# *ARBOR OFFICES*
# *255 W. JULIAN STREET*
# *AIR QUALITY ASSESSMENT*

## *San José, California*

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**I&R Project: #21-022**

## Introduction

The purpose of this report is to address air quality and community health risk impacts associated with the proposed mixed-use project located at 255 W. Julian Street in 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 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 1.7-acre site is located at 255 W. Julian Street in downtown San José. The site is currently developed with an office building and surface parking. The approximately 72,582-square foot (sf), six-story building has approximately 62,000-sf of office space and is located at the southern end of the site, near W. Julian Street. As proposed, the existing office building would be kept in place and renovated to retain 50,000-sf of office space and add 6,000-sf of retail space on the ground floor. The project also proposes to demolish the existing parking lot and construct an approximately 689,000-sf, 14-story mixed-use building. The proposed building would contain approximately 484,000-sf of office space on the second through 14$^{th}$ floors, as well as approximately 13,000-sf of ground-floor retail space. Parking containing 350 spaces would be provided within four levels of below-grade parking. The project would also include two generators, one in each of the proposed buildings on the first basements levels. The project is within the San José Downtown Strategy 2040 Plan area.

## Setting

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

### Air Pollutants of Concern

High ozone levels are caused by the cumulative emissions of reactive organic gases (ROG) and nitrogen oxides ($NO_X$). These precursor pollutants react under certain meteorological conditions to form high ozone levels. Controlling the emissions of these precursor pollutants is the focus of the Bay Area's attempts to reduce ozone levels. The highest ozone levels in the Bay Area occur in the eastern and southern inland valleys that are downwind of air pollutant sources. High ozone levels aggravate respiratory and cardiovascular diseases, reduced lung function, and increase coughing and chest discomfort.

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

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.[2] 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 future residences to the north of the site and residences to the east of the project site across Terraine Street. There are additional sensitive receptors at farther distances. The project would not introduce new sensitive receptors to the area.

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

## Regulatory Setting

Federal Regulations

The United States Environmental Protection Agency (EPA) sets nationwide emission standards for mobile sources, which include on-road (highway) motor vehicles such trucks, buses, and automobiles, and non-road (off-road) vehicles and equipment used in construction, agricultural, industrial, and mining activities (such as bulldozers and loaders). The EPA also sets nationwide fuel standards. California also has the ability to set motor vehicle emission standards and standards for fuel used in California, as long as they are the same or more stringent than the federal standards.

In the past decade the EPA has established a number of emission standards for on- and non-road heavy-duty diesel engines used in trucks and other equipment. This was done in part because diesel engines are a significant source of $NO_X$ and particulate matter ($PM_{10}$ and $PM_{2.5}$) and because the EPA has identified DPM as a probable carcinogen. Implementation of the heavy-duty diesel on-road vehicle standards and the non-road diesel engine standards are estimated to reduce particulate matter and $NO_X$ emissions from diesel engines up to 95 percent in 2030 when the heavy-duty vehicle fleet is completely replaced with newer heavy-duty vehicles that comply with these emission standards.[3]

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

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

CARB has adopted and implemented a number of regulations for stationary and mobile sources to reduce emissions of DPM. Several of these regulatory programs affect medium and heavy-duty diesel trucks that represent the bulk of DPM emissions from California highways. CARB regulations require on-road diesel trucks to be retrofitted with particulate matter controls or replaced to meet 2010 or later engine standards that have much lower DPM and $PM_{2.5}$ emissions. This regulation will substantially reduce these emissions between 2013 and 2023. While new trucks and buses will meet strict federal standards, this measure is intended to accelerate the rate at which the fleet either turns over so there are more cleaner vehicles on the road or is retrofitted to meet similar standards. With this regulation, older, more polluting trucks would be removed from the roads sooner.

CARB has also adopted and implemented regulations to reduce DPM and $NO_X$ emissions from in-use (existing) and new off-road heavy-duty diesel vehicles (e.g., loaders, tractors, bulldozers, backhoes, off-highway trucks, etc.). The regulations apply to diesel-powered off-road vehicles with engines 25 horsepower (hp) or greater. The regulations are intended to reduce particulate matter and $NO_X$ exhaust emissions by requiring owners to turn over their fleet (replace older equipment with newer equipment) or retrofit existing equipment in order to achieve specified fleet-averaged emission rates. Implementation of this regulation, in conjunction with stringent federal off-road equipment engine emission limits for new vehicles, will significantly reduce emissions of DPM and $NO_X$.

Bay Area Air Quality Management District (BAAQMD)

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

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

BAAQMD's Community Air Risk Evaluation (CARE) program was initiated in 2004 to evaluate and reduce health risks associated with exposures to outdoor TACs in the Bay Area.[5] The program examines TAC emissions from point sources, area sources, and on-road and off-road mobile sources with an emphasis on diesel exhaust, which is a major contributor to airborne health risk in California. The CARE program is an on-going program that encourages community involvement and input. The technical analysis portion of the CARE program is being implemented in three phases that includes an assessment of the sources of TAC emissions, modeling and measurement

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

programs to estimate concentrations of TAC, and an assessment of exposures and health risks. Throughout the program, information derived from the technical analyses will be used to focus emission reduction measures in areas with high TAC exposures and high density of sensitive populations. Risk reduction activities associated with the CARE program are focused on the most at-risk communities in the Bay Area. The BAAQMD has identified six communities as impacted: Concord, Richmond/San Pablo, Western Alameda County, San José, Redwood City/East Palo Alto, and Eastern San Francisco. The project site is in the center of the San José area.

The BAAQMD California Environmental Quality Act (*CEQA) Air Quality Guidelines*[6] were prepared to assist in the evaluation of air quality impacts of projects and plans proposed within the Bay Area. The guidelines provide recommended procedures for evaluating potential air impacts during the environmental review process consistent with CEQA requirements including thresholds of significance, mitigation measures, and background air quality information. They also include assessment methodologies for air toxics, odors, and greenhouse gas emissions. *Attachment 1* includes detailed community risk modeling methodology.

BAAQMD Rules and Regulations

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

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

*Permits*

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

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

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

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

*New Source Review*

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

Rule 2-2-301 requires that an applicant for an ATC or PTO apply Best Available Control Technology (BACT) to any new or modified source that results in an increase in emissions and has emissions of precursor organic compounds, non-precursor organic compounds, NOx, $SO_2$, $PM_{10}$, or CO of 10.0 pounds or more per highest day. Based on the estimated emissions from the proposed project, BACT will be required for NOx emissions from the diesel-fueled generator engines.

*Stationary Diesel Airborne Toxic Control Measure*

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

*Offsets*

Rule 2-2-302 require that offsets be provided for a new or modified source that emits more than 10 tons per year of NOx or precursor organic compounds. It is not expected that emissions of any pollutant will exceed the offset thresholds. Thus, is not expected that offsets for the proposed project would be required.

*Prohibitory Rules*

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

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

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

Rule 9-7 limits the emissions of NOx CO from industrial, institutional and commercial boilers, steam generators and process heaters. This regulation typically applies to boilers with a heat rating of 2 million British Thermal Units (BTU) per hour

Rule 9-8 prescribes NOx and CO emission limits for stationary internal combustion engines. Since the proposed engines will be used with emergency standby generators, Regulation 9-8-110 exempts the engines from the requirements of this Rule, except for the recordkeeping requirements (9-8-530) and limitations on hours of operation for reliability-related operation (maintenance and testing). The engines will not operate more than 50 hours per year, which will satisfy the requirements of 9-8-111.

*BACT for Diesel Generator Engines*

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

> I.C. Engine – Compression Ignition >50hp and <1.000hp: BAAQMD applies BACT 2 emission limits based on the ATCM for stationary emergency standby diesel engines larger than 50 brake-horsepower (BHP). NOx emission factor limit is subject to the CARB ACTM that ranges from 3.0 to 3.5 grams per horsepower hour (g/hp-hr). The PM (PM10 or PM2.5) limit is 0.15 g/hp-hr per CARB's ACTM.
>
> I.C. Engine – Compression Ignition <999hp: BAAQMD applies specific BACT emission limits for stationary emergency standby diesel engines equal or larger than 1,000 brake-horsepower (BHP). NOx emission factor limit is subject to the CARB ACTM that ranges from 0.5 g/hp-hr. The PM (PM10 or PM2.5) limit is 0.02 g/hp-hr. POC (i.e., ROG) limits are 0.14 g/hp-hr.

San José Envision 2040 General Plan

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

*Applicable Goals – Air Pollutant Emission Reduction*
Goal MS-10 Minimize emissions from new development.

*Applicable Policies – Air Pollutant Emission Reduction*
MS-10.1 Assess projected air emissions from new development in conformance with the Bay Area Air Quality Management District (BAAQMD) CEQA Guidelines and relative to state and federal standards. Identify and implement feasible air emission reduction measures.

MS-10.2 Consider the cumulative air quality impacts from proposed developments for proposed land use designation changes and new development, consistent with the region's Clean Air Plan and State law.

MS-10.3 Promote the expansion and improvement of public transportation services and facilities, where appropriate, to both encourage energy conservation and reduce air pollution.

*Applicable Goals – Toxic Air Contaminants*

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

*Applicable Policies – Toxic Air Contaminants*

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

MS-11.4 Encourage the installation of appropriate air filtration at existing schools, residences, and other sensitive receptor uses adversely affected by pollution sources.

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

*Actions – Toxic Air Contaminants*

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

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

*Applicable Goals – Construction Air Emissions*

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

*Applicable Policies – Construction Air Emissions*

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

*Applicable Actions – Construction Air Emissions*

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

Downtown Strategy 2040 Plan

The San José Downtown Strategy (DTS) 2040 Plan[7] is an urban design plan that guides development activities planned within the Downtown area. This strategy would increase the amount of new commercial office by an additional three million sf (approximately 10,000 jobs with the new total being 14.2 million sf of commercial by the year 2040. The residential capacity would be increased up to 4,360 units. The amount of new retail development (1.4 million sf) and hotel room (3,600 rooms) capacities of the DTS 2000 would be maintained. The integrated Final Environmental Impact Report was published December 2018.

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

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

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

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

- Post a publicly visible sign with the telephone number and person to contact at the lead agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's phone number shall also be visible to ensure compliance with applicable regulations.

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

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

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

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

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

Significance Thresholds

In June 2010, BAAQMD adopted thresholds of significance to assist in the review of projects under CEQA and these significance thresholds were contained in the District's 2011 CEQA Air Quality Guidelines. These thresholds were designed to establish the level at which BAAQMD believed air pollution emissions would cause significant environmental impacts under CEQA. The thresholds were challenged through a series of court challenges and were mostly upheld. BAAQMD updated the CEQA Air Quality Guidelines in 2017 to include the latest significance thresholds, which were used in this analysis and are summarized in Table 1. Impacts above these thresholds are considered potentially significant. Note that the DTS Plan Draft Environmental Impact Report (DEIR) evaluated emissions of criteria air pollutants (and their precursors) from planned development that includes the Proposed Project. Operational emissions from the Proposed Project are predicted in this assessment for informational purposes only.

**Table 1. BAAQMD CEQA Significance Thresholds**

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

## AIR QUALITY IMPACTS AND MITIGATION MEASURES

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

BAAQMD is the regional agency responsible for overseeing compliance with State and Federal laws, regulations, and programs within the San Francisco Bay Area Air Basin (SFBAAB). BAAQMD, with assistance from the Association of Bay Area Governments (ABAG) and Metropolitan Transportation Commission (MTC), prepares and implements specific plans to meet the applicable laws, regulations, and programs. The most recent and comprehensive of which is the *Bay Area 2017 Clean Air Plan*.[8] 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) project would have construction and operational emissions below the BAAQMD thresholds (see Impact 2 below), 2) the project would be considered urban infill, 3) the project would be located near employment centers, 4) 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 2016.3.2 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 2017 (EMFAC2017) model was used to predict

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

emissions from construction traffic, which includes worker travel, vendor trucks, and haul trucks.[9] The CalEEMod model output along with construction inputs are included in *Attachment 2* and EMFAC2017 vehicle emissions modeling outputs are included in *Attachment 3*.

CalEEMod Inputs

*Land Use Inputs*

The majority of construction activities would occur at the project's new mixed-use building while construction activities at the existing office building would occur as interior renovations and be minimal. Therefore, separate CalEEMod runs were conducted for the construction emissions of the new building and for the operational emissions of the entire completed project. The proposed construction land uses for the new building were entered into the construction CalEEMod scenario as described in Table 2.

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

| Project Land Uses | Size | Units | Square Feet | Acreage |
|---|---|---|---|---|
| General Office Building | 484.26 | 1,000 Square Feet | 484,256 | 1.70 |
| Strip Mall | 13.00 | 1,000 Square Feet | 13,000 | |
| Enclosed Parking with Elevator | 350 | Parking Spaces | 191,616 | |

*Construction Inputs*

CalEEMod computes annual emissions for construction that are based on the project type, size, and acreage. The model provides emission estimates for both on-site and off-site construction activities. On-site activities are primarily made up of construction equipment emissions, while off-site activity includes worker, hauling, and vendor traffic. The construction build-out scenario, including equipment list and schedule, were based on 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 2022 and the project would be built out 6 days a week over a period of approximately 31 months or 799 construction workdays. The earliest year of operation was assumed to be 2025.

*Construction Traffic Emissions*

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 EMFAC2017 model; however, CalEEMod has not been updated to include EMFAC2017. 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

[9] See CARB's EMFAC2017 Web Database at https://www.arb.ca.gov/emfac/2017/

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 construction traffic information was combined with EMFAC2017 motor vehicle emissions factors. EMFAC2017 provides aggregate emission rates in grams per mile for each vehicle type. The vehicle mix for this study was based on CalEEMod defaults, where worker trips are assumed to be comprised of light-duty autos (EMFAC category LDA) and light duty trucks (EMFAC category LDT1 and LDT2). Vendor trips are comprised of delivery and large trucks (EMFAC category MHDT and HHDT) and haul trips, including cement trucks, are comprised of large trucks (EMFAC category HHDT). Travel distances are based on CalEEMod default lengths, which are 10.8 miles for worker travel, 7.3 miles for vendor trips and 20 miles for hauling (demolition material export and soil import/export). Since CalEEMod does not address cement or asphalt trucks, these were treated as vendor travel distances. Each trip was assumed to include an idle time of 5 minutes. Emissions associated with vehicle starts were also included. On-road emission rates from the years 2022-2024 for Santa Clara County were used. Table 3 provides the traffic inputs that were combined with the EMFAC2017 emission database to compute vehicle emissions.

**Table 3. Construction Traffic Data Used for EMFAC2017 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] | 72% LDA<br>6% LDT1<br>22% LDT2 | 38% MHDT<br>62% HHDT | 100% HDDT | |
| Trip Length (miles) | 10.8 | 7.3 | 20.0 (Demo/Soil)<br>7.3 (Cement/Asphalt) | CalEEMod default distance with 5-min truck idle time. |
| Demolition | 60 | - | 118 | 53,190-sf of pavement demolition. Default worker trips. |
| Site Preparation | 650 | - | - | CalEEMod default worker trips. |
| Grading | 2,520 | - | 22,688 | 180,000-cy of export and 1,500-cy of import volumes. CalEEMod default worker trips. |
| Trenching | 300 | - | 1,400 | 700 cement truck round trips. CalEEMod default worker trips. |
| Building Superstructure / Exterior | 91,200 | 42,940 | 3,510 | 1,755 cement truck round trips. CalEEMod default worker and vendor trips. |
| Building – Cores / Elevators | 14,592 | - | - | CalEEMod default worker trips. |
| Sitework | 1,250 | - | 400 | 200 cement truck round trips. CalEEMod default worker trips. |

Notes: [1] Based on 2022-2024 EMFAC2017 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 plans provided by the applicant.

Summary of Computed Construction Period Emissions

Average daily emissions were annualized for each year of construction by dividing the annual construction emissions by the number of active workdays during that year. Table 4 shows the annualized average daily construction emissions of ROG, $NO_X$, $PM_{10}$ exhaust, and $PM_{2.5}$ exhaust during construction of the project. As indicated in Table 4, predicted annualized project construction emissions would not exceed the BAAQMD significance thresholds during any year of construction.

**Table 4. Construction Period Emissions**

| Year | ROG | NOx | $PM_{10}$ Exhaust | $PM_{2.5}$ Exhaust |
|---|---|---|---|---|
| *Construction Emissions Per Year (Tons)* | | | | |
| 2022 | 0.16 | 2.24 | 0.11 | 0.07 |
| 2023 | 2.39 | 3.03 | 0.14 | 0.10 |
| 2024 | 0.56 | 1.23 | 0.06 | 0.04 |
| *Average Daily Construction Emissions Per Year (pounds/day)* | | | | |
| 2022 (311 construction workdays) | 1.06 | 14.42 | 0.71 | 0.45 |
| 2023 (313 construction workdays) | 15.28 | 19.37 | 0.91 | 0.64 |
| 2024 (175 construction workdays) | 6.44 | 14.11 | 0.70 | 0.44 |
| *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 autos driven by future employees and customers. Evaporative emissions from architectural coatings and maintenance products (classified as consumer products) are typical emissions from these types of uses. CalEEMod was used to estimate emissions from operation of the proposed project assuming full build-out.

CalEEMod Inputs

*Land Uses*

The operation of the total proposed project would be for both the newly constructed building and the renovated existing building. Therefore, separate CalEEMod runs were conducted for the construction emissions of the new building and for the operational emissions of the entire completed project. The proposed operational land uses for the completed project were input into CalEEMod as described in Table 5.

**Table 5. Summary of Project Operational Land Use Inputs**

| Project Land Uses | Size | Units | Square Feet | Acreage[1] |
|---|---|---|---|---|
| General Office Building | 534.26 | 1,000 Square Feet | 534,256 | 12.26 |
| Strip Mall | 19.00 | 1,000 Square Feet | 19,000 | 0.44 |
| Enclosed Parking with Elevator | 350 | Parking Spaces | 191,616 | 3.15 |
| Notes: [1] CalEEMod default acreage used. | | | | |

*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 2025 if construction begins in 2022. Emissions associated with build-out later than 2025 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.[10] The project would produce 3,586 net daily trips after a *Location Based Reduction.* 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.

