	3	0.00002	0.0019	0.0023	0.00042	0.00023	0.00002	0.00067	
6	2026	1	7-8	3	0.00002	0.0019	0.0023	0.00042	0.00023	0.00002	0.00067	
7	2027	1	8-9	3	0.00002	0.0019	0.0023	0.00042	0.00023	0.00002	0.00067	
8	2028	1	9 - 10	3	0.00002	0.0019	0.0023	0.00042	0.00023	0.00002	0.00067	
9	2029	1	10-11	3	0.00002	0.0019	0.0023	0.00042	0.00023	0.00002	0.00067	
Total Increased Cancer Risk								0.0038	0.0021	0.0001	**0.006**	

Project Generator Health Risk Assessment and Calculations

Icon-Echo MU, San Jose, CA

Standby Emergency Generator Impacts - w/ BAAQMD BACT Requirements for engines >1,000-hp
Off-site Sensitive Receptors
MEI Location = 6.1 meter receptor height

DPM Emission Rates		
	DPM Emissions per Generator	
Source Type	Max Daily (lb/day)	Annual (lb/year)
Two, 1,000-kW, 1,340-hp Generator BACT Requirements	0.012	4.32
CalEEMod DPM Emissions	2.16E-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)	1340	
Stack Height (ft)	18.00	top of 2nd floor based exhaust release
Stack Diameter (ft)**	0.60	
Exhaust Gas Flowrate (CFM)*	2528	
Stack Exit Velocity (ft/sec)**	149	
Exhaust Temperature (˚F)**	872	
Emissions Rate (lb/hr)	0.0005	0.00025 each generator

* AERMOD default

**BAAQMD default generator parameters

Icon-Echo MU, San Jose - Cancer Risks from Project Operation
Project Emergency Generators
Impacts at Construction MEI Receptor- 6.1m Receptor Height
Impact at Project MEI (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

			Infant/Child - Exposure Information						
Exposure Year	Exposure Duration (years)	Age	DPM Conc (ug/m3) Year	Annual	Age Sensitivity Factor	Cancer Risk (per million)		Hazard Index	Fugitive PM2.5	Total PM2.5
0	0.25	-0.25 - 0*	2023	0.00000	10	0.000				
1	1	0 - 1	2023	0.00000	10	0.000				
2	1	1 - 2	2024	0.00000	10	0.000				
3	1	2 - 3	2025	0.00000	3	0.000				
4	1	3 - 4	2026	0.00038	3	0.007		0.0001	0.0004	0.001
5	1	4 - 5	2027	0.00038	3	0.007		0.0001	0.0004	0.001
6	1	5 - 6	2028	0.00038	3	0.007		0.0001	0.0004	0.001
7	1	6 - 7	2029	0.00038	3	0.007		0.0001	0.0004	0.001
8	1	7 - 8	2030	0.00038	3	0.007		0.0001	0.0004	0.001
9	1	8 - 9	2031	0.00038	3	0.007		0.0001	0.0004	0.001
10	1	9 - 10	2032	0.00038	3	0.007		0.0001	0.0004	0.001
11	1	10 - 11	2033	0.00038	3	0.007		0.0001	0.0004	0.001
12	1	11 - 12	2034	0.00038	3	0.007		0.0001	0.0004	0.001
13	1	12 - 13	2035	0.00038	3	0.007		0.0001	0.0004	0.001
14	1	13 - 14	2036	0.00038	3	0.007		0.0001	0.0004	0.001
15	1	14 - 15	2037	0.00038	3	0.007		0.0001	0.0004	0.001
16	1	15 - 16	2038	0.00038	3	0.007		0.0001	0.0004	0.001
17	1	16-17	2039	0.00038	1	0.001		0.0001	0.0004	0.001
18	1	17-18	2040	0.00038	1	0.001		0.0001	0.0004	0.001
19	1	18-19	2041	0.00038	1	0.001		0.0001	0.0004	0.001
20	1	19-20	2042	0.00038	1	0.001		0.0001	0.0004	0.001
21	1	20-21	2043	0.00038	1	0.001		0.0001	0.0004	0.001
22	1	21-22	2044	0.00038	1	0.001		0.0001	0.0004	0.001
23	1	22-23	2045	0.00038	1	0.001		0.0001	0.0004	0.001
24	1	23-24	2046	0.00038	1	0.001		0.0001	0.0004	0.001
25	1	24-25	2047	0.00038	1	0.001		0.0001	0.0004	0.001
26	1	25-26	2048	0.00038	1	0.001		0.0001	0.0004	0.001
27	1	26-27	2049	0.00038	1	0.001		0.0001	0.0004	0.001
28	1	27-28	2050	0.00038	1	0.001		0.0001	0.0004	0.001
29	1	28-29	2051	0.00038	1	0.001		0.0001	0.0004	0.001
30	1	29-30	2052	0.00038	1	0.001		0.0001	0.0004	0.001
Total Increased Cancer Risk						**0.11**	**Max**	**0.0001**	**0.0004**	**0.001**

* Third trimester of pregnancy

Icon-Echo MU, San Jose, CA - Project Generator Impacts
Maximum DPM Cancer Risk and PM2.5 Calculations
Impacts at Little Einstein's Montessori Preschool, 4-Year Child Exposure - 1 meter

Student Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT 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)

Inhalation Dose = C_{air} x SAF x 8-Hr BR x A x (EF/365) x 10^{-6}

Where: C_{air} = concentration in air ($\mu g/m^3$)
SAF = Student Adjustment Factor (unitless)
= (24 hrs/24 hrs) x (7 days/7 days) x (10/8) = 1.25
8-Hr BR = Eight-hour breathing rate (L/kg body weight-per 8 hrs)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
10^{-6} = Conversion factor

Values

	Infant	School Child	Adult
Age -->	**0 - <2**	**2 - <16**	**16 - 30**
Parameter			
ASF =	10	3	1
CPF =	1.10E+00	1.10E+00	1.10E+00
8-Hr BR* =	1200	520	240
A =	1	1	1
EF =	250	250	250
AT =	70	70	70
SAF =	1.00	1.25	1.00