[10] Email correspondence with Amy Wang, Project Manager, David J. Powers & Associates, Inc., March 11, 2021, *Attachment 20210310_255_W_Julian_Trip_Gen_Table.pdf.*

*EMFAC2017 Adjustment*

The vehicle emission factors and fleet mix used in CalEEMod are based on EMission FACtors from 2014 (EMFAC2014), which is an older CARB emission inventory for on road and off road mobile sources. Since the release of CalEEMod Version 2016.3.2, new emission factors have been produced by CARB. EMFAC2017 became available for use in March 2018 and approved by the EPA in August 2019. 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.[11,12] The SAFE vehicle Rule Part One revoked California's authority to set its own GHG emission standards and set zero emission vehicle mandates in California. As a result of this ruling, mobile criteria pollutant and GHG emissions would increase. Therefore, the CalEEMod vehicle emission factors and fleet mix were updated with the emission rates and fleet mix from EMFAC2017, which were adjusted with the CARB EMFAC off-model adjustment factors. More details about the updates in emissions calculation methodologies and data are available in the EMFAC2017 Technical Support Document.[13]

*Climate Smart San José*

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

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

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

[11] 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

[12] California Air Resource Board, 2020. *EMFAC Off-Model Adjustment Factors for Carbon Dioxide ($CO_20$ Emissions to Accounts for the SAFE Vehicles Rule Part One and the Final SAFE Rule*. June. Web: https://ww3.arb.ca.gov/msei/emfac_off_model_co2_adjustment_factors_06262020-final.pdf?utm_medium=email&utm_source=govdelivery

[13] See CARB 2018: https://ww2.arb.ca.gov/our-work/programs/mobile-source-emissions-inventory/road-documentation/msei-modeling-tools-emfac

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

*Energy*

CalEEMod defaults for energy use were used, which include the 2016 Title 24 Building Standards. GHG emissions modeling includes those indirect emissions from electricity consumption. The electricity produced emission rate was modified in CalEEMod. CalEEMod has a default emission factor of 641.3 pounds of $CO_2$ per megawatt of electricity produced, which is based on PG&E's 2008 emissions rate. However, PG&E published in 2020 emissions rates for 2010 through 2018, which showed the emission rate for delivered electricity had been reduced to 206 pounds CO2 per megawatt of electricity delivered in the year 2018.[15] This intensity factor was used in the model along with the assumption that the project would use electricity supplied by San José Clean Energy (SJCE). SJCE would provide electricity that would be 100-percent carbon free by 2021 before the project becomes operational.[16] Electricity was assumed to be 100-percent carbon free in the model since this project would be operational post-2021.

*Project Generators*

The project proposes to include two stand-by emergency diesel generators on the first basement levels of each proposed building and a fire pump on the fourth basement level. Details about the generators and fire pump had not been determined at the time of this study. Therefore, each generator was assumed to be 1,000-kilowatt (kW) powered by a 1,340 horsepower (HP) diesel engine and the fire pump was assumed to be powered by the stand-by generators and not have its own engine. These 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 engine would typically be run for less than one hour. The engine would be required to meet CARB and EPA emission standards and consume commercially available California low-sulfur diesel fuel. Additionally, BAAQMD has BACT requirements for large generator engines. The generator emissions that were modeled using CalEEMod did not consider BAAQMD BACT standard for large diesel engines.[17]

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[14] City of San José Transportation and Environmental Committee, *Building Reach Code for New Construction Memorandum,* August 2019.
[15] PG&E Website, Climate Change Webpage - 2021. Web: https://www.pgecorp.com/corp_responsibility/reports/2019/en02_climate_change.html
[16] Kerrie Romanow and Rosalynn Hughey, City of San José, 2019. *Building reach Code for New Construction Memorandum*. August. Web: https://sanjose.legistar.com/LegislationDetail.aspx?ID=4090015&GUID=278596A7-1A2B-4248-B794-7A34E2279E85
[17] BACT standards for engines greater than 1,000 HP would greatly reduce NOx and $PM_{10}/PM_{2.5}$ emissions; however, they were not applied since the project could ultimately use a smaller engine or set of smaller engines that could result in higher emissions. The modeling presented is likely an overestimate of project emissions.

*Existing Uses*

The existing site consist of office land uses. A CalEEMod model run was developed to compute emissions from use of the existing land uses as if it were operating in 2025. Inputs for the existing modeling scenario included 62,000-sf entered as "General Office Building" and 1.2 acres entered as "Parking Lot". 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.

*Other Inputs*

Default model assumptions for emissions associated with solid waste generation use were applied to the project. Water/wastewater use were changed to 100% aerobic conditions to represent wastewater treatment plant conditions.

Summary of Computed Operational Emissions

Annual emissions were predicted using CalEEMod and daily emissions were estimating assuming 365 days of operation. Table 6 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 6. Operational Period Emissions**

| Scenario | ROG | NOx | $PM_{10}$ | $PM_{2.5}$ |
|---|---|---|---|---|
| 2025 Annual Project Operational Emissions (*tons/year*) | 3.69 | 2.60 | 2.80 | 0.80 |
| 2025 Existing Use Emissions (*tons/year*) | 0.39 | 0.22 | 0.29 | 0.08 |
| Net Annual Emissions (*tons/year*) | 3.30 | 2.38 | 2.52 | 0.72 |
| *BAAQMD Thresholds (tons /year)* | *10 tons* | *10 tons* | *15 tons* | *10 tons* |
| ***Exceed Threshold?*** | *No* | *No* | *No* | *No* |
| 2025 Daily Project Operational Emissions (*pounds/day*)[1] | 18.08 | 13.05 | 13.78 | 3.93 |
| *BAAQMD Thresholds (pounds/day)* | *54* lbs. | *54* lbs. | *82* lbs. | *54* lbs. |
| ***Exceed Threshold?*** | *No* | *No* | *No* | *No* |
| Notes: [1]Assumes 365-day operation. | | | | |

**Impact AIR-3: Expose sensitive receptors to substantial pollutant concentrations?**

Project impacts related to increased community risk can occur either by introducing a new source of TACs with the potential to adversely affect existing sensitive receptors in the project vicinity or by significantly exacerbating existing cumulative TAC impacts. This project would introduce new sources of TACs during construction (i.e., on-site construction and truck hauling emissions) and operation (i.e., stationary and mobile sources).

Project construction activity would generate dust and equipment exhaust that would affect nearby sensitive receptors. The project would also include the installation of two emergency 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.

**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,[18] 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 north, east, and south 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 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 $PM_{2.5}$.[19] This assessment included dispersion modeling to predict the offsite and onsite concentrations resulting

[18] BAAQMD, 2016. *BAAQMD Air Toxics NSR Program Health Risk Assessment (HRA) Guidelines.* December 2016.
[19] DPM is identified by California as a toxic air contaminant due to the potential to cause cancer.

from project construction, so that increased cancer risks and non-cancer health effects could be evaluated.

Construction Emissions

The CalEEMod and EMFAC2017 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 0.1425 tons (285 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 0.1020 tons (204 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.[20] 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 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 115 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. Emissions from vehicle travel on- and off-site were also distributed among the point sources throughout the site.

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.

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

*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 10:00 p.m. Monday through Friday and 7:00 a.m. to 7:00 p.m. Saturday per the project applicant's construction schedule. Annual DPM and $PM_{2.5}$ concentrations from construction activities during the 2022-2024 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), 17 feet (5.2 meters), and 27 feet (8.2 meters) were used to represent the breathing heights of residents in nearby townhomes, apartments, and condominiums on the first, second, and third floors, respectively.[21]

Summary of Construction Community Risk Impacts

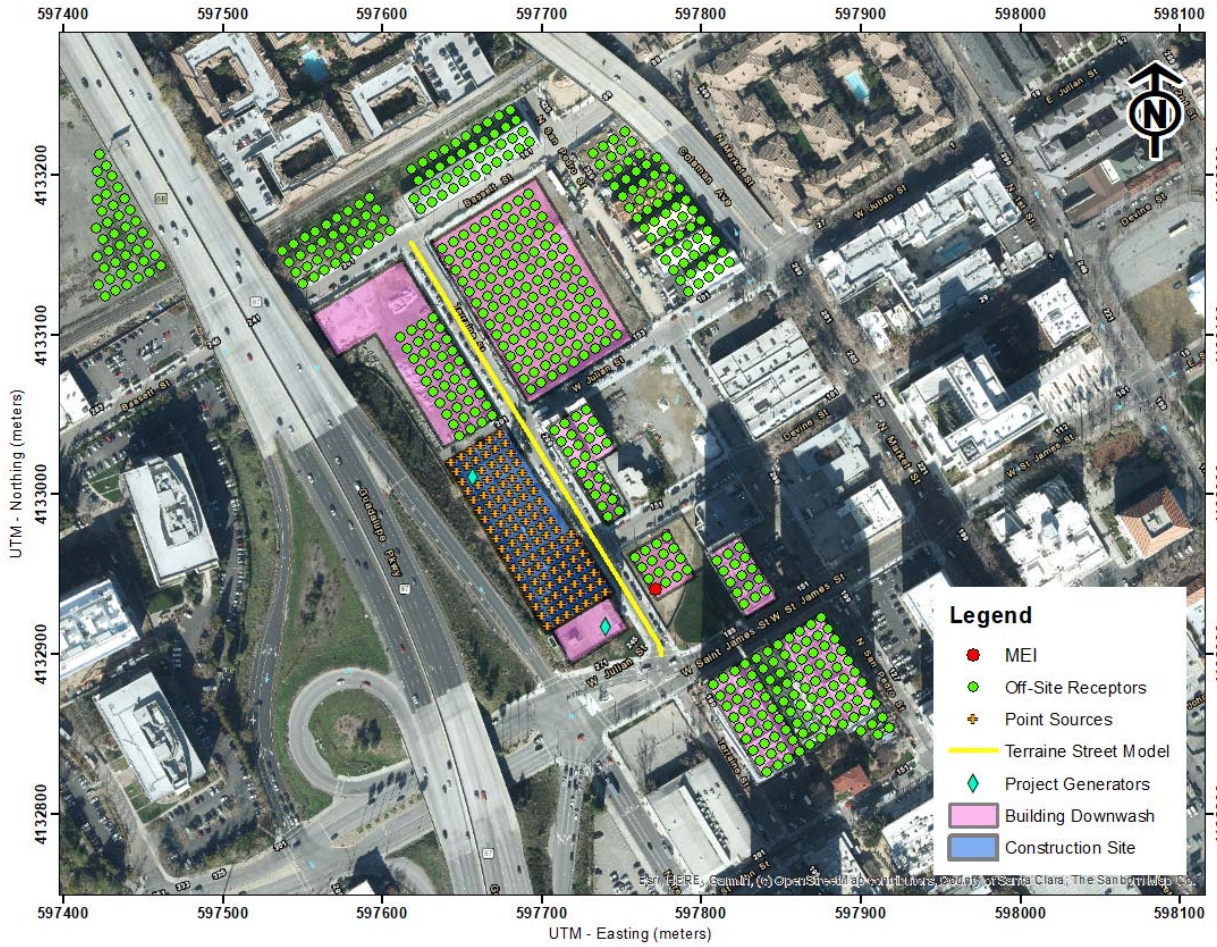
The increased cancer risk calculations were based on applying the BAAQMD recommended age sensitivity factors to the TAC concentrations, as described in *Attachment 1*. Age-sensitivity factors reflect the greater sensitivity of infants and small children to cancer causing TACs. Infant and adult exposures were assumed to occur at all residences during the entire construction period.

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 refence 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 cancer risk MEI was located on the third floor (27 feet above ground) of the residence to the southeast of the project site opposite Terraine Street and the total $PM_{2.5}$ concentration MEI was located on the first floor (5 feet above ground) at the same receptor location. The location of the MEI and nearby sensitive receptors are shown in Figure 1. Table 7 lists the community risks from construction at the location of the residential MEIs. *Attachment 4* to this report includes the emission calculations used for the construction modeling and the cancer risk calculations.

[21] 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

**Figure 1. Locations of Project Construction Site, Modeled DPM Point Sources, Project Traffic, Project Generators, 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 3,586 gross trips per day.[22] 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 modeling roadway segments.

[22] Email correspondence with Amy Wang, Project Manager, David J. Powers & Associates, Inc., March 11, 2021, *Attachment 20210310_255_W_Julian_Trip_Gen_Table.pdf.*

*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. 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 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),[23] traffic mix assigned by EMFAC2017 for the county, year of analysis (2025 – project operational year), and season (annual).

Project operation was assumed to begin in 2025 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 (2025-2051). 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 2025. Year 2025 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 where all project traffic emissions from on- and near-site travel were assumed to occur along Terraine Street. This roadway is closest to the nearby sensitive receptors. The project's trip generation of 3,586 gross trips per day predicted by the traffic consultant as used to assess project traffic impacts. [24] The average hourly traffic distributions for Santa Clara County roadways were developed using the EMFAC model,[25] 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 25 mph on Terraine Street was assumed for all vehicles based on posted speed limit signs on the roadway.

[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

[24] Email correspondence with Amy Wang, Project Manager, David J. Powers & Associates, Inc., March 11, 2021, *Attachment 20210310_255_W_Julian_Trip_Gen_Table.pdf.*

[25] The Burden output from EMFAC2007, a previous version of CARB's EMFAC model, was used for this since the current web-based version of EMFAC2017 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 line-area sources (a series of adjacent area sources along a line) to represent traffic emissions on roadway segments within 1,000 feet of the project site. 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 2025 were calculated by the model at the same sensitive receptor locations with the same receptor heights of 5 feet (1.5 meters) and 27 feet (8.2 meters) used for the construction health risk modeling at the MEI location.

Figure 1 shows the project roadway segments modeled and residential MEI receptor location used in the modeling. Table 7 lists the project roadway risks and hazards at the location of the MEI. 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 first basement levels of each proposed building and a fire pump on the fourth basement level (see Figure 1). Details about the generators and fire pump had not been determined at the time of this study. Therefore, each generator was assumed to be 1,000-kW powered by a 1,340-HP diesel engine and the fire pump was assumed to run off the stand-by generators. Operation of a diesel generator would be a source of TAC emissions. The generator would be operated for testing and maintenance purposes, with a maximum of 50 hours per year of non-emergency operation under normal conditions. During testing periods, the engine would typically be run for less than one hour under light engine loads. The generator engine would be required to meet U.S. EPA emission standards and consume commercially available California low sulfur diesel fuel. The emissions from the operation of the generator were calculated using the CalEEMod model.

This diesel engine 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. As part of the BAAQMD permit requirements for toxics screening analysis, the engine emissions will have to meet Best Available Control Technology for Toxics (TBACT) 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 generators the U.S. EPA AERMOD dispersion model was used to calculate the maximum annual DPM concentration at off-site sensitive receptor locations (nearby residences). The same receptors and breathing heights used in the construction dispersion modeling were used for the generator model. Additionally, the same building downwash and BAAQMD San José Airport meteorological data was used. Stack parameters (stack height, exhaust flow rate, and exhaust gas temperature) for modeling the generators was based on BAAQMD default parameters for

emergency generators.[26] 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 MEIs, the cancer risks were also adjusted for exposure duration to account for the MEI being exposed to construction for the first 3 years of the 30-year period. The exposure duration was adjusted for 27 years of exposure. Table 7 lists the community risks from stand-by diesel generators at the location of residential MEIs. 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 to the increased cancer risk for the project operational conditions for the roadway and generator at the MEIs 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 7. The unmitigated maximum cancer risks and annual $PM_{2.5}$ concentration from construction activities at the residential project MEI locations would exceed the single-source significance thresholds. 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 non-cancer hazards from construction and operation activities would be below the single-source significance threshold.

**Table 7. Construction and Operation Risk Impacts at the Off-Site Project MEIs**

| Source | | Cancer Risk* (per million) | Annual $PM_{2.5}$* ($\mu g/m^3$) | Hazard Index |
|---|---|---|---|---|
| Project Construction (Years 0-3) | Unmitigated | **46.01 (infant)** | **0.74** | 0.03 |
| | Mitigated** | 4.82 (infant) | 0.15 | <0.01 |
| Project Traffic Operation on Terraine Street (Years 3-30) | | 0.11 | 0.08 | <0.01 |
| Project Generators Operation, Two 1,340-HP (Years 3-30) | | 2.70 | 0.02 | <0.01 |
| Total/Maximum Project Impact (Years 0-30) | Unmitigated | **48.82** | **0.74** | 0.03 |
| | Mitigated** | 7.63 | 0.15 | <0.01 |
| ***BAAQMD Single-Source Threshold*** | | ***10*** | ***0.3*** | ***1.0*** |
| ***Exceed Threshold?*** | Unmitigated | ***Yes*** | ***Yes*** | *No* |
| | Mitigated | *No* | *No* | *No* |

* Maximum cancer risk and maximum $PM_{2.5}$ concentration occur at same receptor on different floors.
** Construction equipment with Tier 4 Final engines, electric cranes, and enhanced BMPs as Mitigation Measures.

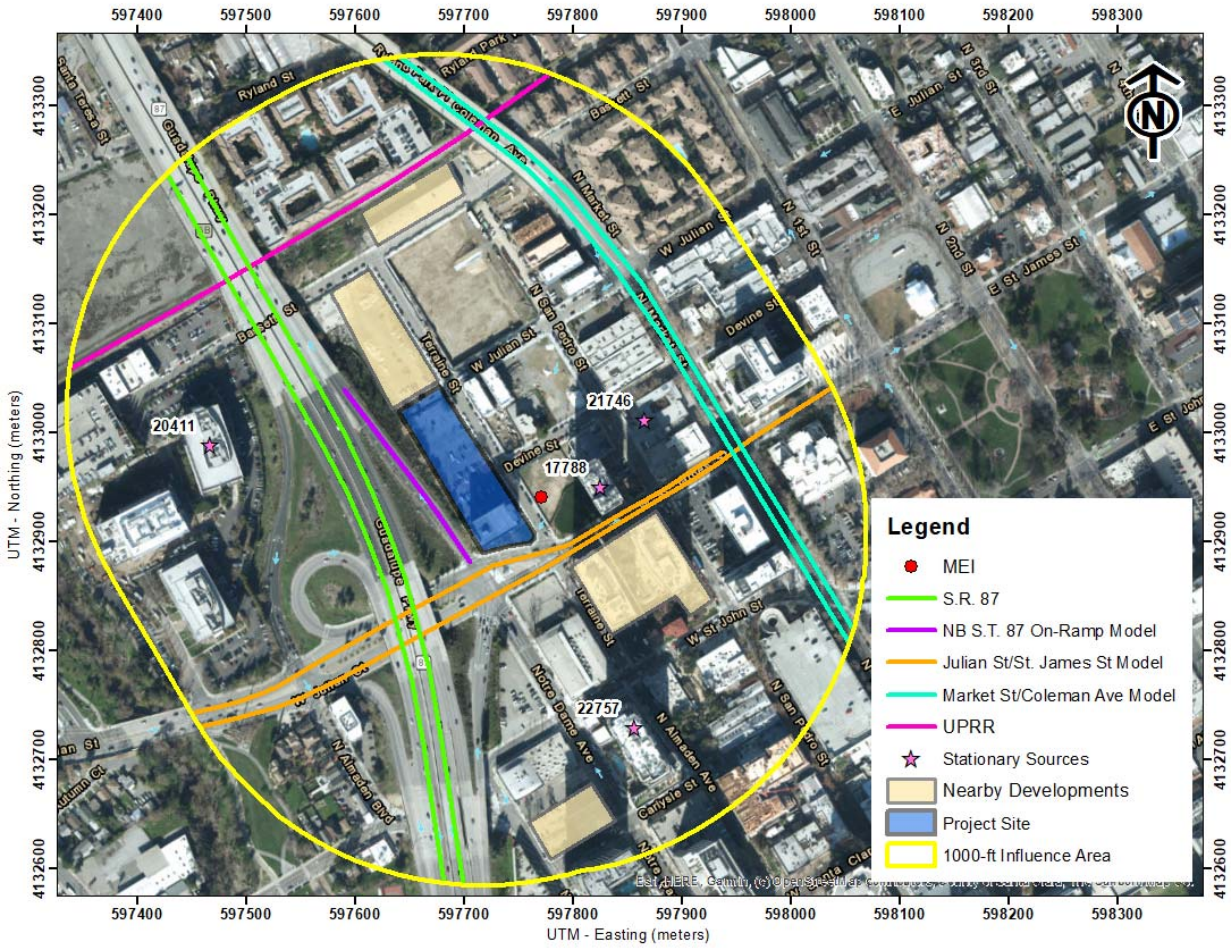
[26] The San Francisco Community Risk Reduction Plan: Technical Support Document, BAAQMD, San Francisco Dept. of Public Health, and San Francisco Planning Dept., December 2012

**Cumulative Community Risks of all TAC Sources at 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 State Route 87 (S.R. 87), the northbound on-ramp to S.R. 87, W. Julian Street/W. St James Street, and N. Market Street/Coleman Avenue would exceed 10,000 vehicles per day. Other nearby streets are assumed to have less than 10,000 vehicles per day. The Union Pacific Railroad (UPRR) runs along a line north of the project site. A review of BAAQMD's stationary source map website identified four 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 8. 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**



Highways – S.R. 87

The project MEIs are located near S.R. 87. A refined analysis of the impacts of TACs and $PM_{2.5}$ to the MEI receptors is necessary to evaluate potential cancer risks and $PM_{2.5}$ concentrations from S.R. 87. A review of the traffic information reported by Caltrans indicates that S.R. 87 traffic includes 124,400 vehicles per day (based on an annual average)[27] that are about 3.7 percent trucks, of which 1.0 percent are considered diesel heavy duty trucks and 2.7 percent are medium duty trucks.[28]

*Traffic Emissions Modeling*

This analysis involved the development of DPM, organic TACs, and $PM_{2.5}$ emissions for traffic on S.R. 87 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 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 (freeway), traffic mix assigned by CT-EMFAC2017 for the county and adjusted for the local truck mix on S.R. 87, year of analysis (2022 – construction start year), and season (annual).

In order 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 2022 (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 2022 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.

Average daily traffic volumes and truck percentages were based on Caltrans data for S.R. 87. Traffic volumes were assumed to increase 1 percent per year. Hourly traffic distributions specific to these segments of S.R. 87 were obtained from Caltrans Performance Measurement System (PeMS). PeMS data is collected in real-time from nearly 40,000 individual detectors spanning the freeway system across all major metropolitan areas of California.[29] The fraction of traffic volume each hour was calculated and applied to the 2022 average daily traffic volumes estimate to estimate hourly traffic emission rates for S.R. 87.

[27] Caltrans. 2019. *2018 Traffic Volumes California State Highways.*
[28] Caltrans. 2020. *2018 Annual Average Daily Truck Traffic on the California State Highway System.*
[29] https://dot.ca.gov/programs/traffic-operations/mpr/pems-source

For all hours of the day, other than during peak a.m. and p.m. periods, an average speed of 65 mph was assumed for all vehicles. Based on traffic data from the Santa Clara Valley Transportation Authority's 2018 Monitoring and Conformance Report, traffic speeds during the peak a.m. and p.m. periods were identified.[30] For a 2-hour period during the peak a.m. period, an average travel speed of 25 mph was used for northbound traffic and an average speed of 60 mph was used for southbound traffic. For the peak p.m. period, an average travel speed of 60 mph was used for northbound traffic and an average travel speed of 25 mph was used for southbound traffic.

This analysis involved the development of DPM, organic TACs, and $PM_{2.5}$ emissions for future traffic on S.R. 87 and using these emissions with an air quality dispersion model to calculate TAC and $PM_{2.5}$ concentrations at the project MEI receptor locations. Maximum increased lifetime cancer risks and annual $PM_{2.5}$ concentrations for the receptors were then computed using modeled TAC and $PM_{2.5}$ concentrations and BAAQMD methods and exposure parameters described in *Attachment 1*.

*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.[31] TAC and $PM_{2.5}$ emissions from traffic on S.R. 87 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 northbound and southbound travel lanes on S.R. 87. The same meteorological data and off-site sensitive receptors used in the previous construction dispersion modeling were used in the highway modeling. Other inputs to the model included road geometry and elevations, hourly traffic emissions, and receptor locations and heights. Roadway and receptor elevations were based on USGS National Elevation Data (NED) with a 10-meter resolution. Annual TAC and $PM_{2.5}$ concentrations for 2022 from traffic on S.R. 87 were calculated using the model. Concentrations were calculated at the project MEIs with receptor heights of 5 feet (1.5 meters) and 27 feet (8.2 meters) to represent the breathing heights on the first and third floors of nearby residence.

*Computed Cancer and Non-Cancer Health Impacts*

The cancer risk, $PM_{2.5}$ concentration, and HI impacts from S.R. 87 on the project MEI is shown in Table 8. 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 S.R. 87 traffic are provided in *Attachment 5.*

[30] Santa Clara Valley Transportation Authority. *2018 CMP Monitoring and Conformance Report May 24, 2019. Web: https://www.vta.org/sites/default/files/2020-08/2018%20Monitoring%20Report.pdf*
[31] BAAQMD. *Recommended Methods for Screening and Modeling Local Risks and Hazards*. May 2012

Local Roadways – Northbound S.R. 87 On-Ramp, W. Julian Street/W. St. James Street, and N. Market Street/Coleman Avenue

A refined analysis of potential health impacts from vehicle traffic on the Northbound S.R. 87 On-Ramp, W. Julian Street/W. St. James Street, and N. Market Street/Coleman Avenue was conducted, similar to the highway analysis above. The refined analysis involved predicting emissions for the traffic volume and mix of vehicle types on the roadways 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.

*Emission Rates*

Local roadway inputs to the CT-EMFAC2017 model include region (Santa Clara County), type of road (major/collector), truck percentage for non-state highways in Santa Clara County (3.51 percent),[32] traffic mix assigned by CT-EMFAC2017 for the county, year of analysis (2022 – construction start year), and season (annual).

The average daily traffic (ADT) for Northbound S.R. 87 On-Ramp, W. Julian Street/W. St. James Street, and N. Market Street/Coleman Avenue were based on AM and PM peak-hour background plus project traffic volumes for the nearby roadways provided by the project's traffic consultant.[33] Assuming a 1 percent per year increase, the predicted ADT on Northbound S.R. 87 On-Ramp would be 15,801 vehicles, the ADT on W. Julian Street/W. St. James Street would be 16,604 vehicles, and the ADT on N. Market Street/Coleman Avenue would be 21,962 vehicles. Average hourly traffic distributions for Santa Clara County roadways were developed using the EMFAC model,[34] 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 25 mph was assumed for all vehicles based on posted speed limit signs on these roadways.

*Dispersion Modeling*

Dispersion modeling of TAC and $PM_{2.5}$ emissions was conducted using the EPA AERMOD air quality dispersion model. TAC and $PM_{2.5}$ emissions from traffic on Northbound S.R. 87 On-Ramp, W. Julian Street/W. St. James Street, and N. Market Street/Coleman Avenue within 1,000 feet of the project site were evaluated. Vehicle traffic on the roadways were modeled using line-area sources (a series of adjacent area sources along a line), with line segments used for the travel directions on Northbound S.R. 87 On-Ramp, W. Julian Street/W. St. James Street, and N. Market Street/Coleman Avenue. The same meteorological data and off-site sensitive receptors used in the highway dispersion modeling were used in the roadway modeling. Other inputs to the model included road geometry and elevations, hourly traffic emissions, and receptor locations.

[32] 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

[33] Email correspondence with Amy Wang, Project Manager, David J. Powers & Associates, Inc., March 11, 2021, *Attachment 20210309_255_W_Julian_Intersection_Volumes.xlsx*.

[34] 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.

Figure 2 shows the roadway segments modeled and residential MEI receptor location used in the modeling. Table 8 lists the risks and hazards from the roadways. The emission rates and roadway calculations used in the analysis are shown in *Attachment 5*.

Railroad – UPRR

The project site is located approximately 600 feet south of a UPRR line used for freight service, which generates TAC and $PM_{2.5}$ emissions from diesel locomotives. There are about four freight trains that use this rail line on a daily basis.[35] BAAQMD provided raster files with cancer risk and $PM_{2.5}$ values for all highways/freeways, high volume roadways (ADT > 30,000), and rail lines within the Bay Area. The risk values shown in the raster files were modeled in AERMOD in 20x20-meter grid cells. These raster files were used to screen the UPRR risks and hazards upon the project site. The project MEIs are approximately 1,000 feet south of the rail line. The rail line screening level impacts are listed in Table 8. Refined modeling of the rail line would have resulted in even lower risk values. Note that BAAQMD has found that non-cancer hazards were found to be minimal, so an HI value is not included.

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,[36] 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. Four sources were identified using this tool with all four sources being diesel generators. The BAAQMD GIS website provided screening risks and hazards for all the sources, so a stationary source information request was not required to be submitted to BAAQMD.

The screening level risks and hazards provided by BAAQMD for the 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 8.

Construction Risk Impacts from Nearby Developments

From the City's website,[37] four planned or approved projects[38] are located within 1,000 feet of the proposed project. The developments under construction include the Silvery Towers at 188 W. St. James Street (File Number H13-041, HA13-041-03). The developments that have been approved include the Carlysle at 51 Notre Dame Ave (File Number H18-025), the N. San Pedro Tower 3 at

[35] U.S. Department of Transportation, Federal Railroad Administration, U.S. DOT Crossing Inventory Form for crossing 750136G, accessed April 13, 2021. Web: https://safetydata.fra.dot.gov/OfficeofSafety/PublicSite/Crossing/XingLocResults.aspx?state=06&countycity=3340,&railroad=&reportinglevel=ALL&radionm=City&street=1st%20street&xingtype=3&xingstatus=1&xingpos=1

[36] BAAQMD, https://baaqmd.maps.arcgis.com/apps/webappviewer/index.html?id=2387ae674013413f987b1071715daa65

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

[38] Developments under planning review are not included within the cumulative analysis since it is speculative to include construction emissions from projects that may or may not be approved.

323 Terraine St. (File Number H14-037, HA14-037), and Aviato at 199 Bassett Street (File Number SP17-023, SPA17-023). The Silvery Towers project is currently under construction and is expected to be completed by the time Arbor Office begins construction, so it was not included in the cumulative projects. The mitigated construction risks and hazard impact values for the other three developments were available from their technical reports conducted by *Illingworth & Rodin, Inc*.[39,40,41] 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 8.

Summary of Cumulative Risks at the Project MEI

Table 8 reports both the project and cumulative community risk impacts at the sensitive receptors most affected by project construction and operation (i.e., the project MEIs). The project would have an exceedance with respect to community risk caused by project construction and operation activities, since the maximum unmitigated cancer risk and $PM_{2.5}$ concentration exceeds the BAAQMD single-source thresholds. 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 and $PM_{2.5}$ concentration 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 nearby roadways (S.R. 87) and simultaneous construction of nearby developments. The cumulative threshold would be exceeded in the case where all construction activity occurred simultaneously. The HI, unmitigated and mitigated, does not exceed its cumulative threshold. According to BAAQMD, health risks would be less than significant if the risks from the project are reduced below the single source thresholds.

[39] Illingworth & Rodkin, Inc., *The Carlysle Air Quality and GHG Assessment,* March 13, 2020.
[40] Illingworth & Rodkin, Inc., *N. San Pedro Square Tower 4 TAC and GHG Emissions Assessment,* March 12, 2015
[41] Illingworth & Rodkin, Inc., *199 Bassett Street Project Air Quality Assessment,* July 11, 2017.

**Table 8. Cumulative Community Risk Impacts at the Location of the Project MEIs**

| Source | | Maximum Cancer Risk* (per million) | $PM_{2.5}$ Concentration* ($\mu g/m^3$) | Hazard Index |
|---|---|---|---|---|
| **Project Impacts** | | | | |
| Total/Maximum Project Impact | Unmitigated | **48.82** | **0.74** | 0.03 |
| | Mitigated | 7.63 | 0.15 | <0.01 |
| ***BAAQMD Single-Source Threshold*** | | ***10*** | ***0.3*** | ***1.0*** |
| *Exceed Threshold?* | Unmitigated | ***Yes*** | ***Yes*** | *No* |
| | Mitigated | *No* | *No* | *No* |
| **Cumulative Sources** | | | | |
| S.R. 87, ADT 127,720 | | 9.55 | 0.32 | <0.01 |
| NB S.R. 87 On-Ramp, ADT 15,801 | | 0.48 | 0.05 | <0.01 |
| W. Julian St / W. St. James St, ADT 16,604 | | 1.03 | 0.10 | <0.01 |
| N. Market St / Coleman Ave, ADT 21,962 | | 0.28 | 0.02 | <0.01 |
| UPRR, MEI at 1,000-ft | | 9.03 | 0.02 | - |
| City Heights At Pellier Park (Facility ID #17788, Generator), MEI at 105 feet | | 3.83 | - | 0.01 |
| County of Santa Clara (Facility ID #20411, Generator), MEI at 880 feet | | 0.13 | - | - |
| San Jose Fire Dept / Accts Payable (Facility ID #21746, Generator), MEI at 365 feet | | 0.03 | - | - |
| Centerra Apartments (Facility ID #22757, Generator), MEI at 675 feet | | 0.01 | - | - |
| Nearby Development – Carlysle Mitigated Construction Risks | | <6.00 | <0.09 | <0.01 |
| Nearby Development – N. San Pedro Tower 3 Mitigated Construction Risks | | <4.09 | <0.10 | <0.01 |
| Nearby Development – Aviato Mitigated Construction Risks | | <9.5 | <0.15 | <0.01 |
| *Combined Sources* | Unmitigated | <92.78 | **<1.59** | <0.11 |
| | Mitigated | <51.59 | **<1.00** | <0.09 |
| ***BAAQMD Cumulative Source Threshold*** | | ***100*** | ***0.8*** | ***10.0*** |
| ***Exceed Threshold?*** | Unmitigated | *No* | ***Yes*** | *No* |
| | Mitigated | *No* | ***Yes*** | *No* |

* Maximum cancer risk and maximum $PM_{2.5}$ concentration occur at same receptor on different floors.

**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 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 an 80 percent reduction in particulate matter exhaust in comparison to uncontrolled equipment.

b. Use of alternatively fueled or electric equipment.

2. Stationary cranes shall be powered by electricity.

*Effectiveness of Mitigation Measure AQ-2*

CalEEMod was used to compute emissions associated with this mitigation measure assuming that all equipment met U.S. EPA Tier 4 engines standards, electric stationary cranes were used, and enhanced BAAQMD best management practices for construction were included. With these implemented, the project's construction cancer risk levels (assuming infant exposure) and annual $PM_{2.5}$ concentrations would be reduced to 4.82 per million and 0.15 $\mu g/m^3$, respectively. This would reduce the cumulative cancer risk and $PM_{2.5}$ concentration risk to less than 51.59 per million and less than 1.00 $\mu g/m^3$, which still exceeds the $PM_{2.5}$ concentration cumulative threshold.

*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 0.85 $\mu g/m^3$. Cumulative risks exceed the $PM_{2.5}$ concentration threshold because of the overwhelming influence of the traffic on the nearby roadways (S.R. 87) and simultaneous nearby developments at the MEIs. The project's mitigated $PM_{2.5}$ concentration only represents 15 percent of the total mitigated cumulative concentration. Therefore, the project would not substantially contribute to the total cumulative $PM_{2.5}$ concentration, and therefore, would not be cumulatively considerable.

## 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. The operational output for existing uses is also included in this attachment. Also included are any modeling assumptions.

*Attachment 3* includes the EMFAC2017 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.

# 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.[42] 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.[43] 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.[44] 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, 95$^{th}$ percentile breathing rates are used for the third trimester and infant exposures, and 80$^{th}$ percentile breathing rates for child and adult exposures. For children at schools and daycare facilities, BAAQMD recommends using the 95$^{th}$ percentile 8-hour breathing rates.