* 95th percentile 8-hr breathing rates for moderate intensity activities

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

Exposure Year	Exposure Duration (years)	Age	Child - Exposure Information: DPM Conc (ug/m3) Year	DPM Conc (ug/m3) Annual	Age* Sensitivity Factor	Child Cancer Risk (per million)
1	1	2 - 3	2026	0.0004	3	0.01
2	1	3 - 4	2027	0.0004	3	0.01
3	1	4 - 5	2028	0.0004	3	0.01
4	1	5 - 6	2029	0.0004	3	0.01
5	1			0.0000	3	0.0
6	1			0.0000	3	0.0
7	1			0.0000	3	0.0
8	1			0.0000	3	0.0
9	1			0.0000	3	0.0
Total Increased Cancer Risk						**0.03**

* Children assumed to be 2 years of age or older with 4 years of exposure

Maximum		
Hazard Index	**Fugitive PM2.5**	**Total PM2.5**
0.0001	0.0004	0.001
0.0001	0.0004	0.001
0.0001	0.0004	0.001

Icon-Echo MU, San Jose, CA - Construction Impacts - Without Mitigation
Maximum DPM Cancer Risk and PM2.5 Calculations From Construction Impacts at Horace Mann Elementary School, 9-Year Child Exposure - 1 meter

Student Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT 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)

Inhalation Dose = C_{air} x SAF x 8-Hr BR x A x (EF/365) x 10^{-6}

Where: C_{air} = concentration in air $(\mu g/m^3)$
SAF = Student Adjustment Factor (unitless)
= (24 hrs/24 hrs) x (7 days/7 days) x (10/8) = 1.25
8-Hr BR = Eight-hour breathing rate (L/kg body weight-per 8 hrs)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
10^{-6} = Conversion factor

Values

	Infant	School Child	Adult
Age -->	**0 - <2**	**2 - <16**	**16 - 30**
Parameter			
ASF =	10	3	1
CPF =	1.10E+00	1.10E+00	1.10E+00
8-Hr BR* =	1200	520	240
A =	1	1	1
EF =	250	250	250
AT =	70	70	70
SAF =	1.00	1.25	1.00

* 95th percentile 8-hr breathing rates for moderate intensity activities

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

Exposure Year	Exposure Duration (years)	Age	Child - Exposure Information: DPM Conc (ug/m3) Year	DPM Conc (ug/m3) Annual	Age* Sensitivity Factor	Child Cancer Risk (per million)	Maximum Hazard Index	Maximum Fugitive PM2.5	Maximum Total PM2.5
1	1	2 - 3	2026	0.00012	3	0.003	0.00002	0.0000	0.0001
2	1	3 - 4	2027	0.00012	3	0.003	0.0000	0.00000	0.0001
3	1	4 - 5	2028	0.00012	3	0.003	0.0000	0.00000	0.0001
4	1	5 - 6	2029	0.00012	3	0.003	0.0000	0.00000	0.0001
5	1	6-7	2030	0.00012	3	0.003	0.0000	0.00000	0.0001
6	1	7-8	2031	0.00012	3	0.003	0.0000	0.00000	0.0001
7	1	8-9	2032	0.00012	3	0.003	0.0000	0.00000	0.0001
8	1	9 - 10	2033	0.00012	3	0.003	0.0000	0.00000	0.0001
9	1	10-11	2034	0.00012	3	0.003	0.0000	0.00000	0.0001
Total Increased Cancer Risk						**0.02**			

* Children assumed to be 2 years of age or older with 9 years of exposure

Attachment 5: Cumulative Community Risk from Existing TAC Sources

CT-EMFAC2017 Emissions Factors for E. Santa Clara Street 2023

File Name:	2023 Icon Echo MU - Santa Clara (SF) - 2023 - Annual.EF
CT-EMFAC2017 Version:	1.0.2.27401
Run Date:	6/8/2021 16:05
Area:	Santa Clara (SF)
Analysis Year:	2023
Season:	Annual

Vehicle Category	VMT Fraction Across Category	Diesel VMT Fraction Within Category	Gas VMT Fraction Within Category
Truck 1	0.015	0.487	0.513
Truck 2	0.02	0.938	0.047
Non-Truck	0.965	0.014	0.958

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	40 mph
PM2.5	0.009229	0.005981	0.004054	0.002896	0.002194	0.001765	0.001511	0.001375
TOG	0.195764	0.127928	0.086105	0.061055	0.046181	0.036838	0.030861	0.027137
Diesel PM	0.000904	0.000732	0.000563	0.000446	0.000382	0.000353	0.00035	0.00037

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

Pollutant Name	Emission Factor
TOG	1.35761

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

Pollutant Name	Emission Factor
PM2.5	0.002108

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

Pollutant Name	Emission Factor
PM2.5	0.016808

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

Pollutant Name	Emission Factor
PM2.5	0.014855

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

E. Santa Clara Street Emissions and Health Risk Calculations

Analysis Year = ***2023***

Vehicle Type	**2021 Caltrans Vehicles (veh/day)**	**2023 Vehicles (veh/day)**
Truck 1 (MDT)	460	470
Truck 2 (HDT)	124	126
Non-Truck	16,061	16,382
Total	**16,645**	**16,978**

Increase From 2021	1.02
Vehicles/Direction	**8,489**
Avg Vehicles/Hour/Direction	354

Traffic Data Year = ***2021***

Proejct Traffic 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%*

Icon-Echo MU, San Jose - Offsite Residential Roadway Modeling
Cumulative Operation - E. Santa Clara Street
DPM Modeling - Roadway Links, Traffic Volumes, and DPM Emissions
Year = **2023**

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	E Santa Clara Street Eastbound	EB	2	662.3	0.41	13.3	43.7	3.4	20	8,489
DPM_WBSC	E Santa Clara Street Westbound	WB	2	662.3	0.41	13.3	43.7	3.4	20	8,489
									Total	16,978

Emission Factors - DPM

Speed Category	1	2	3	4
Travel Speed (mph)	20			
Emissions per Vehicle (g/VMT)	0.00045			