[42] 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.
[43] CARB, 2015. *Risk Management Guidance for Stationary Sources of Air Toxics*. July 23.
[44] 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:** 255 West Julian

**Complete ALL Portions in Yellow**

See Equipment Type TAB for type, horsepower and load factor

| Project Size | | Dwelling Units | | total project acres disturbed |
|---|---|---|---|---|
| | | s.f. residential | | |
| | 13,000 | s.f. retail | | |
| | 484,256 | s.f. office/commercial | | |
| | | s.f. other, specify: | | |
| | 191,616 | s.f. parking garage | 350 | spaces |
| | | s.f. parking lot | | spaces |
| Construction Hours: | 7:00 | | 10:00 | |
| Monday-Friday | AM 7:00 | to | PM 7:00 PM | |
| Saturday | AM | | | |

Pile Driving? Y/N? - No pile on this project

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

IF YES (if BOTH separate values) --> Yes - the completed building will have a generator and fire pump

Kilowatts/Horsepower: TBD - Pending Engineering_____

Fuel Type: TBD - Pending Engineering_____

Location in project (Plans Desired if Available): See attached floor plans

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

| Quantity | Description | HP | Load Factor | Hours/day | Total Work Days | Avg. Hours per day | HP Annual Hours | Comments |
|---|---|---|---|---|---|---|---|---|
| | **Demolition** | **Start Date:** | **1/3/2022** | **Total phase:** | **6** | | | **Overall Import/Export Volumes** |
| | | **End Date:** | **1/10/2022** | | | | | |
| 1 | Concrete/Industrial Saws | 81 | 0.73 | 4 | 6 | 4 | 1419 | **Demolition Volume** |
| 1 | Excavators | 158 | 0.38 | 8 | 3 | 4 | 1441 | 50,000 SF of AC Parking Lot (thickness 2"-3") |
| 1 | Rubber-Tired Dozers | 247 | 0.4 | 5 | 3 | 2.5 | 1482 | 1,900 SF of Sidewalk (thickness 4") |
| 1 | Tractors/Loaders/Backhoes | 97 | 0.37 | 4 | 3 | 2 | 431 | 1,190 LF of vertical curb, 430 LF of concrete & brick wall |
| | | | | | | | | 100 LF of valley gutter, 17LF of Fencing |
| | | | | | | | | 6 Light Poles & 20 trees |
| | **Site Preparation** | **Start Date:** | **1/4/2022** | **Total phase:** | **65** | | | |
| | | **End Date:** | **4/4/2022** | | | | | |
| 1 | Graders | 187 | 0.41 | 5 | 5 | 0.4 | 1917 | |
| 1 | Rubber Tired Dozers | 247 | 0.4 | 3 | 28 | 1.3 | 8299 | |
| 2 | Tractors/Loaders/Backhoes | 97 | 0.37 | 7 | 30 | 3.2 | 15074 | |
| | **Grading / Excavation** | **Start Date:** | **4/5/2022** | **Total phase:** | **140** | | | |
| | | **End Date:** | **10/17/2022** | | | | | **Soil Hauling Volume** |
| 2 | Excavators | 158 | 0.38 | 7 | 100 | 5 | 84056 | Export volume = 180,000 CY |
| 1 | Graders | 187 | 0.41 | 2 | 30 | 0.4 | 4600 | Import volume = 1,500 CY |
| 1 | Rubber Tired Dozers | 247 | 0.4 | 4 | 95 | 2.7 | 37544 | |
| 2 | Concrete/Industrial Saws | 81 | 0.73 | 8 | 10 | 0.6 | 9461 | |
| 1 | Tractors/Loaders/Backhoes | 97 | 0.37 | 4 | 60 | 1.7 | 8614 | |
| | **Trenching/Foundation** | **Start Date:** | **10/18/2022** | **Total phase:** | **30** | | | |
| | | **End Date:** | **11/28/2022** | | | | | |
| 1 | Tractor/Loader/Backhoe | 97 | 0.37 | 4 | 10 | 1.3 | 1436 | |
| 1 | Excavators | 158 | 0.38 | 7 | 15 | 3.5 | 6304 | |
| 2 | Cranes | 231 | 0.29 | 8 | 30 | 8 | 32155 | |
| 700 | Cement and Mortar Mixers | 9 | 0.56 | 8 | 2 | 0.5 | 56448 | We will have cement truck, no onsite mixers |
| | **Building - Superstructure/Exterior** | **Start Date:** | **11/29/2022** | **Total phase:** | **380** | | | Cement Trucks = 24,550 CY/2,455 trips |
| | | **End Date:** | **5/13/2024** | | | | | |
| 2 | Cranes | 231 | 0.29 | 8 | 380 | 8 | 407299 | Tower cranes will be electric |
| 2 | Forklifts | 89 | 0.2 | 4 | 380 | 4 | 54112 | Forklifts will be diesel |
| 0 | Generator Sets | 84 | 0.74 | 0 | 0 | 0 | 0 | No generators assumed onsite, Temporary power from PG&E |
| 5 | Aerial Lifts | 63 | 0.31 | 7 | 380 | 7 | 259749 | |
| 1755 | Cement and Mortar Mixers | 9 | 0.56 | 8 | 25 | 0.5 | 1769040 | We will have cement truck, no onsite mixers |
| | **Building - Cores/Elevators** | **Start Date:** | **1/17/2023** | **Total phase:** | **304** | | | |
| | | **End Date:** | **3/15/2024** | | | | | |
| 2 | Industrial Saws | 81 | 0.73 | 4 | 304 | 4 | 143804 | |
| 5 | Aerial Lift | 62 | 0.31 | 4 | 304 | 4 | 116858 | |
| | **Sitework** | **Start Date:** | **5/14/2024** | **Total phase:** | **50** | | | No paving under sitework. New building will take up existing parking lot. Some minor misc paving anticipated a city street areas/patchwork |
| | | **Start Date:** | **7/22/2024** | | | | | New sitework to consist of planters, walking paths, dining areas & landscape |
| 200 | Cement and Mortar Mixers | 9 | 0.56 | 8 | 5 | 0.8 | 40320 | We will have cement truck, no onsite mixers |
| 8 | Paving Equipment | 132 | 0.36 | 8 | 1 | 0.2 | 3041 | |
| 1 | Rollers | 80 | 0.38 | 8 | 2 | 0.3 | 486 | |
| 1 | Tractors/Loaders/Backhoes | 97 | 0.37 | 8 | 10 | 1.6 | 2871 | |
| | **Finals/CX/Raindays** | **Start Date:** | **3/18/2024** | **Total phase:** | **114** | | | |
| | | **Start Date:** | **8/22/2024** | | | | | |

**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 | Size | Daily Trips | New Trips | Weekday Trip Gen | Weekday | Sat | Sun |
| Office | 534.256 | 5207 | 3593 | ***6.73*** | 11.03 | 2.46 | 1.05 |
| *Location Based Reduction* 31% | | *-1614* | | | *0* | ***1.50*** | ***0.64*** |
| Retail | 19 | 726 | 588 | ***30.95*** | 44.32 | 42.04 | 20.43 |
| *Location Based Reduction* 17% | | *-138* | | | *Rev* | ***29.36*** | ***14.27*** |
| *Existing* | | | | | | | |
| Office | 62 | 606 | 418 | ***6.74*** | 11.03 | 2.46 | 1.05 |
| *Location Based Reduction* 31% | | *-188* | | | *Rev* | ***1.50*** | ***0.64*** |

## Table 6: Project Trip Generation

| ITE # | Land Use Type | Size | Type[1] | Weekday Trips[2] | AM Peak Hour Trips[2] | | | PM Peak Hour Trips[2] | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Total | In | Out | Total | In | Out |
| ***Proposed Project – City Code*** | | | | | | | | | | |
| 710 | Office **(A)** | 508 | ksf | 4,951 | 590 | 507 | 83 | 585 | 94 | 491 |
| | *Location Based Reduction*[3] **(B = A x 31%)** | | | *-1,535* | *-183* | *-157* | *-26* | *-181* | *-29* | *-152* |
| | **New Office Trips (C = A + B)** | | | **3,416** | **407** | **350** | **57** | **404** | **65** | **339** |
| 820 | Shopping Center **(D)** | 19 | ksf | 726 | 18 | 11 | 7 | 73 | 35 | 38 |
| | *Location Based Reduction*[3] **(E = D x 17%)** | | | *-138* | *-3* | *-2* | *-1* | *-14* | *-7* | *-7* |
| | **Net Retail Trips (F = D + E)** | | | **588** | **15** | **9** | **6** | **59** | **28** | **31** |
| | ***New Project Trips (G = C + F)*** | | | ***4,004*** | ***422*** | ***359*** | ***63*** | ***463*** | ***93*** | ***362*** |
| ***Trips Generated by Existing Office Use*** | | | | | | | | | | |
| 710 | Office **(H)** | 62 | ksf | 606 | 72 | 62 | 10 | 72 | 11 | 60 |
| | *Location Based Reduction*[3] **(I = H x 31%)** | | | **-188** | **-22** | **-19** | **-3** | **-22** | **-3** | **-19** |
| | *Existing Office Trips* ***(J = H-I)*** | | | ***418*** | ***50*** | ***43*** | ***7*** | ***50*** | ***8*** | ***41*** |
| | ***Net New Trips at Project Driveway (K = G-J)*** | | | ***3,586*** | ***372*** | ***316*** | ***56*** | ***413*** | ***85*** | ***328*** |

Notes:
1. ksf = 1,000 square feet
2. Trip generation estimates using the average rates from ITE's *Trip Generation Manual*, 10th Edition (2017).
3. Because the project is located within an urban high-transit area, location-based trip reductions were applied according to Table 6 of the *City of San José Transportation Analysis Handbook*.

| Construction Criteria Air Pollutants | | | | | | |
|---|---|---|---|---|---|---|
| *Unmitigated* | ROG | NOX | PM10 Exhaust | PM2.5 Exhaust | **CO2e** | |
| Year | Tons | | | | MT | |
| Construction Equipment | | | | | | |
| 2022 | 0.08 | 0.83 | 0.04 | 0.04 | 124.90 | |
| 2023 | 2.33 | 1.91 | 0.07 | 0.07 | 348.37 | |
| 2024 | 0.53 | 0.61 | 0.02 | 0.02 | 115.22 | |
| *EMFAC* | | | | | | |
| 2022 | 0.08 | 1.41 | 0.07 | 0.04 | 621.09 | |
| 2023 | 0.06 | 1.12 | 0.07 | 0.03 | 598.21 | |
| 2024 | 0.03 | 0.63 | 0.04 | 0.02 | 328.53 | |
| *Total Construction Emissions by Year* | | | | | | |
| 2022 | 0.16 | 2.24 | 0.11 | 0.07 | 746.00 | |
| 2023 | 2.39 | 3.03 | 0.14 | 0.10 | 946.57 | |
| 2024 | 0.56 | 1.23 | 0.06 | 0.04 | 443.75 | |
| | *Total Construction Emissions* | | | | | |
| Tons | 3.12 | 6.51 | 0.31 | 0.21 | 2136.32 | |
| Pounds/Workdays | *Average Daily Emissions* | | | | Workdays | |
| 2022 | 1.06 | 14.42 | 0.71 | 0.45 | | **311** |
| 2023 | 15.28 | 19.37 | 0.91 | 0.64 | | **313** |
| 2024 | 6.44 | 14.11 | 0.70 | 0.44 | | **175** |
| **Threshold - lbs/day** | **54.0** | **54.0** | **82.0** | **54.0** | | |
| | *Total Construction Emissions* | | | | | |
| Pounds | 22.78 | 47.90 | 2.32 | 1.53 | 0.00 | |
| Average | 7.81 | 16.29 | 0.79 | 0.52 | 0.00 | 799.00 |
| **Threshold - lbs/day** | **54.0** | **54.0** | **82.0** | **54.0** | | |

| Operational Criteria Air Pollutants | | | | | | |
|---|---|---|---|---|---|---|
| *Unmitigated* | ROG | NOX | Total PM10 | Total PM2.5 | | |
| Year | Tons | | | | | |
| Total | 3.69 | 2.60 | 2.80 | 0.80 | | |
| | **Existing Use Emissions** | | | | | |
| Total | 0.39 | 0.22 | 0.29 | 0.08 | | |
| | *Net Annual Operational Emissions* | | | | | |
| Tons/year | 3.30 | 2.38 | 2.52 | 0.72 | | |
| **Threshold - Tons/year** | **10.0** | **10.0** | **15.0** | **10.0** | | |
| | | | | | | |
| | *Average Daily Emissions* | | | | | |
| Pounds Per Day | 18.08 | 13.05 | 13.78 | 3.93 | | |
| **Threshold - lbs/day** | **54.0** | **54.0** | **82.0** | **54.0** | | |

| **Category** | **CO2e** | | | |
|---|---|---|---|---|
| | Project | Existing | Project 2030 | Existing |
| Area | 0.02 | 0.00 | | |
| Energy | 471.90 | 382.68 | | |
| Mobile | 2429.43 | 249.94 | | |
| Waste | 259.90 | 29.00 | | |
| Water | 127.99 | 39.32 | | |
| TOTAL | 3289.24 | 700.93 | 0.00 | 0.00 |
| Net GHG Emissions | | 2588.32 | | 0.00 |
| Service Population | 2185 | | | |
| Per Capita Emissions | | 1.51 | | 0.00 |

| | | | | |
|---|---|---|---|---|
| Office Use | 534.256 | units | 19 | Retail Use |
| | 4 | pp office | 2.5 | pp retail |

Arbor Office, San Jose - Construction - Santa Clara County, Annual

# Arbor Office, San Jose - Construction

**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 | 484.26 | 1000sqft | 1.70 | 484,256.00 | 0 |
| Enclosed Parking with Elevator | 350.00 | Space | 0.00 | 191,616.00 | 0 |
| Strip Mall | 13.00 | 1000sqft | 0.00 | 13,000.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 2.2 | **Precipitation Freq (Days)** | 58 |
| **Climate Zone** | 4 | | | **Operational Year** | 2025 |
| **Utility Company** | Pacific Gas & Electric Company | | | | |
| **CO2 Intensity (lb/MWhr)** | 206 | **CH4 Intensity (lb/MWhr)** | 0.029 | **N2O Intensity (lb/MWhr)** | 0.006 |

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics - PG&E 2018 rate = 206

Land Use - Provided land uses - construction worksheet

Construction Phase - Provided construction schedule

Off-road Equipment - Provided construction equip & hours

Off-road Equipment - Provided construction equip & hours, mixers converted to trips

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, mixers converted to trips

Off-road Equipment - Provided construction equip & hours, mixers converted to trips

Trips and VMT - 0 trips EMFAC2017, pavement demo = 53,190sf, Cement = 24,550cy -> treching = 700 cement trips, Building Ext = 1,755 cement trips, sitework = 200 cement trips

Demolition -

Grading - grading = 180,000cy export, 1,500cy import

Construction Off-road Equipment Mitigation - Enhanced BMPs, Tier 4 final engines, electric cranes mitigation

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblConstDustMitigation | WaterUnpavedRoadMoistureContent | 0 | 12 |
| tblConstDustMitigation | WaterUnpavedRoadVehicleSpeed | 0 | 15 |
| tblConstEquipMitigation | FuelType | Diesel | Electrical |
| tblConstEquipMitigation | NumberOfEquipmentMitigated | 0.00 | 10.00 |
| tblConstEquipMitigation | NumberOfEquipmentMitigated | 0.00 | 5.00 |
| tblConstEquipMitigation | NumberOfEquipmentMitigated | 0.00 | 4.00 |
| tblConstEquipMitigation | NumberOfEquipmentMitigated | 0.00 | 4.00 |
| tblConstEquipMitigation | NumberOfEquipmentMitigated | 0.00 | 2.00 |
| tblConstEquipMitigation | NumberOfEquipmentMitigated | 0.00 | 2.00 |
| tblConstEquipMitigation | NumberOfEquipmentMitigated | 0.00 | 8.00 |
| tblConstEquipMitigation | NumberOfEquipmentMitigated | 0.00 | 1.00 |
| tblConstEquipMitigation | NumberOfEquipmentMitigated | 0.00 | 3.00 |
| tblConstEquipMitigation | NumberOfEquipmentMitigated | 0.00 | 6.00 |
| 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 | 304.00 |
| tblConstructionPhase | NumDays | 200.00 | 380.00 |
| tblConstructionPhase | NumDays | 20.00 | 6.00 |
| tblConstructionPhase | NumDays | 4.00 | 140.00 |
| tblConstructionPhase | NumDays | 10.00 | 50.00 |
| tblConstructionPhase | NumDays | 2.00 | 65.00 |
| tblGrading | MaterialExported | 0.00 | 180,000.00 |
| tblGrading | MaterialImported | 0.00 | 1,500.00 |
| tblLandUse | LandUseSquareFeet | 484,260.00 | 484,256.00 |
| tblLandUse | LandUseSquareFeet | 140,000.00 | 191,616.00 |
| tblLandUse | LotAcreage | 11.12 | 1.70 |
| tblLandUse | LotAcreage | 3.15 | 0.00 |
| tblLandUse | LotAcreage | 0.30 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 2.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 2.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 8.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 3.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 2.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 3.00 | 0.00 |

| | | | |
|---|---|---|---|
| tblOffRoadEquipment | UsageHours | 6.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 4.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 4.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 0.40 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.40 |
| tblOffRoadEquipment | UsageHours | 6.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.20 |
| tblOffRoadEquipment | UsageHours | 7.00 | 0.30 |
| tblOffRoadEquipment | UsageHours | 8.00 | 2.50 |
| tblOffRoadEquipment | UsageHours | 6.00 | 2.70 |
| tblOffRoadEquipment | UsageHours | 7.00 | 1.30 |
| tblOffRoadEquipment | UsageHours | 6.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 2.00 |
| tblOffRoadEquipment | UsageHours | 7.00 | 1.70 |
| tblOffRoadEquipment | UsageHours | 8.00 | 1.60 |
| tblOffRoadEquipment | UsageHours | 8.00 | 3.20 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblProjectCharacteristics | CO2IntensityFactor | 641.35 | 206 |
| tblTripsAndVMT | HaulingTripNumber | 22,688.00 | 0.00 |
| tblTripsAndVMT | VendorTripNumber | 113.00 | 0.00 |
| tblTripsAndVMT | WorkerTripNumber | 10.00 | 0.00 |
| tblTripsAndVMT | WorkerTripNumber | 10.00 | 0.00 |
| tblTripsAndVMT | WorkerTripNumber | 18.00 | 0.00 |
| tblTripsAndVMT | WorkerTripNumber | 10.00 | 0.00 |
| tblTripsAndVMT | WorkerTripNumber | 240.00 | 0.00 |
| tblTripsAndVMT | WorkerTripNumber | 48.00 | 0.00 |
| tblTripsAndVMT | WorkerTripNumber | 25.00 | 0.00 |

## 2.0 Emissions Summary

### 2.1 Overall Construction

#### Unmitigated Construction

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | tons/yr | | | | | | | | | | MT/yr | | | | | |
| 2022 | 0.0814 | 0.8347 | 0.7428 | 1.4100e-003 | 0.1871 | 0.0381 | 0.2251 | 0.0975 | 0.0352 | 0.1327 | 0.0000 | 123.9461 | 123.9461 | 0.0384 | 0.0000 | 124.9049 |
| 2023 | 2.3332 | 1.9078 | 2.0421 | 3.9600e-003 | 0.0000 | 0.0732 | 0.0732 | 0.0000 | 0.0686 | 0.0686 | 0.0000 | 346.0269 | 346.0269 | 0.0936 | 0.0000 | 348.3659 |
| 2024 | 0.5326 | 0.6081 | 0.6558 | 1.3100e-003 | 0.0000 | 0.0228 | 0.0228 | 0.0000 | 0.0212 | 0.0212 | 0.0000 | 114.3951 | 114.3951 | 0.0329 | 0.0000 | 115.218 |
| **Maximum** | **2.3332** | **1.9078** | **2.0421** | **3.9600e-003** | **0.1871** | **0.0732** | **0.2251** | **0.0975** | **0.0686** | **0.1327** | **0.0000** | **346.0269** | **346.0269** | **0.0936** | **0.0000** | **348.3659** |

#### Mitigated Construction

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | tons/yr | | | | | | | | | | MT/yr | | | | | |
| 2022 | 0.0144 | 0.1027 | 0.7344 | 1.4100e-003 | 0.0730 | 1.78E-03 | 0.0747 | 0.019 | 1.7800e-003 | 0.0208 | 0.0000 | 96.5700 | 96.5700 | 0.0295 | 0.0000 | 97.3075 |
| 2023 | 2.2031 | 0.8749 | 1.7529 | 3.9600e-003 | 0.0000 | 3.79E-03 | 3.7900e-003 | 0.0000 | 3.7900e-003 | 3.7900e-003 | 0.0000 | 214.2190 | 214.2190 | 0.0509 | 0.0000 | 215.4923 |
| 2024 | 0.4910 | 0.2765 | 0.5462 | 1.3100e-003 | 0.0000 | 1.18E-03 | 1.1800e-003 | 0.0000 | 1.1800e-003 | 1.1800e-003 | 0.0000 | 65.7286 | 65.7286 | 0.0172 | 0.0000 | 66.1581 |
| **Maximum** | **2.2031** | **0.8749** | **1.7529** | **3.9600e-003** | **0.0730** | **3.7900e-003** | **0.0747** | **0.0190** | **3.7900e-003** | **0.0208** | **0.0000** | **214.2190** | **214.2190** | **0.0509** | **0.0000** | **215.4923** |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Percent Reduction | 8.10 | 62.57 | 11.83 | 0.00 | 61.00 | 94.97 | 75.18 | 80.50 | 94.60 | 88.42 | 0.00 | 35.57 | 35.57 | 40.78 | 0.00 | 35.60 |

| Quarter | Start Date | End Date | Maximum Unmitigated ROG + NOX (tons/quarter) | Maximum Mitigated ROG + NOX (tons/quarter) |
|---|---|---|---|---|
| 1 | 1-3-2022 | 4-2-2022 | 0.1228 | 0.0103 |
| 2 | 4-3-2022 | 7-2-2022 | 0.2208 | 0.0233 |
| 3 | 7-3-2022 | 10-2-2022 | 0.2258 | 0.0239 |
| 4 | 10-3-2022 | 1-2-2023 | 0.3514 | 0.0617 |
| 5 | 1-3-2023 | 4-2-2023 | 0.9698 | 0.6878 |
| 6 | 4-3-2023 | 7-2-2023 | 1.0900 | 0.7972 |
| 7 | 7-3-2023 | 10-2-2023 | 1.1020 | 0.8059 |
| 8 | 10-3-2023 | 1-2-2024 | 1.1013 | 0.8059 |
| 9 | 1-3-2024 | 4-2-2024 | 0.9201 | 0.6678 |
| 10 | 4-3-2024 | 7-2-2024 | 0.1753 | 0.0664 |
| 11 | 7-3-2024 | 9-30-2024 | 0.0051 | 0.0007 |
| | | Highest | 1.1020 | 0.8059 |

## 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 | 1/3/2022 | 1/10/2022 | 5 | 6 | |
| 2 | Site Preparation | Site Preparation | 1/4/2022 | 4/4/2022 | 5 | 65 | |
| 3 | Grading | Grading | 4/5/2022 | 10/17/2022 | 5 | 140 | |
| 4 | Trenching | Trenching | 10/18/2022 | 11/28/2022 | 5 | 30 | |
| 5 | Building Superstructure/Exterior | Building Construction | 11/29/2022 | 5/13/2024 | 5 | 380 | |
| 6 | Building - Cores/Elevators | Architectural Coating | 1/17/2023 | 3/15/2024 | 5 | 304 | |
| 7 | Sitework | Paving | 5/14/2024 | 7/22/2024 | 5 | 50 | |

**Acres of Grading (Site Preparation Phase): 1.63**

**Acres of Grading (Grading Phase): 3.5**

**Acres of Paving: 0**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 745,884; Non-Residential Outdoor: 248,628; Striped Parking Area:**

**OffRoad Equipment**

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Demolition | Concrete/Industrial Saws | 1 | 4.00 | 81 | 0.73 |
| Demolition | Excavators | 1 | 4.00 | 158 | 0.38 |
| Demolition | Rubber Tired Dozers | 1 | 2.50 | 247 | 0.40 |
| Demolition | Tractors/Loaders/Backhoes | 1 | 2.00 | 97 | 0.37 |
| Site Preparation | Graders | 1 | 0.40 | 187 | 0.41 |
| Site Preparation | Rubber Tired Dozers | 1 | 1.30 | 247 | 0.40 |
| Site Preparation | Tractors/Loaders/Backhoes | 2 | 3.20 | 97 | 0.37 |
| Grading | Concrete/Industrial Saws | 2 | 0.60 | 81 | 0.73 |
| Grading | Excavators | 2 | 5.00 | 158 | 0.38 |
| Grading | Graders | 1 | 0.40 | 187 | 0.41 |
| Grading | Rubber Tired Dozers | 1 | 2.70 | 247 | 0.40 |
| Grading | Tractors/Loaders/Backhoes | 1 | 1.70 | 97 | 0.37 |
| Trenching | Cranes | 2 | 8.00 | 231 | 0.29 |
| Trenching | Excavators | 1 | 3.50 | 158 | 0.38 |
| Trenching | Tractors/Loaders/Backhoes | 1 | 1.30 | 97 | 0.37 |
| Building Superstructure/Exterior | Aerial Lifts | 5 | 7.00 | 63 | 0.31 |
| Building Superstructure/Exterior | Cranes | 2 | 8.00 | 231 | 0.29 |
| Building Superstructure/Exterior | Forklifts | 2 | 4.00 | 89 | 0.20 |
| Building Superstructure/Exterior | Generator Sets | 0 | 0.00 | 84 | 0.74 |
| Building Superstructure/Exterior | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Building Superstructure/Exterior | Welders | 0 | 0.00 | 46 | 0.45 |
| Building - Cores/Elevators | Aerial Lifts | 5 | 4.00 | 63 | 0.31 |
| Building - Cores/Elevators | Air Compressors | 0 | 0.00 | 78 | 0.48 |
| Building - Cores/Elevators | Concrete/Industrial Saws | 2 | 4.00 | 81 | 0.73 |

| | | | | | |
|---|---|---|---|---|---|
| Sitework | Cement and Mortar Mixers | 0 | 0.00 | 9 | 0.56 |
| Sitework | Pavers | 0 | 0.00 | 130 | 0.42 |
| Sitework | Paving Equipment | 8 | 0.20 | 132 | 0.36 |
| Sitework | Rollers | 1 | 0.30 | 80 | 0.38 |
| Sitework | Tractors/Loaders/Backhoes | 1 | 1.60 | 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 | 4 | 0.00 | 0.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Site Preparation | 4 | 0.00 | 0.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Grading | 7 | 0.00 | 0.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Trenching | 4 | 0.00 | 0.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Building Superstructure/Exterior | 9 | 0.00 | 0.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Building - Cores/Elevators | 7 | 0.00 | 0.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Sitework | 10 | 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 - 2022

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Fugitive Dust | | | | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 1.7500e-003 | 0.0164 | 0.0154 | 3.0000e-005 | | 8.1000e-004 | 8.1000e-004 | | 7.7000e-004 | 7.7000e-004 | 0.0000 | 2.3952 | 2.3952 | 5.6000e-004 | 0.0000 | 2.4092 |
| **Total** | **1.7500e-003** | **0.0164** | **0.0154** | **3.0000e-005** | **0.0000** | **8.1000e-004** | **8.1000e-004** | **0.0000** | **7.7000e-004** | **7.7000e-004** | **0.0000** | **2.3952** | **2.3952** | **5.6000e-004** | **0.0000** | **2.4092** |

## Unmitigated Construction Off-Site

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

## Mitigated Construction On-Site

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

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Off-Road | 3.2000e-004 | 1.3700e-003 | 0.0170 | 3.0000e-005 | | 4.0000e-005 | 4.0000e-005 | | 4.0000e-005 | 4.0000e-005 | 0.0000 | 2.3952 | 2.3952 | 5.6000e-004 | 0.0000 | 2.4092 |
| **Total** | **3.2000e-004** | **1.3700e-003** | **0.0170** | **3.0000e-005** | **0.0000** | **4.0000e-005** | **4.0000e-005** | **0.0000** | **4.0000e-005** | **4.0000e-005** | **0.0000** | **2.3952** | **2.3952** | **5.6000e-004** | **0.0000** | **2.4092** |

**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 - 2022

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Fugitive Dust | | | | | 0.0327 | 0.0000 | 0.0327 | 0.0176 | 0.0000 | 0.0176 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 9.3800e-003 | 0.0986 | 0.0799 | 1.4000e-004 | | 4.8200e-003 | 4.8200e-003 | | 4.4300e-003 | 4.4300e-003 | 0.0000 | 12.0130 | 12.0130 | 3.8900e-003 | 0.0000 | 12.1101 |
| **Total** | **9.3800e-003** | **0.0986** | **0.0799** | **1.4000e-004** | **0.0327** | **4.8200e-003** | **0.0375** | **0.0176** | **4.4300e-003** | **0.0220** | **0.0000** | **12.0130** | **12.0130** | **3.8900e-003** | **0.0000** | **12.1101** |

## Unmitigated Construction Off-Site

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

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Fugitive Dust | | | | | 0.0127 | 0.0000 | 0.0127 | 3.4300e-003 | 0.0000 | 3.4300e-003 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 1.6700e-003 | 7.2400e-003 | 0.0860 | 1.4000e-004 | | 2.2000e-004 | 2.2000e-004 | | 2.2000e-004 | 2.2000e-004 | 0.0000 | 12.0130 | 12.0130 | 3.8900e-003 | 0.0000 | 12.1101 |
| **Total** | **1.6700e-003** | **7.2400e-003** | **0.0860** | **1.4000e-004** | **0.0127** | **2.2000e-004** | **0.0130** | **3.4300e-003** | **2.2000e-004** | **3.6500e-003** | **0.0000** | **12.0130** | **12.0130** | **3.8900e-003** | **0.0000** | **12.1101** |

## 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 - 2022

### Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Fugitive Dust | | | | | 0.1544 | 0.0000 | 0.1544 | 0.0800 | 0.0000 | 0.0800 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 0.0452 | 0.4360 | 0.4472 | 7.9000e-004 | | 0.0209 | 0.0209 | | 0.0193 | 0.0193 | 0.0000 | 69.1623 | 69.1623 | 0.0209 | 0.0000 | 69.6836 |
| **Total** | **0.0452** | **0.4360** | **0.4472** | **7.9000e-004** | **0.1544** | **0.0209** | **0.1753** | **0.0800** | **0.0193** | **0.0993** | **0.0000** | **69.1623** | **69.1623** | **0.0209** | **0.0000** | **69.6836** |

### Unmitigated Construction Off-Site

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

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Worker | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Fugitive Dust | | | | | 0.0602 | 0.0000 | 0.0602 | 0.0156 | 0.0000 | 0.0156 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 9.5400e-003 | 0.0413 | 0.5192 | 7.9000e-004 | | 1.2700e-003 | 1.2700e-003 | | 1.2700e-003 | 1.2700e-003 | 0.0000 | 69.1623 | 69.1623 | 0.0209 | 0.0000 | 69.6835 |
| **Total** | **9.5400e-003** | **0.0413** | **0.5192** | **7.9000e-004** | **0.0602** | **1.2700e-003** | **0.0615** | **0.0156** | **1.2700e-003** | **0.0169** | **0.0000** | **69.1623** | **69.1623** | **0.0209** | **0.0000** | **69.6835** |

**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 - 2022

## Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 0.0129 | 0.1413 | 0.0836 | 2.1000e-004 | | 6.0000e-003 | 6.0000e-003 | | 5.5200e-003 | 5.5200e-003 | 0.0000 | 18.8518 | 18.8518 | 6.1000e-003 | 0.0000 | 19.0042 |
| **Total** | **0.0129** | **0.1413** | **0.0836** | **2.1000e-004** | | **6.0000e-003** | **6.0000e-003** | | **5.5200e-003** | **5.5200e-003** | **0.0000** | **18.8518** | **18.8518** | **6.1000e-003** | **0.0000** | **19.0042** |

## 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 | 5.1000e-004 | 2.2100e-003 | 0.0314 | 2.1000e-004 | | 7.0000e-005 | 7.0000e-005 | | 7.0000e-005 | 7.0000e-005 | 0.0000 | 3.6429 | 3.6429 | 1.1800e-003 | 0.0000 | 3.6724 |
| **Total** | **5.1000e-004** | **2.2100e-003** | **0.0314** | **2.1000e-004** | | **7.0000e-005** | **7.0000e-005** | | **7.0000e-005** | **7.0000e-005** | **0.0000** | **3.6429** | **3.6429** | **1.1800e-003** | **0.0000** | **3.6724** |

**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 Building Superstructure/Exterior - 2022

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 0.0122 | 0.1425 | 0.1167 | 2.5000e-004 | | 5.5500e-003 | 5.5500e-003 | | 5.1100e-003 | 5.1100e-003 | 0.0000 | 21.5237 | 21.5237 | 6.9600e-003 | 0.0000 | 21.6978 |
| **Total** | **0.0122** | **0.1425** | **0.1167** | **2.5000e-004** | | **5.5500e-003** | **5.5500e-003** | | **5.1100e-003** | **5.1100e-003** | **0.0000** | **21.5237** | **21.5237** | **6.9600e-003** | **0.0000** | **21.6978** |

## 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 | 2.4000e-003 | 0.0505 | 0.0809 | 2.5000e-004 | | 1.7000e-004 | 1.7000e-004 | | 1.7000e-004 | 1.7000e-004 | 0.0000 | 9.3566 | 9.3566 | 3.0300e-003 | 0.0000 | 9.4323 |
| **Total** | **2.4000e-003** | **0.0505** | **0.0809** | **2.5000e-004** | | **1.7000e-004** | **1.7000e-004** | | **1.7000e-004** | **1.7000e-004** | **0.0000** | **9.3566** | **9.3566** | **3.0300e-003** | **0.0000** | **9.4323** |

## 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 Building Superstructure/Exterior - 2023

### Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 0.1244 | 1.4201 | 1.2469 | 2.6600e-003 | | 0.0544 | 0.0544 | | 0.0500 | 0.0500 | 0.0000 | 233.1710 | 233.1710 | 0.0754 | 0.0000 | 235.0563 |
| **Total** | **0.1244** | **1.4201** | **1.2469** | **2.6600e-003** | | **0.0544** | **0.0544** | | **0.0500** | **0.0500** | **0.0000** | **233.1710** | **233.1710** | **0.0754** | **0.0000** | **235.0563** |

### 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 | 0.0260 | 0.5474 | 0.8759 | 2.6600e-003 | | 1.8900e-003 | 1.8900e-003 | | 1.8900e-003 | 1.8900e-003 | 0.0000 | 101.3633 | 101.3633 | 0.0328 | 0.0000 | 102.1829 |
| **Total** | **0.0260** | **0.5474** | **0.8759** | **2.6600e-003** | | **1.8900e-003** | **1.8900e-003** | | **1.8900e-003** | **1.8900e-003** | **0.0000** | **101.3633** | **101.3633** | **0.0328** | **0.0000** | **102.1829** |

## 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 Building Superstructure/Exterior - 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 | 0.0436 | 0.4893 | 0.4545 | 9.8000e-004 | | 0.0184 | 0.0184 | | 0.0169 | 0.0169 | 0.0000 | 86.0929 | 86.0929 | 0.0278 | 0.0000 | 86.7890 |
| **Total** | **0.0436** | **0.4893** | **0.4545** | **9.8000e-004** | | **0.0184** | **0.0184** | | **0.0169** | **0.0169** | **0.0000** | **86.0929** | **86.0929** | **0.0278** | **0.0000** | **86.7890** |

### 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 | 9.5800e-003 | 0.2021 | 0.3234 | 9.8000e-004 | | 7.0000e-004 | 7.0000e-004 | | 7.0000e-004 | 7.0000e-004 | 0.0000 | 37.4265 | 37.4265 | 0.0121 | 0.0000 | 37.7291 |
| **Total** | **9.5800e-003** | **0.2021** | **0.3234** | **9.8000e-004** | | **7.0000e-004** | **7.0000e-004** | | **7.0000e-004** | **7.0000e-004** | **0.0000** | **37.4265** | **37.4265** | **0.0121** | **0.0000** | **37.7291** |

**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 - Cores/Elevators - 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 | | | | | |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Archit. Coating | 2.1565 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 0.0523 | 0.4877 | 0.7952 | 1.3000e-003 | | 0.0188 | 0.0188 | | 0.0186 | 0.0186 | 0.0000 | 112.8559 | 112.8559 | 0.0182 | 0.0000 | 113.3096 |
| **Total** | **2.2088** | **0.4877** | **0.7952** | **1.3000e-003** | | **0.0188** | **0.0188** | | **0.0186** | **0.0186** | **0.0000** | **112.8559** | **112.8559** | **0.0182** | **0.0000** | **113.3096** |

## 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 | | | | | |
| Archit. Coating | 2.1565 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 0.0207 | 0.3275 | 0.8771 | 1.3000e-003 | | 1.9000e-003 | 1.9000e-003 | | 1.9000e-003 | 1.9000e-003 | 0.0000 | 112.8557 | 112.8557 | 0.0182 | 0.0000 | 113.3095 |
| **Total** | **2.1772** | **0.3275** | **0.8771** | **1.3000e-003** | | **1.9000e-003** | **1.9000e-003** | | **1.9000e-003** | **1.9000e-003** | **0.0000** | **112.8557** | **112.8557** | **0.0182** | **0.0000** | **113.3095** |

**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 - Cores/Elevators - 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 | | | | | |
| Archit. Coating | 0.4763 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 0.0110 | 0.1026 | 0.1755 | 2.9000e-004 | | 3.6700e-003 | 3.6700e-003 | | 3.6200e-003 | 3.6200e-003 | 0.0000 | 24.9280 | 24.9280 | 3.9800e-003 | 0.0000 | 25.0276 |
| **Total** | **0.4873** | **0.1026** | **0.1755** | **2.9000e-004** | | **3.6700e-003** | **3.6700e-003** | | **3.6200e-003** | **3.6200e-003** | **0.0000** | **24.9280** | **24.9280** | **3.9800e-003** | **0.0000** | **25.0276** |