Emisson Factors from CT-EMFAC2017

2023 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	3.91%	332	1.69E-05	9	6.50%	552	2.81E-05	17	5.58%	474	2.41E-05
2	2.59%	220	1.12E-05	10	7.36%	625	3.19E-05	18	3.28%	278	1.42E-05
3	2.88%	244	1.24E-05	11	6.33%	537	2.74E-05	19	2.36%	200	1.02E-05
4	3.34%	283	1.44E-05	12	6.84%	581	2.96E-05	20	0.92%	78	3.98E-06
5	2.19%	185	9.46E-06	13	6.15%	522	2.66E-05	21	2.99%	254	1.29E-05
6	3.39%	288	1.47E-05	14	6.15%	522	2.66E-05	22	4.14%	351	1.79E-05
7	5.98%	508	2.59E-05	15	5.23%	444	2.26E-05	23	2.47%	210	1.07E-05
8	4.66%	395	2.02E-05	16	3.91%	332	1.69E-05	24	0.86%	73	3.73E-06
								Total		8,489	

2023 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	3.91%	332	1.69E-05	9	6.50%	552	2.81E-05	17	5.58%	474	2.41E-05
2	2.59%	220	1.12E-05	10	7.36%	625	3.19E-05	18	3.28%	278	1.42E-05
3	2.88%	244	1.24E-05	11	6.33%	537	2.74E-05	19	2.36%	200	1.02E-05
4	3.34%	283	1.44E-05	12	6.84%	581	2.96E-05	20	0.92%	78	3.98E-06
5	2.19%	185	9.46E-06	13	6.15%	522	2.66E-05	21	2.99%	254	1.29E-05
6	3.39%	288	1.47E-05	14	6.15%	522	2.66E-05	22	4.14%	351	1.79E-05
7	5.98%	508	2.59E-05	15	5.23%	444	2.26E-05	23	2.47%	210	1.07E-05
8	4.66%	395	2.02E-05	16	3.91%	332	1.69E-05	24	0.86%	73	3.73E-06
								Total		8,489	

Icon-Echo MU, San Jose - Offsite Residential Roadway Modeling
Cumulative Operation - E. Santa Clara Street
PM2.5 Modeling - Roadway Links, Traffic Volumes, and PM2.5 Emissions
Year = 2023

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	E Santa Clara Street Eastbound	EB	2	662.3	0.41	13.3	44	1.3	20	8,489
PM25_WBSC	E Santa Clara Street Westbound	WB	2	662.3	0.41	13.3	44	1.3	20	8,489
									Total	16,978

Emission Factors - PM2.5

Speed Category	1	2	3	4
Travel Speed (mph)	20			
Emissions per Vehicle (g/VMT)	0.002896			

Emisson Factors from CT-EMFAC2017

2023 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%	98	3.24E-05	9	7.11%	604	2.00E-04	17	7.38%	627	2.08E-04
2	0.42%	35	1.17E-05	10	4.39%	373	1.23E-04	18	8.17%	694	2.30E-04
3	0.41%	35	1.15E-05	11	4.66%	396	1.31E-04	19	5.70%	484	1.60E-04
4	0.26%	22	7.40E-06	12	5.89%	500	1.65E-04	20	4.27%	363	1.20E-04
5	0.50%	42	1.41E-05	13	6.15%	522	1.73E-04	21	3.26%	277	9.16E-05
6	0.90%	77	2.54E-05	14	6.04%	512	1.70E-04	22	3.30%	280	9.27E-05
7	3.79%	322	1.07E-04	15	7.01%	595	1.97E-04	23	2.46%	209	6.91E-05
8	7.76%	659	2.18E-04	16	7.14%	606	2.01E-04	24	1.86%	158	5.24E-05
								Total		8,489	

2023 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%	98	3.24E-05	9	7.11%	604	2.00E-04	17	7.38%	627	2.08E-04
2	0.42%	35	1.17E-05	10	4.39%	373	1.23E-04	18	8.17%	694	2.30E-04
3	0.41%	35	1.15E-05	11	4.66%	396	1.31E-04	19	5.70%	484	1.60E-04
4	0.26%	22	7.40E-06	12	5.89%	500	1.65E-04	20	4.27%	363	1.20E-04
5	0.50%	42	1.41E-05	13	6.15%	522	1.73E-04	21	3.26%	277	9.16E-05
6	0.90%	77	2.54E-05	14	6.04%	512	1.70E-04	22	3.30%	280	9.27E-05
7	3.79%	322	1.07E-04	15	7.01%	595	1.97E-04	23	2.46%	209	6.91E-05
8	7.76%	659	2.18E-04	16	7.14%	606	2.01E-04	24	1.86%	158	5.24E-05
								Total		8,489	

Icon-Echo MU, San Jose - Offsite Residential Roadway Modeling
Cumulative Operation - E. Santa Clara Street
TOG Exhaust Modeling - Roadway Links, Traffic Volumes, and TOG Exhaust Emissions
Year = 2023

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	E Santa Clara Street Eastbound	EB	2	662.3	0.41	13.3	44	1.3	20	8,489
TEXH_WBSC	E Santa Clara Street Westbound	WB	2	662.3	0.41	13.3	44	1.3	20	8,489
									Total	16,978

Emission Factors - TOG Exhaust

Speed Category	1	2	3	4
Travel Speed (mph)	20			
Emissions per Vehicle (g/VMT)	0.06106			

Emisson Factors from CT-EMFAC2017

2023 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%	98	6.82E-04	9	7.11%	604	4.21E-03	17	7.38%	627	4.38E-03
2	0.42%	35	2.47E-04	10	4.39%	373	2.60E-03	18	8.17%	694	4.84E-03
3	0.41%	35	2.42E-04	11	4.66%	396	2.76E-03	19	5.70%	484	3.38E-03
4	0.26%	22	1.56E-04	12	5.89%	500	3.49E-03	20	4.27%	363	2.53E-03
5	0.50%	42	2.97E-04	13	6.15%	522	3.64E-03	21	3.26%	277	1.93E-03
6	0.90%	77	5.36E-04	14	6.04%	512	3.58E-03	22	3.30%	280	1.95E-03
7	3.79%	322	2.25E-03	15	7.01%	595	4.15E-03	23	2.46%	209	1.46E-03
8	7.76%	659	4.60E-03	16	7.14%	606	4.23E-03	24	1.86%	158	1.10E-03
								Total		8,489	