**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 | | | | | |
| Archit. Coating | 0.4763 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 4.5600e-003 | 0.0723 | 0.1937 | 2.9000e-004 | | 4.2000e-004 | 4.2000e-004 | | 4.2000e-004 | 4.2000e-004 | 0.0000 | 24.9280 | 24.9280 | 3.9800e-003 | 0.0000 | 25.0275 |
| **Total** | **0.4809** | **0.0723** | **0.1937** | **2.9000e-004** | | **4.2000e-004** | **4.2000e-004** | | **4.2000e-004** | **4.2000e-004** | **0.0000** | **24.9280** | **24.9280** | **3.9800e-003** | **0.0000** | **25.0275** |

## 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** |

## 3.8 Sitework - 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 | 1.6800e-003 | 0.0162 | 0.0258 | 4.0000e-005 | | 7.7000e-004 | 7.7000e-004 | | 7.1000e-004 | 7.1000e-004 | 0.0000 | 3.3742 | 3.3742 | 1.0900e-003 | 0.0000 | 3.4015 |
| Paving | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | **1.6800e-003** | **0.0162** | **0.0258** | **4.0000e-005** | | **7.7000e-004** | **7.7000e-004** | | **7.1000e-004** | **7.1000e-004** | **0.0000** | **3.3742** | **3.3742** | **1.0900e-003** | **0.0000** | **3.4015** |

### 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 | 4.7000e-004 | 2.0400e-003 | 0.0291 | 4.0000e-005 | | 6.0000e-005 | 6.0000e-005 | | 6.0000e-005 | 6.0000e-005 | 0.0000 | 3.3742 | 3.3742 | 1.0900e-003 | 0.0000 | 3.4015 |
| Paving | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | **4.7000e-004** | **2.0400e-003** | **0.0291** | **4.0000e-005** | | **6.0000e-005** | **6.0000e-005** | | **6.0000e-005** | **6.0000e-005** | **0.0000** | **3.3742** | **3.3742** | **1.0900e-003** | **0.0000** | **3.4015** |

## 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** |

Arbor Office, San Jose - Operation - Santa Clara County, Annual

# Arbor Office, San Jose - Operation

**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 | 534.26 | 1000sqft | 12.26 | 534,256.00 | 0 |
| Strip Mall | 19.00 | 1000sqft | 0.44 | 19,000.00 | 0 |
| Enclosed Parking with Elevator | 350.00 | Space | 3.15 | 191,616.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 2.2 | **Precipitation Freq (Days)** | 58 |
| **Climate Zone** | 4 | | | **Operational Year** | 2025 |
| **Utility Company** | Pacific Gas & Electric Company | | | | |
| **CO2 Intensity (lb/MWhr)** | 206 | **CH4 Intensity (lb/MWhr)** | 0.029 | **N2O Intensity (lb/MWhr)** | 0.006 |

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics - PG&E 2018 rate = 206

Land Use - Project provided land use sizes, default acreage used

Construction Phase - No construction, operational run only

Off-road Equipment - No construction, operational run only

Trips and VMT - No construction, operational run only

Vehicle Trips - Provided trip generation, adjusted for larger office sf and reductions, office = 6.73, 1.50, 0.64, retail = 30.95, 29.36, 14.27

Vehicle Emission Factors - EMFAC2017 Santa Clara County 2025 Emission Factors

Water And Wastewater - WWTP 100% aerobic

Stationary Sources - Emergency Generators and Fire Pumps - Two, 1,000-kW, 1,340-hp standby diesel generators, 50 hrs/year

Energy Mitigation - SVCE by 2021 will provide carbon-free electricity

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblConstructionPhase | NumDays | 10.00 | 1.00 |
| tblConstructionPhase | PhaseEndDate | 2/11/2022 | 1/31/2022 |
| tblFleetMix | HHD | 0.02 | 0.02 |
| tblFleetMix | HHD | 0.02 | 0.02 |
| tblFleetMix | HHD | 0.02 | 0.02 |
| tblFleetMix | LDA | 0.62 | 0.59 |
| tblFleetMix | LDA | 0.62 | 0.59 |
| tblFleetMix | LDA | 0.62 | 0.59 |
| tblFleetMix | LDT1 | 0.04 | 0.05 |
| tblFleetMix | LDT1 | 0.04 | 0.05 |
| tblFleetMix | LDT1 | 0.04 | 0.05 |
| tblFleetMix | LDT2 | 0.18 | 0.18 |
| tblFleetMix | LDT2 | 0.18 | 0.18 |
| tblFleetMix | LDT2 | 0.18 | 0.18 |
| tblFleetMix | LHD1 | 0.01 | 0.02 |
| tblFleetMix | LHD1 | 0.01 | 0.02 |
| tblFleetMix | LHD1 | 0.01 | 0.02 |
| tblFleetMix | LHD2 | 5.0160e-003 | 5.3460e-003 |
| tblFleetMix | LHD2 | 5.0160e-003 | 5.3460e-003 |
| tblFleetMix | LHD2 | 5.0160e-003 | 5.3460e-003 |
| tblFleetMix | MCY | 5.2190e-003 | 5.0208e-003 |
| tblFleetMix | MCY | 5.2190e-003 | 5.0208e-003 |
| tblFleetMix | MCY | 5.2190e-003 | 5.0208e-003 |
| tblFleetMix | MDV | 0.10 | 0.11 |
| tblFleetMix | MDV | 0.10 | 0.11 |
| tblFleetMix | MDV | 0.10 | 0.11 |

| | | | |
|---|---|---|---|
| tblFleetMix | MH | 6.9100e-004 | 7.4594e-004 |
| tblFleetMix | MH | 6.9100e-004 | 7.4594e-004 |
| tblFleetMix | MH | 6.9100e-004 | 7.4594e-004 |
| tblFleetMix | MHD | 0.01 | 0.01 |
| tblFleetMix | MHD | 0.01 | 0.01 |
| tblFleetMix | MHD | 0.01 | 0.01 |
| tblFleetMix | OBUS | 2.1830e-003 | 1.5554e-003 |
| tblFleetMix | OBUS | 2.1830e-003 | 1.5554e-003 |
| tblFleetMix | OBUS | 2.1830e-003 | 1.5554e-003 |
| tblFleetMix | SBUS | 6.3400e-004 | 9.1613e-004 |
| tblFleetMix | SBUS | 6.3400e-004 | 9.1613e-004 |
| tblFleetMix | SBUS | 6.3400e-004 | 9.1613e-004 |
| tblFleetMix | UBUS | 1.5080e-003 | 1.2346e-003 |
| tblFleetMix | UBUS | 1.5080e-003 | 1.2346e-003 |
| tblFleetMix | UBUS | 1.5080e-003 | 1.2346e-003 |
| tblLandUse | LandUseSquareFeet | 534,260.00 | 534,256.00 |
| tblLandUse | LandUseSquareFeet | 140,000.00 | 191,616.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 4.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 3.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblProjectCharacteristics | CO2IntensityFactor | 641.35 | 206 |
| tblStationaryGeneratorsPumpsEF | CH4_EF | 0.07 | 0.07 |
| tblStationaryGeneratorsPumpsEF | ROG_EF | 2.2480e-003 | 2.2477e-003 |
| tblStationaryGeneratorsPumpsUse | HorsePowerValue | 0.00 | 1,340.00 |
| tblStationaryGeneratorsPumpsUse | HoursPerYear | 0.00 | 50.00 |
| tblStationaryGeneratorsPumpsUse | NumberOfEquipment | 0.00 | 2.00 |
| tblVehicleEF | HHD | 0.32 | 0.02 |
| tblVehicleEF | HHD | 0.05 | 0.05 |
| tblVehicleEF | HHD | 0.07 | 0.00 |

| | | | |
|---|---|---|---|
| tblVehicleEF | HHD | 1.54 | 6.32 |
| tblVehicleEF | HHD | 0.93 | 0.41 |
| tblVehicleEF | HHD | 3.69 | 5.9250e-003 |
| tblVehicleEF | HHD | 4,258.83 | 1,030.26 |
| tblVehicleEF | HHD | 1,538.25 | 1,386.58 |
| tblVehicleEF | HHD | 11.71 | 0.05 |
| tblVehicleEF | HHD | 13.31 | 5.35 |
| tblVehicleEF | HHD | 1.86 | 2.67 |
| tblVehicleEF | HHD | 19.34 | 2.32 |
| tblVehicleEF | HHD | 6.5900e-003 | 2.5050e-003 |
| tblVehicleEF | HHD | 0.06 | 0.06 |
| tblVehicleEF | HHD | 0.04 | 0.04 |
| tblVehicleEF | HHD | 6.0790e-003 | 0.02 |
| tblVehicleEF | HHD | 1.1100e-004 | 1.0000e-006 |
| tblVehicleEF | HHD | 6.3050e-003 | 2.3970e-003 |
| tblVehicleEF | HHD | 0.03 | 0.03 |
| tblVehicleEF | HHD | 8.8400e-003 | 8.8870e-003 |
| tblVehicleEF | HHD | 5.8150e-003 | 0.02 |
| tblVehicleEF | HHD | 1.0200e-004 | 1.0000e-006 |
| tblVehicleEF | HHD | 9.5000e-005 | 2.0000e-006 |
| tblVehicleEF | HHD | 4.7640e-003 | 8.6000e-005 |
| tblVehicleEF | HHD | 0.40 | 0.43 |
| tblVehicleEF | HHD | 5.9000e-005 | 1.0000e-006 |
| tblVehicleEF | HHD | 0.09 | 0.03 |
| tblVehicleEF | HHD | 4.0600e-004 | 4.3400e-004 |
| tblVehicleEF | HHD | 0.08 | 2.0000e-006 |
| tblVehicleEF | HHD | 0.04 | 9.5860e-003 |
| tblVehicleEF | HHD | 0.01 | 0.01 |
| tblVehicleEF | HHD | 1.7700e-004 | 0.00 |
| tblVehicleEF | HHD | 9.5000e-005 | 2.0000e-006 |

| | | | |
|---|---|---|---|
| tblVehicleEF | HHD | 4.7640e-003 | 8.6000e-005 |
| tblVehicleEF | HHD | 0.46 | 0.49 |
| tblVehicleEF | HHD | 5.9000e-005 | 1.0000e-006 |
| tblVehicleEF | HHD | 0.15 | 0.08 |
| tblVehicleEF | HHD | 4.0600e-004 | 4.3400e-004 |
| tblVehicleEF | HHD | 0.09 | 3.0000e-006 |
| tblVehicleEF | LDA | 2.7870e-003 | 1.5230e-003 |
| tblVehicleEF | LDA | 3.6670e-003 | 0.04 |
| tblVehicleEF | LDA | 0.44 | 0.49 |
| tblVehicleEF | LDA | 0.90 | 2.01 |
| tblVehicleEF | LDA | 214.54 | 233.90 |
| tblVehicleEF | LDA | 50.82 | 49.70 |
| tblVehicleEF | LDA | 0.04 | 0.03 |
| tblVehicleEF | LDA | 0.05 | 0.16 |
| tblVehicleEF | LDA | 1.5710e-003 | 1.2450e-003 |
| tblVehicleEF | LDA | 2.2130e-003 | 1.6250e-003 |
| tblVehicleEF | LDA | 1.4470e-003 | 1.1470e-003 |
| tblVehicleEF | LDA | 2.0350e-003 | 1.4940e-003 |
| tblVehicleEF | LDA | 0.02 | 0.03 |
| tblVehicleEF | LDA | 0.08 | 0.08 |
| tblVehicleEF | LDA | 0.02 | 0.03 |
| tblVehicleEF | LDA | 6.9950e-003 | 5.5810e-003 |
| tblVehicleEF | LDA | 0.03 | 0.19 |
| tblVehicleEF | LDA | 0.05 | 0.18 |
| tblVehicleEF | LDA | 2.1480e-003 | 9.3000e-005 |
| tblVehicleEF | LDA | 5.2300e-004 | 0.00 |
| tblVehicleEF | LDA | 0.02 | 0.03 |
| tblVehicleEF | LDA | 0.08 | 0.08 |
| tblVehicleEF | LDA | 0.02 | 0.03 |
| tblVehicleEF | LDA | 0.01 | 8.1120e-003 |

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|---|---|---|---|
| tblVehicleEF | LDA | 0.03 | 0.19 |
| tblVehicleEF | LDA | 0.05 | 0.19 |
| tblVehicleEF | LDT1 | 6.2290e-003 | 3.1240e-003 |
| tblVehicleEF | LDT1 | 8.5310e-003 | 0.05 |
| tblVehicleEF | LDT1 | 0.83 | 0.78 |
| tblVehicleEF | LDT1 | 1.85 | 2.18 |
| tblVehicleEF | LDT1 | 271.39 | 280.79 |
| tblVehicleEF | LDT1 | 63.79 | 60.31 |
| tblVehicleEF | LDT1 | 0.08 | 0.06 |
| tblVehicleEF | LDT1 | 0.10 | 0.20 |
| tblVehicleEF | LDT1 | 2.0340e-003 | 1.5430e-003 |
| tblVehicleEF | LDT1 | 2.7490e-003 | 1.9900e-003 |
| tblVehicleEF | LDT1 | 1.8720e-003 | 1.4190e-003 |
| tblVehicleEF | LDT1 | 2.5270e-003 | 1.8300e-003 |
| tblVehicleEF | LDT1 | 0.07 | 0.07 |
| tblVehicleEF | LDT1 | 0.18 | 0.13 |
| tblVehicleEF | LDT1 | 0.06 | 0.06 |
| tblVehicleEF | LDT1 | 0.02 | 0.01 |
| tblVehicleEF | LDT1 | 0.13 | 0.50 |
| tblVehicleEF | LDT1 | 0.12 | 0.25 |
| tblVehicleEF | LDT1 | 2.7230e-003 | 2.6170e-003 |
| tblVehicleEF | LDT1 | 6.7000e-004 | 0.00 |
| tblVehicleEF | LDT1 | 0.07 | 0.07 |
| tblVehicleEF | LDT1 | 0.18 | 0.13 |
| tblVehicleEF | LDT1 | 0.06 | 0.06 |
| tblVehicleEF | LDT1 | 0.02 | 0.02 |
| tblVehicleEF | LDT1 | 0.13 | 0.50 |
| tblVehicleEF | LDT1 | 0.13 | 0.27 |
| tblVehicleEF | LDT2 | 4.2320e-003 | 2.6570e-003 |
| tblVehicleEF | LDT2 | 5.1880e-003 | 0.06 |

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|---|---|---|---|
| tblVehicleEF | LDT2 | 0.61 | 0.70 |
| tblVehicleEF | LDT2 | 1.22 | 2.62 |
| tblVehicleEF | LDT2 | 307.30 | 299.82 |
| tblVehicleEF | LDT2 | 71.92 | 64.96 |
| tblVehicleEF | LDT2 | 0.06 | 0.05 |
| tblVehicleEF | LDT2 | 0.08 | 0.23 |
| tblVehicleEF | LDT2 | 1.6620e-003 | 1.3110e-003 |
| tblVehicleEF | LDT2 | 2.3470e-003 | 1.6610e-003 |
| tblVehicleEF | LDT2 | 1.5280e-003 | 1.2070e-003 |
| tblVehicleEF | LDT2 | 2.1580e-003 | 1.5270e-003 |
| tblVehicleEF | LDT2 | 0.04 | 0.06 |
| tblVehicleEF | LDT2 | 0.09 | 0.11 |
| tblVehicleEF | LDT2 | 0.03 | 0.06 |
| tblVehicleEF | LDT2 | 0.01 | 0.01 |
| tblVehicleEF | LDT2 | 0.07 | 0.40 |
| tblVehicleEF | LDT2 | 0.07 | 0.26 |
| tblVehicleEF | LDT2 | 3.0770e-003 | 0.01 |
| tblVehicleEF | LDT2 | 7.3900e-004 | 8.9000e-005 |
| tblVehicleEF | LDT2 | 0.04 | 0.06 |
| tblVehicleEF | LDT2 | 0.09 | 0.11 |
| tblVehicleEF | LDT2 | 0.03 | 0.06 |
| tblVehicleEF | LDT2 | 0.02 | 0.02 |
| tblVehicleEF | LDT2 | 0.07 | 0.40 |
| tblVehicleEF | LDT2 | 0.08 | 0.29 |
| tblVehicleEF | LHD1 | 4.8850e-003 | 4.8220e-003 |
| tblVehicleEF | LHD1 | 0.01 | 7.2910e-003 |
| tblVehicleEF | LHD1 | 0.02 | 0.01 |
| tblVehicleEF | LHD1 | 0.14 | 0.18 |
| tblVehicleEF | LHD1 | 0.88 | 0.66 |
| tblVehicleEF | LHD1 | 2.27 | 1.01 |

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|---|---|---|---|
| tblVehicleEF | LHD1 | 8.98 | 8.77 |
| tblVehicleEF | LHD1 | 672.30 | 764.47 |
| tblVehicleEF | LHD1 | 30.64 | 11.28 |
| tblVehicleEF | LHD1 | 0.07 | 0.05 |
| tblVehicleEF | LHD1 | 0.91 | 0.57 |
| tblVehicleEF | LHD1 | 0.90 | 0.29 |
| tblVehicleEF | LHD1 | 8.5200e-004 | 8.5700e-004 |
| tblVehicleEF | LHD1 | 0.01 | 9.8070e-003 |
| tblVehicleEF | LHD1 | 0.01 | 9.0910e-003 |
| tblVehicleEF | LHD1 | 8.5600e-004 | 2.3900e-004 |
| tblVehicleEF | LHD1 | 8.1500e-004 | 8.2000e-004 |
| tblVehicleEF | LHD1 | 2.5500e-003 | 2.4520e-003 |
| tblVehicleEF | LHD1 | 0.01 | 8.6510e-003 |
| tblVehicleEF | LHD1 | 7.8700e-004 | 2.2000e-004 |
| tblVehicleEF | LHD1 | 2.4330e-003 | 1.8120e-003 |
| tblVehicleEF | LHD1 | 0.10 | 0.07 |
| tblVehicleEF | LHD1 | 0.02 | 0.02 |
| tblVehicleEF | LHD1 | 1.2680e-003 | 9.4400e-004 |
| tblVehicleEF | LHD1 | 0.11 | 0.09 |
| tblVehicleEF | LHD1 | 0.31 | 0.48 |
| tblVehicleEF | LHD1 | 0.22 | 0.06 |
| tblVehicleEF | LHD1 | 9.0000e-005 | 8.5000e-005 |
| tblVehicleEF | LHD1 | 6.5890e-003 | 7.4620e-003 |
| tblVehicleEF | LHD1 | 3.4900e-004 | 1.1200e-004 |
| tblVehicleEF | LHD1 | 2.4330e-003 | 1.8120e-003 |
| tblVehicleEF | LHD1 | 0.10 | 0.07 |
| tblVehicleEF | LHD1 | 0.02 | 0.03 |
| tblVehicleEF | LHD1 | 1.2680e-003 | 9.4400e-004 |
| tblVehicleEF | LHD1 | 0.13 | 0.10 |
| tblVehicleEF | LHD1 | 0.31 | 0.48 |

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|---|---|---|---|
| tblVehicleEF | LHD1 | 0.25 | 0.07 |
| tblVehicleEF | LHD2 | 3.0460e-003 | 2.9270e-003 |
| tblVehicleEF | LHD2 | 6.5970e-003 | 6.3420e-003 |
| tblVehicleEF | LHD2 | 5.2800e-003 | 7.0910e-003 |
| tblVehicleEF | LHD2 | 0.12 | 0.14 |
| tblVehicleEF | LHD2 | 0.51 | 0.56 |
| tblVehicleEF | LHD2 | 1.04 | 0.57 |
| tblVehicleEF | LHD2 | 13.87 | 13.74 |
| tblVehicleEF | LHD2 | 694.28 | 740.94 |
| tblVehicleEF | LHD2 | 23.21 | 7.36 |
| tblVehicleEF | LHD2 | 0.09 | 0.09 |
| tblVehicleEF | LHD2 | 0.50 | 0.68 |
| tblVehicleEF | LHD2 | 0.38 | 0.16 |
| tblVehicleEF | LHD2 | 1.1820e-003 | 1.4520e-003 |
| tblVehicleEF | LHD2 | 0.01 | 0.01 |
| tblVehicleEF | LHD2 | 0.01 | 0.01 |
| tblVehicleEF | LHD2 | 3.9000e-004 | 1.2200e-004 |
| tblVehicleEF | LHD2 | 1.1310e-003 | 1.3890e-003 |
| tblVehicleEF | LHD2 | 2.6980e-003 | 2.6970e-003 |
| tblVehicleEF | LHD2 | 0.01 | 0.01 |
| tblVehicleEF | LHD2 | 3.5800e-004 | 1.1200e-004 |
| tblVehicleEF | LHD2 | 6.9200e-004 | 9.1300e-004 |
| tblVehicleEF | LHD2 | 0.03 | 0.04 |
| tblVehicleEF | LHD2 | 0.01 | 0.02 |
| tblVehicleEF | LHD2 | 3.8500e-004 | 4.8500e-004 |
| tblVehicleEF | LHD2 | 0.10 | 0.11 |
| tblVehicleEF | LHD2 | 0.06 | 0.23 |
| tblVehicleEF | LHD2 | 0.07 | 0.04 |
| tblVehicleEF | LHD2 | 1.3500e-004 | 1.3100e-004 |
| tblVehicleEF | LHD2 | 6.7490e-003 | 7.1520e-003 |

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|---|---|---|---|
| tblVehicleEF | LHD2 | 2.5000e-004 | 7.3000e-005 |
| tblVehicleEF | LHD2 | 6.9200e-004 | 9.1300e-004 |
| tblVehicleEF | LHD2 | 0.03 | 0.04 |
| tblVehicleEF | LHD2 | 0.02 | 0.02 |
| tblVehicleEF | LHD2 | 3.8500e-004 | 4.8500e-004 |
| tblVehicleEF | LHD2 | 0.11 | 0.12 |
| tblVehicleEF | LHD2 | 0.06 | 0.23 |
| tblVehicleEF | LHD2 | 0.08 | 0.04 |
| tblVehicleEF | MCY | 0.45 | 0.32 |
| tblVehicleEF | MCY | 0.16 | 0.25 |
| tblVehicleEF | MCY | 18.24 | 18.37 |
| tblVehicleEF | MCY | 10.23 | 9.09 |
| tblVehicleEF | MCY | 170.37 | 210.00 |
| tblVehicleEF | MCY | 44.38 | 60.43 |
| tblVehicleEF | MCY | 1.14 | 1.14 |
| tblVehicleEF | MCY | 0.32 | 0.27 |
| tblVehicleEF | MCY | 2.0610e-003 | 2.0310e-003 |
| tblVehicleEF | MCY | 3.4990e-003 | 2.9300e-003 |
| tblVehicleEF | MCY | 1.9250e-003 | 1.8970e-003 |
| tblVehicleEF | MCY | 3.2870e-003 | 2.7510e-003 |
| tblVehicleEF | MCY | 0.89 | 1.80 |
| tblVehicleEF | MCY | 0.67 | 0.67 |
| tblVehicleEF | MCY | 0.48 | 0.97 |
| tblVehicleEF | MCY | 2.17 | 2.18 |
| tblVehicleEF | MCY | 0.56 | 1.82 |
| tblVehicleEF | MCY | 2.17 | 1.92 |
| tblVehicleEF | MCY | 2.0660e-003 | 2.0780e-003 |
| tblVehicleEF | MCY | 6.7500e-004 | 5.9800e-004 |
| tblVehicleEF | MCY | 0.89 | 1.80 |
| tblVehicleEF | MCY | 0.67 | 0.67 |

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|---|---|---|---|
| tblVehicleEF | MCY | 0.48 | 0.97 |
| tblVehicleEF | MCY | 2.70 | 2.71 |
| tblVehicleEF | MCY | 0.56 | 1.82 |
| tblVehicleEF | MCY | 2.36 | 2.09 |
| tblVehicleEF | MDV | 7.6840e-003 | 2.9890e-003 |
| tblVehicleEF | MDV | 0.01 | 0.06 |
| tblVehicleEF | MDV | 0.90 | 0.72 |
| tblVehicleEF | MDV | 2.22 | 2.81 |
| tblVehicleEF | MDV | 414.29 | 362.20 |
| tblVehicleEF | MDV | 95.41 | 77.24 |
| tblVehicleEF | MDV | 0.11 | 0.06 |
| tblVehicleEF | MDV | 0.19 | 0.26 |
| tblVehicleEF | MDV | 1.7530e-003 | 1.3780e-003 |
| tblVehicleEF | MDV | 2.4300e-003 | 1.7330e-003 |
| tblVehicleEF | MDV | 1.6150e-003 | 1.2710e-003 |
| tblVehicleEF | MDV | 2.2340e-003 | 1.5940e-003 |
| tblVehicleEF | MDV | 0.06 | 0.07 |
| tblVehicleEF | MDV | 0.15 | 0.12 |
| tblVehicleEF | MDV | 0.06 | 0.06 |
| tblVehicleEF | MDV | 0.02 | 0.01 |
| tblVehicleEF | MDV | 0.10 | 0.41 |
| tblVehicleEF | MDV | 0.16 | 0.31 |
| tblVehicleEF | MDV | 4.1460e-003 | 3.4720e-003 |
| tblVehicleEF | MDV | 9.9300e-004 | 7.4100e-004 |
| tblVehicleEF | MDV | 0.06 | 0.07 |
| tblVehicleEF | MDV | 0.15 | 0.12 |
| tblVehicleEF | MDV | 0.06 | 0.06 |
| tblVehicleEF | MDV | 0.03 | 0.02 |
| tblVehicleEF | MDV | 0.10 | 0.41 |
| tblVehicleEF | MDV | 0.18 | 0.34 |

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|---|---|---|---|
| tblVehicleEF | MH | 0.02 | 8.5740e-003 |
| tblVehicleEF | MH | 0.02 | 0.02 |
| tblVehicleEF | MH | 1.43 | 0.80 |
| tblVehicleEF | MH | 4.93 | 1.94 |
| tblVehicleEF | MH | 1,202.55 | 1,472.19 |
| tblVehicleEF | MH | 58.11 | 17.63 |
| tblVehicleEF | MH | 1.13 | 1.26 |
| tblVehicleEF | MH | 0.74 | 0.24 |
| tblVehicleEF | MH | 0.01 | 0.01 |
| tblVehicleEF | MH | 0.02 | 0.02 |
| tblVehicleEF | MH | 1.0400e-003 | 2.5000e-004 |
| tblVehicleEF | MH | 3.2210e-003 | 3.2830e-003 |
| tblVehicleEF | MH | 0.02 | 0.02 |
| tblVehicleEF | MH | 9.5600e-004 | 2.3000e-004 |
| tblVehicleEF | MH | 0.69 | 0.58 |
| tblVehicleEF | MH | 0.06 | 0.05 |
| tblVehicleEF | MH | 0.25 | 0.21 |
| tblVehicleEF | MH | 0.07 | 0.06 |
| tblVehicleEF | MH | 0.02 | 1.16 |
| tblVehicleEF | MH | 0.29 | 0.09 |
| tblVehicleEF | MH | 0.01 | 0.01 |
| tblVehicleEF | MH | 6.6700e-004 | 1.7400e-004 |
| tblVehicleEF | MH | 0.69 | 0.58 |
| tblVehicleEF | MH | 0.06 | 0.05 |
| tblVehicleEF | MH | 0.25 | 0.21 |
| tblVehicleEF | MH | 0.10 | 0.08 |
| tblVehicleEF | MH | 0.02 | 1.16 |
| tblVehicleEF | MH | 0.31 | 0.10 |
| tblVehicleEF | MHD | 0.02 | 3.6170e-003 |
| tblVehicleEF | MHD | 3.7120e-003 | 1.5120e-003 |

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|---|---|---|---|
| tblVehicleEF | MHD | 0.04 | 8.8700e-003 |
| tblVehicleEF | MHD | 0.37 | 0.39 |
| tblVehicleEF | MHD | 0.31 | 0.21 |
| tblVehicleEF | MHD | 4.99 | 1.02 |
| tblVehicleEF | MHD | 133.65 | 70.85 |
| tblVehicleEF | MHD | 1,182.56 | 1,065.91 |
| tblVehicleEF | MHD | 60.25 | 8.98 |
| tblVehicleEF | MHD | 0.36 | 0.40 |
| tblVehicleEF | MHD | 1.09 | 1.45 |
| tblVehicleEF | MHD | 10.18 | 1.70 |
| tblVehicleEF | MHD | 9.6000e-005 | 3.2300e-004 |
| tblVehicleEF | MHD | 3.1040e-003 | 7.0640e-003 |
| tblVehicleEF | MHD | 8.5200e-004 | 1.1300e-004 |
| tblVehicleEF | MHD | 9.1000e-005 | 3.0900e-004 |
| tblVehicleEF | MHD | 2.9630e-003 | 6.7520e-003 |
| tblVehicleEF | MHD | 7.8400e-004 | 1.0400e-004 |
| tblVehicleEF | MHD | 7.8000e-004 | 3.5500e-004 |
| tblVehicleEF | MHD | 0.04 | 0.02 |
| tblVehicleEF | MHD | 0.02 | 0.02 |
| tblVehicleEF | MHD | 4.2300e-004 | 1.8800e-004 |
| tblVehicleEF | MHD | 0.04 | 0.01 |
| tblVehicleEF | MHD | 0.02 | 0.09 |
| tblVehicleEF | MHD | 0.30 | 0.05 |
| tblVehicleEF | MHD | 1.2870e-003 | 6.7200e-004 |
| tblVehicleEF | MHD | 0.01 | 0.01 |
| tblVehicleEF | MHD | 6.9000e-004 | 8.9000e-005 |
| tblVehicleEF | MHD | 7.8000e-004 | 3.5500e-004 |
| tblVehicleEF | MHD | 0.04 | 0.02 |
| tblVehicleEF | MHD | 0.03 | 0.02 |
| tblVehicleEF | MHD | 4.2300e-004 | 1.8800e-004 |

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|---|---|---|---|
| tblVehicleEF | MHD | 0.05 | 0.02 |
| tblVehicleEF | MHD | 0.02 | 0.09 |
| tblVehicleEF | MHD | 0.33 | 0.05 |
| tblVehicleEF | OBUS | 0.01 | 7.0670e-003 |
| tblVehicleEF | OBUS | 5.3980e-003 | 3.3170e-003 |
| tblVehicleEF | OBUS | 0.02 | 0.02 |
| tblVehicleEF | OBUS | 0.24 | 0.60 |
| tblVehicleEF | OBUS | 0.39 | 0.39 |
| tblVehicleEF | OBUS | 4.64 | 1.79 |
| tblVehicleEF | OBUS | 101.21 | 94.25 |
| tblVehicleEF | OBUS | 1,288.15 | 1,303.83 |
| tblVehicleEF | OBUS | 66.36 | 14.82 |
| tblVehicleEF | OBUS | 0.22 | 0.39 |
| tblVehicleEF | OBUS | 0.92 | 1.46 |
| tblVehicleEF | OBUS | 2.67 | 1.10 |
| tblVehicleEF | OBUS | 2.0000e-005 | 1.2700e-004 |
| tblVehicleEF | OBUS | 2.8390e-003 | 7.4740e-003 |
| tblVehicleEF | OBUS | 8.5700e-004 | 1.4700e-004 |
| tblVehicleEF | OBUS | 1.9000e-005 | 1.2200e-004 |
| tblVehicleEF | OBUS | 2.6960e-003 | 7.1370e-003 |
| tblVehicleEF | OBUS | 7.8800e-004 | 1.3500e-004 |
| tblVehicleEF | OBUS | 1.1610e-003 | 1.0870e-003 |
| tblVehicleEF | OBUS | 0.02 | 0.02 |
| tblVehicleEF | OBUS | 0.03 | 0.05 |
| tblVehicleEF | OBUS | 5.1700e-004 | 4.8600e-004 |
| tblVehicleEF | OBUS | 0.04 | 0.02 |
| tblVehicleEF | OBUS | 0.03 | 0.18 |
| tblVehicleEF | OBUS | 0.29 | 0.09 |
| tblVehicleEF | OBUS | 9.7700e-004 | 8.9500e-004 |
| tblVehicleEF | OBUS | 0.01 | 0.01 |

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|---|---|---|---|
| tblVehicleEF | OBUS | 7.4500e-004 | 1.4700e-004 |
| tblVehicleEF | OBUS | 1.1610e-003 | 1.0870e-003 |
| tblVehicleEF | OBUS | 0.02 | 0.02 |
| tblVehicleEF | OBUS | 0.04 | 0.06 |
| tblVehicleEF | OBUS | 5.1700e-004 | 4.8600e-004 |
| tblVehicleEF | OBUS | 0.05 | 0.03 |
| tblVehicleEF | OBUS | 0.03 | 0.18 |
| tblVehicleEF | OBUS | 0.32 | 0.09 |
| tblVehicleEF | SBUS | 0.82 | 0.06 |
| tblVehicleEF | SBUS | 0.01 | 5.7290e-003 |
| tblVehicleEF | SBUS | 0.07 | 5.1560e-003 |
| tblVehicleEF | SBUS | 8.35 | 2.37 |
| tblVehicleEF | SBUS | 0.87 | 0.47 |
| tblVehicleEF | SBUS | 8.98 | 0.74 |
| tblVehicleEF | SBUS | 1,084.06 | 345.98 |
| tblVehicleEF | SBUS | 1,038.50 | 1,037.30 |
| tblVehicleEF | SBUS | 57.91 | 4.26 |
| tblVehicleEF | SBUS | 7.20 | 3.34 |
| tblVehicleEF | SBUS | 3.06 | 4.41 |
| tblVehicleEF | SBUS | 11.67 | 0.90 |
| tblVehicleEF | SBUS | 5.9830e-003 | 3.3290e-003 |
| tblVehicleEF | SBUS | 0.01 | 0.01 |
| tblVehicleEF | SBUS | 0.02 | 0.03 |
| tblVehicleEF | SBUS | 9.4800e-004 | 5.1000e-005 |
| tblVehicleEF | SBUS | 5.7240e-003 | 3.1850e-003 |
| tblVehicleEF | SBUS | 2.6150e-003 | 2.7110e-003 |
| tblVehicleEF | SBUS | 0.02 | 0.03 |
| tblVehicleEF | SBUS | 8.7200e-004 | 4.7000e-005 |
| tblVehicleEF | SBUS | 3.3380e-003 | 5.9800e-004 |
| tblVehicleEF | SBUS | 0.03 | 5.7950e-003 |

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|---|---|---|---|
| tblVehicleEF | SBUS | 0.99 | 0.26 |
| tblVehicleEF | SBUS | 1.5210e-003 | 2.6700e-004 |
| tblVehicleEF | SBUS | 0.10 | 0.08 |
| tblVehicleEF | SBUS | 0.02 | 0.04 |
| tblVehicleEF | SBUS | 0.45 | 0.03 |
| tblVehicleEF | SBUS | 0.01 | 3.2940e-003 |
| tblVehicleEF | SBUS | 0.01 | 9.9090e-003 |
| tblVehicleEF | SBUS | 7.3400e-004 | 4.2000e-005 |
| tblVehicleEF | SBUS | 3.3380e-003 | 5.9800e-004 |
| tblVehicleEF | SBUS | 0.03 | 5.7950e-003 |
| tblVehicleEF | SBUS | 1.43 | 0.38 |
| tblVehicleEF | SBUS | 1.5210e-003 | 2.6700e-004 |
| tblVehicleEF | SBUS | 0.12 | 0.09 |
| tblVehicleEF | SBUS | 0.02 | 0.04 |
| tblVehicleEF | SBUS | 0.49 | 0.03 |
| tblVehicleEF | UBUS | 0.23 | 1.66 |
| tblVehicleEF | UBUS | 0.04 | 1.6700e-003 |
| tblVehicleEF | UBUS | 3.99 | 12.57 |
| tblVehicleEF | UBUS | 7.27 | 0.14 |
| tblVehicleEF | UBUS | 2,026.89 | 1,657.49 |
| tblVehicleEF | UBUS | 110.88 | 1.39 |
| tblVehicleEF | UBUS | 7.88 | 0.71 |
| tblVehicleEF | UBUS | 14.06 | 0.01 |
| tblVehicleEF | UBUS | 0.58 | 0.07 |
| tblVehicleEF | UBUS | 0.01 | 0.03 |
| tblVehicleEF | UBUS | 0.17 | 5.2020e-003 |
| tblVehicleEF | UBUS | 1.1660e-003 | 1.5000e-005 |
| tblVehicleEF | UBUS | 0.25 | 0.03 |
| tblVehicleEF | UBUS | 3.0000e-003 | 8.3320e-003 |
| tblVehicleEF | UBUS | 0.16 | 4.9760e-003 |