2023 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%	98	6.82E-04	9	7.11%	604	4.21E-03	17	7.38%	627	4.38E-03
2	0.42%	35	2.47E-04	10	4.39%	373	2.60E-03	18	8.17%	694	4.84E-03
3	0.41%	35	2.42E-04	11	4.66%	396	2.76E-03	19	5.70%	484	3.38E-03
4	0.26%	22	1.56E-04	12	5.89%	500	3.49E-03	20	4.27%	363	2.53E-03
5	0.50%	42	2.97E-04	13	6.15%	522	3.64E-03	21	3.26%	277	1.93E-03
6	0.90%	77	5.36E-04	14	6.04%	512	3.58E-03	22	3.30%	280	1.95E-03
7	3.79%	322	2.25E-03	15	7.01%	595	4.15E-03	23	2.46%	209	1.46E-03
8	7.76%	659	4.60E-03	16	7.14%	606	4.23E-03	24	1.86%	158	1.10E-03
								Total		8,489	

Icon-Echo MU, San Jose - Offsite Residential Roadway Modeling
Cumulative Operation - E. Santa Clara Street
TOG Evaporative Emissions Modeling - Roadway Links, Traffic Volumes, and TOG Evaporative Emissions
Year = 2023

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	E Santa Clara Street Eastbound	EB	2	662.3	0.41	13.3	44	1.3	20	8,489
TEVAP_WBSC	E Santa Clara Street Westbound	WB	2	662.3	0.41	13.3	44	1.3	20	8,489
									Total	16,978

Emission Factors - PM2.5 - Evaporative TOG

Speed Category	1	2	3	4
Travel Speed (mph)	20			
Emissions per Vehicle per Hour (g/hour)	1.35761			
Emissions per Vehicle per Mile (g/VMT)	0.06788			

Emisson Factors from CT-EMFAC2017

2023 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%	98	7.59E-04	9	7.11%	604	4.68E-03	17	7.38%	627	4.86E-03
2	0.42%	35	2.75E-04	10	4.39%	373	2.89E-03	18	8.17%	694	5.38E-03
3	0.41%	35	2.68E-04	11	4.66%	396	3.07E-03	19	5.70%	484	3.75E-03
4	0.26%	22	1.73E-04	12	5.89%	500	3.88E-03	20	4.27%	363	2.82E-03
5	0.50%	42	3.30E-04	13	6.15%	522	4.05E-03	21	3.26%	277	2.15E-03
6	0.90%	77	5.96E-04	14	6.04%	512	3.98E-03	22	3.30%	280	2.17E-03
7	3.79%	322	2.50E-03	15	7.01%	595	4.62E-03	23	2.46%	209	1.62E-03
8	7.76%	659	5.11E-03	16	7.14%	606	4.70E-03	24	1.86%	158	1.23E-03
								Total		8,489	

2023 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%	98	7.59E-04	9	7.11%	604	4.68E-03	17	7.38%	627	4.86E-03
2	0.42%	35	2.75E-04	10	4.39%	373	2.89E-03	18	8.17%	694	5.38E-03
3	0.41%	35	2.68E-04	11	4.66%	396	3.07E-03	19	5.70%	484	3.75E-03
4	0.26%	22	1.73E-04	12	5.89%	500	3.88E-03	20	4.27%	363	2.82E-03
5	0.50%	42	3.30E-04	13	6.15%	522	4.05E-03	21	3.26%	277	2.15E-03
6	0.90%	77	5.96E-04	14	6.04%	512	3.98E-03	22	3.30%	280	2.17E-03
7	3.79%	322	2.50E-03	15	7.01%	595	4.62E-03	23	2.46%	209	1.62E-03
8	7.76%	659	5.11E-03	16	7.14%	606	4.70E-03	24	1.86%	158	1.23E-03
								Total		8,489	

Icon-Echo MU, San Jose - Offsite Residential Roadway Modeling
Cumulative Operation - E. Santa Clara Street
Fugitive Road PM2.5 Modeling - Roadway Links, Traffic Volumes, and Fugitive Road PM2.5 Emissions
Year = 2023

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	E Santa Clara Street Eastbound	EB	2	662.3	0.41	13.3	44	1.3	20	8,489
FUG_WBSC	E Santa Clara Street Westbound	WB	2	662.3	0.41	13.3	44	1.3	20	8,489
									Total	16,978

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)	0.01681			
Road Dust - Emissions per Vehicle (g/VMT)	0.01486			
Total Fugitive PM2.5 - Emissions per Vehicle (g/VMT)	0.03377			

Emisson Factors from CT-EMFAC2017

2023 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%	98	3.77E-04	9	7.11%	604	2.33E-03	17	7.38%	627	2.42E-03
2	0.42%	35	1.37E-04	10	4.39%	373	1.44E-03	18	8.17%	694	2.68E-03
3	0.41%	35	1.34E-04	11	4.66%	396	1.53E-03	19	5.70%	484	1.87E-03
4	0.26%	22	8.62E-05	12	5.89%	500	1.93E-03	20	4.27%	363	1.40E-03
5	0.50%	42	1.64E-04	13	6.15%	522	2.02E-03	21	3.26%	277	1.07E-03
6	0.90%	77	2.96E-04	14	6.04%	512	1.98E-03	22	3.30%	280	1.08E-03
7	3.79%	322	1.24E-03	15	7.01%	595	2.30E-03	23	2.46%	209	8.06E-04
8	7.76%	659	2.54E-03	16	7.14%	606	2.34E-03	24	1.86%	158	6.11E-04
								Total		8,489	

2023 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%	98	3.77E-04	9	7.11%	604	2.33E-03	17	7.38%	627	2.42E-03
2	0.42%	35	1.37E-04	10	4.39%	373	1.44E-03	18	8.17%	694	2.68E-03
3	0.41%	35	1.34E-04	11	4.66%	396	1.53E-03	19	5.70%	484	1.87E-03
4	0.26%	22	8.62E-05	12	5.89%	500	1.93E-03	20	4.27%	363	1.40E-03
5	0.50%	42	1.64E-04	13	6.15%	522	2.02E-03	21	3.26%	277	1.07E-03
6	0.90%	77	2.96E-04	14	6.04%	512	1.98E-03	22	3.30%	280	1.08E-03
7	3.79%	322	1.24E-03	15	7.01%	595	2.30E-03	23	2.46%	209	8.06E-04
8	7.76%	659	2.54E-03	16	7.14%	606	2.34E-03	24	1.86%	158	6.11E-04
								Total		8,489	

Icon-Echo MU, San Jose - E. Santa Clara Street Traffic - TACs & PM2.5
AERMOD Risk Modeling Parameters and Maximum Concentrations
at Construction PM2.5 MEI Receptor, 6.1m receptor height (2nd floor)

Emission Year	2023-2025
Receptor Information	Construction Cancer Risk & PM2.5 MEI receptor
Number of Receptors	1
Receptor Height	2nd Floor, 6.1 meters
Receptor Distances	At Construction MEI location
Meteorological Conditions	
BAQMD San Jose Airport Met Data	2013-2017
Land Use Classification	Urban
Wind Speed	Variable
Wind Direction	Variable

Construction MEI Cancer Risk Maximum Concentrations

Meteorological Data Years	Concentration (µg/m3)		
	DPM	Exhaust TOG	Evaporative TOG
2013-2017	0.0016	0.1437	0.1594

Construction MEI PM2.5 Maximum Concentrations

Meteorological Data Years	PM2.5 Concentration (µg/m3)		
	Total PM2.5	Fugitive PM2.5	Vehicle PM2.5
2013-2017	0.09651	0.0889	0.0076

Icon-Echo MU, San Jose, CA - E. Santa Clara Street Cancer Risk & PM2.5
Impacts at Construction Cancer Risk & PM2.5 MEI - 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)			
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*	2023	10	0.0016	0.1437	0.1594	0.018	0.009	0.0006	0.03
1	1	0 - 1	2023	10	0.0016	0.1437	0.1594	0.219	0.115	0.0075	0.34
2	1	1 - 2	2024	10	0.0016	0.1437	0.1594	0.219	0.115	0.0075	0.34
3	1	2 - 3	2025	3	0.0016	0.1437	0.1594	0.029	0.015	0.0010	0.05
4	1	3 - 4	2026	3	0.0016	0.1437	0.1594	0.029	0.015	0.0010	0.05
5	1	4 - 5	2027	3	0.0016	0.1437	0.1594	0.029	0.015	0.0010	0.05
6	1	5 - 6	2028	3	0.0016	0.1437	0.1594	0.029	0.015	0.0010	0.05
7	1	6 - 7	2029	3	0.0016	0.1437	0.1594	0.029	0.015	0.0010	0.05
8	1	7 - 8	2030	3	0.0016	0.1437	0.1594	0.029	0.015	0.0010	0.05
9	1	8 - 9	2031	3	0.0016	0.1437	0.1594	0.029	0.015	0.0010	0.05
10	1	9 - 10	2032	3	0.0016	0.1437	0.1594	0.029	0.015	0.0010	0.05
11	1	10 - 11	2033	3	0.0016	0.1437	0.1594	0.029	0.015	0.0010	0.05
12	1	11 - 12	2034	3	0.0016	0.1437	0.1594	0.029	0.015	0.0010	0.05
13	1	12 - 13	2035	3	0.0016	0.1437	0.1594	0.029	0.015	0.0010	0.05
14	1	13 - 14	2036	3	0.0016	0.1437	0.1594	0.029	0.015	0.0010	0.05
15	1	14 - 15	2037	3	0.0016	0.1437	0.1594	0.029	0.015	0.0010	0.05
16	1	15 - 16	2038	3	0.0016	0.1437	0.1594	0.029	0.015	0.0010	0.05
17	1	16-17	2039	1	0.0016	0.1437	0.1594	0.005	0.002	0.0002	0.01
18	1	17-18	2040	1	0.0016	0.1437	0.1594	0.005	0.002	0.0002	0.01
19	1	18-19	2041	1	0.0016	0.1437	0.1594	0.005	0.002	0.0002	0.01
20	1	19-20	2042	1	0.0016	0.1437	0.1594	0.005	0.002	0.0002	0.01
21	1	20-21	2043	1	0.0016	0.1437	0.1594	0.005	0.002	0.0002	0.01
22	1	21-22	2044	1	0.0016	0.1437	0.1594	0.005	0.002	0.0002	0.01
23	1	22-23	2045	1	0.0016	0.1437	0.1594	0.005	0.002	0.0002	0.01
24	1	23-24	2046	1	0.0016	0.1437	0.1594	0.005	0.002	0.0002	0.01
25	1	24-25	2047	1	0.0016	0.1437	0.1594	0.005	0.002	0.0002	0.01
26	1	25-26	2048	1	0.0016	0.1437	0.1594	0.005	0.002	0.0002	0.01
27	1	26-27	2049	1	0.0016	0.1437	0.1594	0.005	0.002	0.0002	0.01
28	1	27-28	2050	1	0.0016	0.1437	0.1594	0.005	0.002	0.0002	0.01
29	1	28-29	2051	1	0.0016	0.1437	0.1594	0.005	0.002	0.0002	0.01
30	1	29-30	2052	1	0.0016	0.1437	0.1594	0.005	0.002	0.0002	0.01
Total Increased Cancer Risk								0.93	0.485	0.032	**1.45**

Maximum Hazard Index	Maximum Fugitive PM2.5	Total PM2.5
0.0003	0.09	0.097

* Third trimester of pregnancy

Icon-Echo MU, San Jose - E. Santa Clara Street Traffic - TACs & PM2.5
AERMOD Risk Modeling Parameters and Maximum Concentrations
On-Site 3rd Floor Residential Receptors (7.6 meter receptor height)

Emission Year	2023
Receptor Information	Maximum On-Site Receptor
Number of Receptors	65
Receptor Height	7.6
Receptor Distances	7 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

3rd Floor Project Cancer Risk Maximum Concentrations

Meteorological Data Years	Concentration (µg/m3)		
	DPM	Exhaust TOG	Evaporative TOG
2013-2017	0.0006	0.0619	0.0687

34d 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	0.0373	0.0344	0.0029

Icon-Echo MU, San Jose, CA - E. Santa Clara Street Cancer Risk
Impacts at On-Site 3rd Floor Residential Receptors - 7.6 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*	2026	10	0.0006	0.0619	0.0687	0.007	0.004	0.0003	0.01
1	1	0 - 1	2026	10	0.0006	0.0619	0.0687	0.087	0.049	0.0032	0.14
2	1	1 - 2	2027	10	0.0006	0.0619	0.0687	0.087	0.049	0.0032	0.14
3	1	2 - 3	2028	3	0.0006	0.0619	0.0687	0.012	0.007	0.0004	0.02
4	1	3 - 4	2029	3	0.0006	0.0619	0.0687	0.012	0.007	0.0004	0.02
5	1	4 - 5	2030	3	0.0006	0.0619	0.0687	0.012	0.007	0.0004	0.02
6	1	5 - 6	2031	3	0.0006	0.0619	0.0687	0.012	0.007	0.0004	0.02
7	1	6 - 7	2032	3	0.0006	0.0619	0.0687	0.012	0.007	0.0004	0.02
8	1	7 - 8	2033	3	0.0006	0.0619	0.0687	0.012	0.007	0.0004	0.02
9	1	8 - 9	2034	3	0.0006	0.0619	0.0687	0.012	0.007	0.0004	0.02
10	1	9 - 10	2035	3	0.0006	0.0619	0.0687	0.012	0.007	0.0004	0.02
11	1	10 - 11	2036	3	0.0006	0.0619	0.0687	0.012	0.007	0.0004	0.02
12	1	11 - 12	2037	3	0.0006	0.0619	0.0687	0.012	0.007	0.0004	0.02
13	1	12 - 13	2038	3	0.0006	0.0619	0.0687	0.012	0.007	0.0004	0.02
14	1	13 - 14	2039	3	0.0006	0.0619	0.0687	0.012	0.007	0.0004	0.02
15	1	14 - 15	2040	3	0.0006	0.0619	0.0687	0.012	0.007	0.0004	0.02
16	1	15 - 16	2041	3	0.0006	0.0619	0.0687	0.012	0.007	0.0004	0.02
17	1	16-17	2042	1	0.0006	0.0619	0.0687	0.002	0.001	0.0001	0.00
18	1	17-18	2043	1	0.0006	0.0619	0.0687	0.002	0.001	0.0001	0.00
19	1	18-19	2044	1	0.0006	0.0619	0.0687	0.002	0.001	0.0001	0.00
20	1	19-20	2045	1	0.0006	0.0619	0.0687	0.002	0.001	0.0001	0.00
21	1	20-21	2046	1	0.0006	0.0619	0.0687	0.002	0.001	0.0001	0.00
22	1	21-22	2047	1	0.0006	0.0619	0.0687	0.002	0.001	0.0001	0.00
23	1	22-23	2048	1	0.0006	0.0619	0.0687	0.002	0.001	0.0001	0.00
24	1	23-24	2049	1	0.0006	0.0619	0.0687	0.002	0.001	0.0001	0.00
25	1	24-25	2050	1	0.0006	0.0619	0.0687	0.002	0.001	0.0001	0.00
26	1	25-26	2051	1	0.0006	0.0619	0.0687	0.002	0.001	0.0001	0.00
27	1	26-27	2052	1	0.0006	0.0619	0.0687	0.002	0.001	0.0001	0.00
28	1	27-28	2053	1	0.0006	0.0619	0.0687	0.002	0.001	0.0001	0.00
29	1	28-29	2054	1	0.0006	0.0619	0.0687	0.002	0.001	0.0001	0.00
30	1	29-30	2055	1	0.0006	0.0619	0.0687	0.002	0.001	0.0001	0.00
Total Increased Cancer Risk								0.37	0.209	0.014	**0.59**

Maximum Hazard Index	Maximum Fugitive PM2.5	Total PM2.5
0.0001	0.03	0.037

* Third trimester of pregnancy

Icon-Echo MU, San Jose - E. Santa Clara Street Traffic - TACs & PM2.5
AERMOD Risk Modeling Parameters and Maximum Concentrations
On-Site 4th Floor Residential Receptors (10.6 meter receptor height)

Emission Year	2023
Receptor Information	Maximum On-Site Receptor
Number of Receptors	65
Receptor Height	10.6
Receptor Distances	7 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	0.0005	0.0442	0.0491

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	0.02711	0.0250	0.0021

Icon-Echo MU, San Jose, CA - E. Santa Clara Street Cancer Risk
Impacts at On-Site 4th Floor Residential Receptors - 10.6 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*	2026	10	0.0005	0.0442	0.0491	0.005	0.003	0.0002	0.01
1	1	0 - 1	2026	10	0.0005	0.0442	0.0491	0.064	0.035	0.0023	0.10
2	1	1 - 2	2027	10	0.0005	0.0442	0.0491	0.064	0.035	0.0023	0.10
3	1	2 - 3	2028	3	0.0005	0.0442	0.0491	0.009	0.005	0.0003	0.01
4	1	3 - 4	2029	3	0.0005	0.0442	0.0491	0.009	0.005	0.0003	0.01
5	1	4 - 5	2030	3	0.0005	0.0442	0.0491	0.009	0.005	0.0003	0.01
6	1	5 - 6	2031	3	0.0005	0.0442	0.0491	0.009	0.005	0.0003	0.01
7	1	6 - 7	2032	3	0.0005	0.0442	0.0491	0.009	0.005	0.0003	0.01
8	1	7 - 8	2033	3	0.0005	0.0442	0.0491	0.009	0.005	0.0003	0.01
9	1	8 - 9	2034	3	0.0005	0.0442	0.0491	0.009	0.005	0.0003	0.01
10	1	9 - 10	2035	3	0.0005	0.0442	0.0491	0.009	0.005	0.0003	0.01
11	1	10 - 11	2036	3	0.0005	0.0442	0.0491	0.009	0.005	0.0003	0.01
12	1	11 - 12	2037	3	0.0005	0.0442	0.0491	0.009	0.005	0.0003	0.01
13	1	12 - 13	2038	3	0.0005	0.0442	0.0491	0.009	0.005	0.0003	0.01
14	1	13 - 14	2039	3	0.0005	0.0442	0.0491	0.009	0.005	0.0003	0.01
15	1	14 - 15	2040	3	0.0005	0.0442	0.0491	0.009	0.005	0.0003	0.01
16	1	15 - 16	2041	3	0.0005	0.0442	0.0491	0.009	0.005	0.0003	0.01
17	1	16-17	2042	1	0.0005	0.0442	0.0491	0.001	0.001	0.0000	0.00
18	1	17-18	2043	1	0.0005	0.0442	0.0491	0.001	0.001	0.0000	0.00
19	1	18-19	2044	1	0.0005	0.0442	0.0491	0.001	0.001	0.0000	0.00
20	1	19-20	2045	1	0.0005	0.0442	0.0491	0.001	0.001	0.0000	0.00
21	1	20-21	2046	1	0.0005	0.0442	0.0491	0.001	0.001	0.0000	0.00
22	1	21-22	2047	1	0.0005	0.0442	0.0491	0.001	0.001	0.0000	0.00
23	1	22-23	2048	1	0.0005	0.0442	0.0491	0.001	0.001	0.0000	0.00
24	1	23-24	2049	1	0.0005	0.0442	0.0491	0.001	0.001	0.0000	0.00
25	1	24-25	2050	1	0.0005	0.0442	0.0491	0.001	0.001	0.0000	0.00
26	1	25-26	2051	1	0.0005	0.0442	0.0491	0.001	0.001	0.0000	0.00
27	1	26-27	2052	1	0.0005	0.0442	0.0491	0.001	0.001	0.0000	0.00
28	1	27-28	2053	1	0.0005	0.0442	0.0491	0.001	0.001	0.0000	0.00
29	1	28-29	2054	1	0.0005	0.0442	0.0491	0.001	0.001	0.0000	0.00
30	1	29-30	2055	1	0.0005	0.0442	0.0491	0.001	0.001	0.0000	0.00
Total Increased Cancer Risk								0.27	0.149	0.010	**0.43**

Maximum Hazard Index	Maximum Fugitive PM2.5	Total PM2.5
0.0001	0.02	0.027

* 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	**5/7/2021**
Contact Name	Casey Divine
Affiliation	Illingworth & Rodkin, Inc.
Phone	707-794-0400 x103
Email	cdivine@illingworthrodkin.com
Project Name	Icon-Echo Mixed-Use Towers
Address	N 4th Street & 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)	415du, 525ksf office, 8.5ksf 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 blue section only.

6. Note that a small percentage of the stationa Table B ve Health Risk Screening Assessment (HRSA) data INSTEAD of screening level data. These sources will be noted by an asterisk next to the Plant N 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
400	15267	San Jose New City Hall	200 E Santa Clara St	5.73	0.02	0.19		Generator, Boiler (2)		2018 Dataset
500	23479	SV Towers Investments LLC, C/O Harvest Properties	75 E Santa Clara St	2.73	--	--		Generators		2018 Dataset
To Be Removed	104124	Chevron #4259	147 E Santa Clara St	13.39	0.06	--		Gas Dispensing Facility		2018 Dataset

Project MEI

Distance Adjustment Multiplier	Adjusted Cancer Risk Estimate	Adjusted Hazard Risk	Adjusted PM2.5
0.16	0.92	0.003	0.03
0.12	0.33	#VALUE!	#VALUE!
--	#VALUE!	#VALUE!	#VALUE!

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
450	15267	0.14	0.80	0.003	0.03
315	23479	0.22	0.60	#VALUE!	#VALUE!
To Be Removed	104124	--	#VALUE!	#VALUE!	#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.

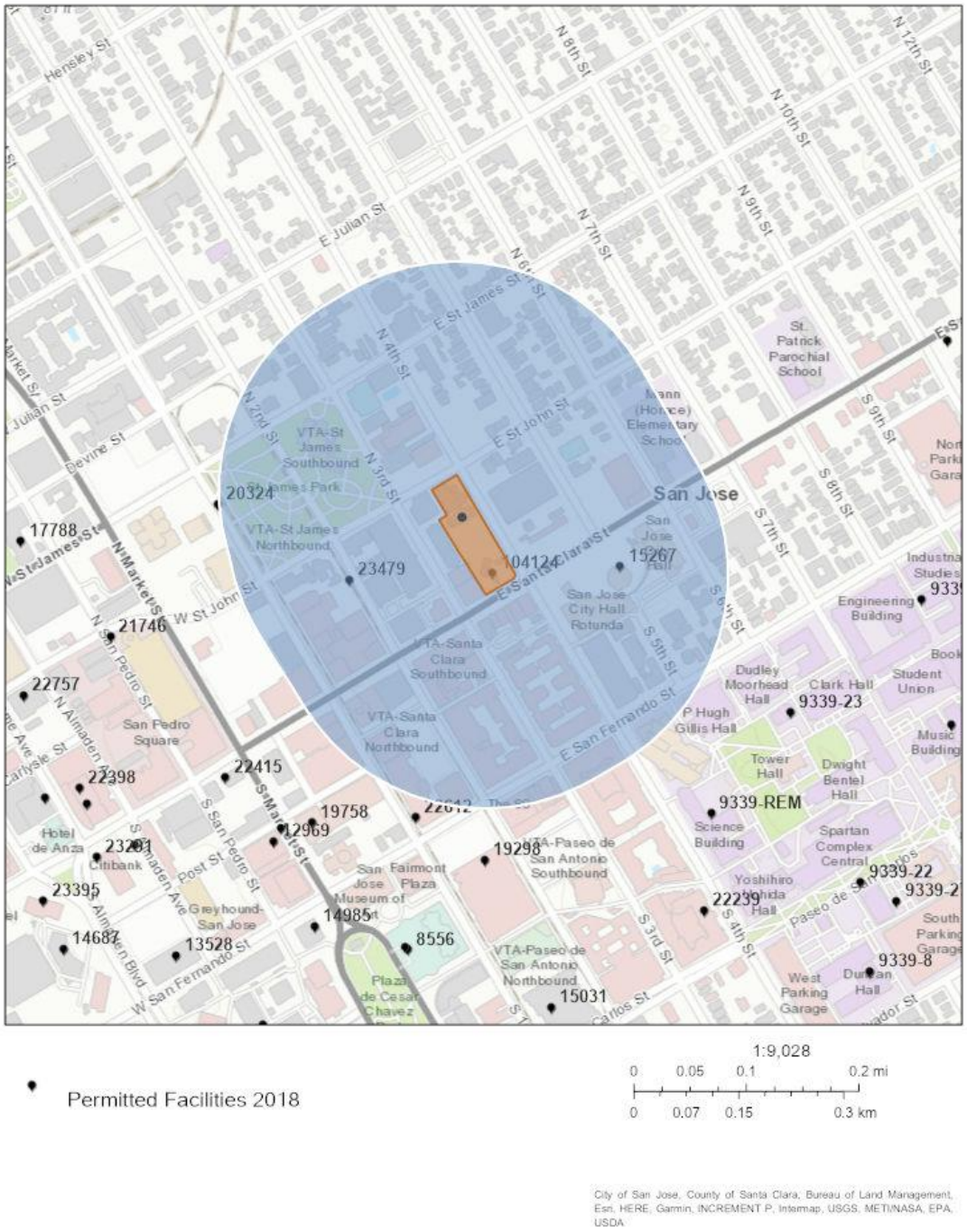
Date last updated:
03/13/2018

Stationary Source Risk & Hazards Screening Report

Area of Interest (AOI) Information

Area : 4,636,449.72 ft²

May 7 2021 11:53:23 Pacific Daylight Time



Summary

Name	Count	Area(ft²)	Length(ft)
Permitted Facilities 2018	3	N/A	N/A

Permitted Facilities 2018

#	FACID	Name	Address	City	St
1	15267	San Jose New City Hall	200 E Santa Clara St	San Jose	CA
2	23479	SV Towers Investments LLC, C/O Harvest Properties	75 E Santa Clara St	San Jose	CA
3	104124	Chevron #4259	147 E Santa Clara St	San Jose	CA

#	Zip	County	Cancer	Hazard	PM_25	Type	Count
1	95113	Santa Clara	5.730	0.020	0.190	Contact BAAQMD	1
2	95113	Santa Clara	2.730	0.000	0.000	Generators	1
3	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.

ILLINGWORTH & RODKIN, INC.
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M E M O

Date: September 23, 2021

To: Shannon George
Vice President & Principal Project Manager
David J. Powers & Associates, Inc.
1871 The Alameda, Suite 200
San José, CA 95126

From: James A. Reyff
Illingworth & Rodkin, Inc.
429 East Cotati Avenue
Cotati, CA 94931

SUBJECT: Icon-Echo Mixed-Use Towers Air Quality Cumulative Memo
I&R Job# 20-009

The City of San José currently has and is planning for the construction of many development projects in the downtown area. Due to the high number of construction activities from development projects, the City requested that air quality assessments for these projects include the construction community risk impacts from these nearby developments in the cumulative analysis.

The inclusion of construction community risk impacts in the cumulative analysis is problematic because not all nearby developments have had CEQA studies conducted, nor have these projects been scheduled for construction in a timely manner that the cumulative analysis could properly include their effects. Construction projects can have elevated effects but usually only temporarily (e.g., for one year or so). Refined information is not usually available for these construction assessments so cumulative analyses have to assume projects meet the health risk single-source significance thresholds. With these assumptions, it only takes the inclusion of two to three projects to reveal exceedances of the annual $PM_{2.5}$ concentration cumulative threshold. There are often more than three approved projects in downtown San José that could be constructed around the same time as a proposed project. Therefore, downtown San José has become an environment where the existing health risk impacts could exceed the cumulative significance thresholds on their own without a proposed project.

The Bay Area Air Quality Management District (BAAQMD) CEQA Guidelines state that, "A Lead Agency shall examine TAC and/or $PM_{2.5}$ sources that are located within 1,000 feet of a proposed project site. Sources of TACs include, but are not limited to, land uses such as freeways and high-volume roadways, truck distribution centers, ports, rail yards, refineries, chrome plating

facilities, dry cleaners using perchloroethylene, and gasoline dispensing facilities." While the Guidelines do not exclude construction impacts from nearby developments as a cumulative source, *Illingworth & Rodkin, Inc.* (I&R) has typically not included this as a cumulative source due to its adjustable and temporary variables. The construction activities of a project can change from what was analyzed in a report and most substantial emissions from construction would only last a few years or less.

Alternatively, I&R reached out to BAAQMD[1] to get direction on how to address the cumulative impact threshold when a project's maximally exposure individual (MEI) is at receptors that has existing exposure levels already exceeding cumulative thresholds. This would mean that no matter what mitigation was applied to the project, the resulting cumulative level would be above the threshold. I&R's approach has been (1) apply mitigation to the project to minimize project impacts to below the single-source threshold and (2) explain that the cumulative sources alone exceed the cumulative threshold, and the project, using best available mitigation measures, would only contribute a small percentage to the total cumulative risk impact, and therefore the project's impact is not cumulatively considerable. BAAMQD response concurred with this approach and that the impact would not be considered significant after mitigation is applied.

It should be noted that BAAQMD is considering new cancer risk thresholds for overburdened communities.[2] The District recently held a workshop to encourage public comment. These would include a lower cancer risk threshold of 6 chances per million at an MEI. Overburdened communities are proposed to be defined as an area located (1) within a census tract identified by the California Communities Environmental Health Screening Tool (CalEnviroScreen), Version 4.0 implemented by OEHHA, as having an overall CalEnviroScreen score at or above the 70th percentile, or (2) within 1,000 feet of any such census tract. The City, as a lead agency, could consider areas with cumulative cancer risk greater than 100 per million or annual $PM_{2.5}$ concentrations greater than 0.8 micrograms per cubic meter to also be overburdened. The District's proposal is only that and is currently going through the public workshop process. The risk of 6 chances per million as at this stage and idea and not adopted. We are aware of one other community that has a similar approach, which is San Francisco. In overburdened areas of that City (considered Air Pollution Exposure Zones), they use a cancer risk threshold of 7 chances per million.

[1] Correspondence with Areana Flores, MSc, Environmental Planner, BAAQMD, February 23, 2021.
[2] See BAAQMD Proposed Regulation 2: Permits - 2021 Amendments to Rules 2-1 and 2-5 (Under Development) https://www.baaqmd.gov/rules-and-compliance/rules/reg-2-permits?rule_version=2021%20Amendments