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|---|---|---|---|
| tblVehicleEF | UBUS | 1.0720e-003 | 1.4000e-005 |
| tblVehicleEF | UBUS | 2.0210e-003 | 2.4000e-005 |
| tblVehicleEF | UBUS | 0.03 | 2.0100e-004 |
| tblVehicleEF | UBUS | 1.0840e-003 | 1.1000e-005 |
| tblVehicleEF | UBUS | 0.41 | 0.02 |
| tblVehicleEF | UBUS | 7.6040e-003 | 1.1110e-003 |
| tblVehicleEF | UBUS | 0.57 | 6.9810e-003 |
| tblVehicleEF | UBUS | 0.02 | 0.01 |
| tblVehicleEF | UBUS | 1.2400e-003 | 1.4000e-005 |
| tblVehicleEF | UBUS | 2.0210e-003 | 2.4000e-005 |
| tblVehicleEF | UBUS | 0.03 | 2.0100e-004 |
| tblVehicleEF | UBUS | 1.0840e-003 | 1.1000e-005 |
| tblVehicleEF | UBUS | 0.68 | 1.70 |
| tblVehicleEF | UBUS | 7.6040e-003 | 1.1110e-003 |
| tblVehicleEF | UBUS | 0.62 | 7.6430e-003 |
| tblVehicleTrips | ST_TR | 2.46 | 1.50 |
| tblVehicleTrips | ST_TR | 42.04 | 29.36 |
| tblVehicleTrips | SU_TR | 1.05 | 0.64 |
| tblVehicleTrips | SU_TR | 20.43 | 14.27 |
| tblVehicleTrips | WD_TR | 11.03 | 6.73 |
| tblVehicleTrips | WD_TR | 44.32 | 30.95 |
| 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 | SepticTankPercent | 10.33 | 0.00 |
| tblWater | SepticTankPercent | 10.33 | 0.00 |
| tblWater | SepticTankPercent | 10.33 | 0.00 |

## 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 | 2.4664 | 8.0000e-005 | 8.2800e-003 | 0.0000 | | 3.0000e-005 | 3.0000e-005 | | 3.0000e-005 | 3.0000e-005 | 0.0000 | 0.0161 | 0.0161 | 4.0000e-005 | 0.0000 | 0.0172 |
| Energy | 0.0474 | 0.4309 | 0.3620 | 2.5900e-003 | | 0.0328 | 0.0328 | | 0.0328 | 0.0328 | 0.0000 | 1,483.0998 | 1,483.0998 | 0.1517 | 0.0381 | 1,498.2571 |
| Mobile | 1.0649 | 1.6781 | 8.4750 | 0.0250 | 2.7342 | 0.0200 | 2.7541 | 0.7315 | 0.0187 | 0.7502 | 0.0000 | 2,426.7961 | 2,426.7961 | 0.1056 | 0.0000 | 2,429.4347 |
| Stationary | 0.1099 | 0.4917 | 0.2804 | 5.3000e-004 | | 0.0162 | 0.0162 | | 0.0162 | 0.0162 | 0.0000 | 51.0268 | 51.0268 | 7.1500e-003 | 0.0000 | 51.2057 |
| Waste | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 104.9078 | 0.0000 | 104.9078 | 6.1999 | 0.0000 | 259.9045 |
| Water | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 34.0935 | 68.0372 | 102.1307 | 0.1269 | 0.0761 | 127.9888 |
| **Total** | **3.6886** | **2.6008** | **9.1256** | **0.0281** | **2.7342** | **0.0689** | **2.8031** | **0.7315** | **0.0676** | **0.7991** | **139.0013** | **4,028.9760** | **4,167.9773** | **6.5913** | **0.1143** | **4,366.8080** |

#### 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 | 2.4664 | 8.0000e-005 | 8.2800e-003 | 0.0000 | | 3.0000e-005 | 3.0000e-005 | | 3.0000e-005 | 3.0000e-005 | 0.0000 | 0.0161 | 0.0161 | 4.0000e-005 | 0.0000 | 0.0172 |
| Energy | 0.0474 | 0.4309 | 0.3620 | 2.5900e-003 | | 0.0328 | 0.0328 | | 0.0328 | 0.0328 | 0.0000 | 469.1106 | 469.1106 | 8.9900e-003 | 8.6000e-003 | 471.8983 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mobile | 1.0649 | 1.6781 | 8.4750 | 0.0250 | 2.7342 | 0.0200 | 2.7541 | 0.7315 | 0.0187 | 0.7502 | 0.0000 | 2,426.7961 | 2,426.7961 | 0.1056 | 0.0000 | 2,429.43 |
| Stationary | 0.1099 | 0.4917 | 0.2804 | 5.3000e-004 | | 0.0162 | 0.0162 | | 0.0162 | 0.0162 | 0.0000 | 51.0268 | 51.0268 | 7.1500e-003 | 0.0000 | 51.2057 |
| Waste | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 104.9078 | 0.0000 | 104.9078 | 6.1999 | 0.0000 | 259.9045 |
| Water | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 34.0935 | 68.0372 | 102.1307 | 0.1269 | 0.0761 | 127.9888 |
| **Total** | **3.6886** | **2.6008** | **9.1256** | **0.0281** | **2.7342** | **0.0689** | **2.8031** | **0.7315** | **0.0676** | **0.7991** | **139.0013** | **3,014.9868** | **3,153.9881** | **6.4485** | **0.0847** | **3,340.4492** |

| | 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** | **25.17** | **24.33** | **2.17** | **25.85** | **23.50** |

# 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 | 1.0649 | 1.6781 | 8.4750 | 0.0250 | 2.7342 | 0.0200 | 2.7541 | 0.7315 | 0.0187 | 0.7502 | 0.0000 | 2,426.7961 | 2,426.7961 | 0.1056 | 0.0000 | 2,429.4347 |
| Unmitigated | 1.0649 | 1.6781 | 8.4750 | 0.0250 | 2.7342 | 0.0200 | 2.7541 | 0.7315 | 0.0187 | 0.7502 | 0.0000 | 2,426.7961 | 2,426.7961 | 0.1056 | 0.0000 | 2,429.4347 |

## 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| Enclosed Parking with Elevator | 0.00 | 0.00 | 0.00 | | |

| | | | | | |
|---|---|---|---|---|---|
| General Office Building | 3,595.57 | 801.39 | 341.93 | 6,527,837 | 6,527,837 |
| Strip Mall | 588.05 | 557.84 | 271.13 | 829,246 | 829,246 |
| Total | 4,183.62 | 1,359.23 | 613.06 | 7,357,083 | 7,357,083 |

### 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 |
| 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Enclosed Parking with Elevator | 0.593223 | 0.053202 | 0.175286 | 0.106474 | 0.020914 | 0.005346 | 0.013515 | 0.022567 | 0.001555 | 0.001235 | 0.005021 | 0.000916 | 0.000746 |
| General Office Building | 0.593223 | 0.053202 | 0.175286 | 0.106474 | 0.020914 | 0.005346 | 0.013515 | 0.022567 | 0.001555 | 0.001235 | 0.005021 | 0.000916 | 0.000746 |
| Strip Mall | 0.593223 | 0.053202 | 0.175286 | 0.106474 | 0.020914 | 0.005346 | 0.013515 | 0.022567 | 0.001555 | 0.001235 | 0.005021 | 0.000916 | 0.000746 |

## 5.0 Energy Detail

Historical Energy Use: N

### 5.1 Mitigation Measures Energy

Percent of Electricity Use Generated with Renewable Energy

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Electricity Mitigated | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Electricity Unmitigated | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 1,013.9892 | 1,013.9892 | 0.1428 | 0.0295 | 1,026.3588 |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NaturalGas Mitigated | 0.0474 | 0.4309 | 0.3620 | 2.5900e-003 | | 0.0328 | 0.0328 | | 0.0328 | 0.0328 | 0.0000 | 469.1106 | 469.1106 | 8.9900e-003 | 8.6000e-003 | 471.8983 |
| NaturalGas Unmitigated | 0.0474 | 0.4309 | 0.3620 | 2.5900e-003 | | 0.0328 | 0.0328 | | 0.0328 | 0.0328 | 0.0000 | 469.1106 | 469.1106 | 8.9900e-003 | 8.6000e-003 | 471.8983 |

## 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 | | | | | |
| 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 | 8.74577e+006 | 0.0472 | 0.4287 | 0.3601 | 2.5700e-003 | | 0.0326 | 0.0326 | | 0.0326 | 0.0326 | 0.0000 | 466.7076 | 466.7076 | 8.9500e-003 | 8.5600e-003 | 469.4810 |
| Strip Mall | 45030 | 2.4000e-004 | 2.2100e-003 | 1.8500e-003 | 1.0000e-005 | | 1.7000e-004 | 1.7000e-004 | | 1.7000e-004 | 1.7000e-004 | 0.0000 | 2.4030 | 2.4030 | 5.0000e-005 | 4.0000e-005 | 2.4173 |
| **Total** | | **0.0474** | **0.4309** | **0.3620** | **2.5800e-003** | | **0.0328** | **0.0328** | | **0.0328** | **0.0328** | **0.0000** | **469.1106** | **469.1106** | **9.0000e-003** | **8.6000e-003** | **471.8983** |

### 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 | | | | | |
| 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 | 8.74577e+006 | 0.0472 | 0.4287 | 0.3601 | 2.5700e-003 | | 0.0326 | 0.0326 | | 0.0326 | 0.0326 | 0.0000 | 466.7076 | 466.7076 | 8.9500e-003 | 8.5600e-003 | 469.4810 |
| Strip Mall | 45030 | 2.4000e-004 | 2.2100e-003 | 1.8500e-003 | 1.0000e-005 | | 1.7000e-004 | 1.7000e-004 | | 1.7000e-004 | 1.7000e-004 | 0.0000 | 2.4030 | 2.4030 | 5.0000e-005 | 4.0000e-005 | 2.4173 |
| **Total** | | **0.0474** | **0.4309** | **0.3620** | **2.5800e-003** | | **0.0328** | **0.0328** | | **0.0328** | **0.0328** | **0.0000** | **469.1106** | **469.1106** | **9.0000e-003** | **8.6000e-003** | **471.8983** |

## 5.3 Energy by Land Use - Electricity

**Unmitigated**

| | Electricity Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | kWh/yr | MT/yr | | | |
| Enclosed Parking with Elevator | 1.12287e+006 | 104.9210 | 0.0148 | 3.0600e-003 | 106.2009 |
| General Office Building | 9.52578e+006 | 890.0896 | 0.1253 | 0.0259 | 900.9478 |
| Strip Mall | 203110 | 18.9786 | 2.6700e-003 | 5.5000e-004 | 19.2101 |
| **Total** | | **1,013.9892** | **0.1427** | **0.0295** | **1,026.3588** |

**Mitigated**

| | Electricity Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | kWh/yr | MT/yr | | | |
| Enclosed Parking with Elevator | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| General Office Building | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Strip Mall | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

# 6.0 Area Detail

## 6.1 Mitigation Measures Area

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Mitigated | 2.4664 | 8.0000e-005 | 8.2800e-003 | 0.0000 | | 3.0000e-005 | 3.0000e-005 | | 3.0000e-005 | 3.0000e-005 | 0.0000 | 0.0161 | 0.0161 | 4.0000e-005 | 0.0000 | 0.0172 |
| Unmitigated | 2.4664 | 8.0000e-005 | 8.2800e-003 | 0.0000 | | 3.0000e-005 | 3.0000e-005 | | 3.0000e-005 | 3.0000e-005 | 0.0000 | 0.0161 | 0.0161 | 4.0000e-005 | 0.0000 | 0.0172 |

## 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 | 0.2925 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Consumer Products | 2.1731 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Landscaping | 7.6000e-004 | 8.0000e-005 | 8.2800e-003 | 0.0000 | | 3.0000e-005 | 3.0000e-005 | | 3.0000e-005 | 3.0000e-005 | 0.0000 | 0.0161 | 0.0161 | 4.0000e-005 | 0.0000 | 0.0172 |
| **Total** | **2.4664** | **8.0000e-005** | **8.2800e-003** | **0.0000** | | **3.0000e-005** | **3.0000e-005** | | **3.0000e-005** | **3.0000e-005** | **0.0000** | **0.0161** | **0.0161** | **4.0000e-005** | **0.0000** | **0.0172** |

**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 | 0.2925 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Consumer Products | 2.1731 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Landscaping | 7.6000e-004 | 8.0000e-005 | 8.2800e-003 | 0.0000 | | 3.0000e-005 | 3.0000e-005 | | 3.0000e-005 | 3.0000e-005 | 0.0000 | 0.0161 | 0.0161 | 4.0000e-005 | 0.0000 | 0.0172 |
| **Total** | **2.4664** | **8.0000e-005** | **8.2800e-003** | **0.0000** | | **3.0000e-005** | **3.0000e-005** | | **3.0000e-005** | **3.0000e-005** | **0.0000** | **0.0161** | **0.0161** | **4.0000e-005** | **0.0000** | **0.0172** |

# 7.0 Water Detail

## 7.1 Mitigation Measures Water

| | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|
| Category | MT/yr | | | |
| Mitigated | 102.1307 | 0.1269 | 0.0761 | 127.9888 |
| Unmitigated | 102.1307 | 0.1269 | 0.0761 | 127.9888 |

## 7.2 Water by Land Use

**Unmitigated**

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

| | | | | | |
|---|---|---|---|---|---|
| Enclosed Parking with Elevator | 0 / 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| General Office Building | 94.956 / 58.1989 | 100.6391 | 0.1251 | 0.0750 | 126.1195 |
| Strip Mall | 1.40738 / 0.862586 | 1.4916 | 1.8500e-003 | 1.1100e-003 | 1.8693 |
| **Total** | | **102.1307** | **0.1269** | **0.0761** | **127.9888** |

**Mitigated**

| | Indoor/Outdoor Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | Mgal | MT/yr | | | |
| Enclosed Parking with Elevator | 0 / 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| General Office Building | 94.956 / 58.1989 | 100.6391 | 0.1251 | 0.0750 | 126.1195 |
| Strip Mall | 1.40738 / 0.862586 | 1.4916 | 1.8500e-003 | 1.1100e-003 | 1.8693 |
| **Total** | | **102.1307** | **0.1269** | **0.0761** | **127.9888** |

## 8.0 Waste Detail

### 8.1 Mitigation Measures Waste

**Category/Year**

| | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|
| | MT/yr | | | |

| | | | | |
|---|---|---|---|---|
| Mitigated | 104.9078 | 6.1999 | 0.0000 | 259.9045 |
| Unmitigated | 104.9078 | 6.1999 | 0.0000 | 259.9045 |

## 8.2 Waste by Land Use

### Unmitigated

| | Waste Disposed | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | tons | MT/yr | | | |
| Enclosed Parking with Elevator | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| General Office Building | 496.86 | 100.8581 | 5.9605 | 0.0000 | 249.8717 |
| Strip Mall | 19.95 | 4.0497 | 0.2393 | 0.0000 | 10.0329 |
| **Total** | | **104.9078** | **6.1999** | **0.0000** | **259.9045** |

### Mitigated

| | Waste Disposed | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | tons | MT/yr | | | |
| Enclosed Parking with Elevator | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| General Office Building | 496.86 | 100.8581 | 5.9605 | 0.0000 | 249.8717 |
| Strip Mall | 19.95 | 4.0497 | 0.2393 | 0.0000 | 10.0329 |
| **Total** | | **104.9078** | **6.1999** | **0.0000** | **259.9045** |

## 9.0 Operational Offroad

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

## 10.0 Stationary Equipment

### Fire Pumps and Emergency Generators

| Equipment Type | Number | Hours/Day | Hours/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|
| Emergency Generator | 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) | 0.1099 | 0.4917 | 0.2804 | 5.3000e-004 | | 0.0162 | 0.0162 | | 0.0162 | 0.0162 | 0.0000 | 51.0268 | 51.0268 | 7.1500e-003 | 0.0000 | 51.2057 |
| **Total** | **0.1099** | **0.4917** | **0.2804** | **5.3000e-004** | | **0.0162** | **0.0162** | | **0.0162** | **0.0162** | **0.0000** | **51.0268** | **51.0268** | **7.1500e-003** | **0.0000** | **51.2057** |

## 11.0 Vegetation

# Arbor Office, San Jose - Existing

**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 | 62.00 | 1000sqft | 1.42 | 62,000.00 | 0 |
| Parking Lot | 1.20 | Acre | 1.20 | 52,272.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 2.2 | **Precipitation Freq (Days)** | 58 |
| **Climate Zone** | 4 | | | **Operational Year** | 2025 |
| **Utility Company** | Pacific Gas & Electric Company | | | | |
| **CO2 Intensity (lb/MWhr)** | 641.35 | **CH4 Intensity (lb/MWhr)** | 0.029 | **N2O Intensity (lb/MWhr)** | 0.006 |

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Existing land uses, default acreage

Construction Phase - No construction, existing operational run only

Off-road Equipment - No construction, existing operational run only

Grading - No construction, existing operational run only

Trips and VMT - No construction, existing operational run only

Vehicle Trips - Provided trip generation with reductions, office = 6.74, 1.5, 0.64

Vehicle Emission Factors - EMFAC2017 Santa Clara County 2025 Emission Factors

Energy Use - Historical energy use

Water And Wastewater -

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblConstructionPhase | NumDays | 3.00 | 1.00 |
| tblConstructionPhase | PhaseEndDate | 2/2/2022 | 1/31/2022 |
| tblEnergyUse | LightingElect | 4.72 | 3.88 |
| tblEnergyUse | LightingElect | 0.88 | 0.35 |
| tblEnergyUse | T24E | 8.01 | 6.11 |
| tblEnergyUse | T24NG | 19.90 | 16.31 |
| tblFleetMix | HHD | 0.02 | 0.02 |
| tblFleetMix | HHD | 0.02 | 0.02 |
| tblFleetMix | LDA | 0.62 | 0.59 |
| tblFleetMix | LDA | 0.62 | 0.59 |
| tblFleetMix | LDT1 | 0.04 | 0.05 |
| tblFleetMix | LDT1 | 0.04 | 0.05 |
| tblFleetMix | LDT2 | 0.18 | 0.18 |
| tblFleetMix | LDT2 | 0.18 | 0.18 |
| tblFleetMix | LHD1 | 0.01 | 0.02 |
| tblFleetMix | LHD1 | 0.01 | 0.02 |
| tblFleetMix | LHD2 | 5.0160e-003 | 5.3460e-003 |
| tblFleetMix | LHD2 | 5.0160e-003 | 5.3460e-003 |
| tblFleetMix | MCY | 5.2190e-003 | 5.0208e-003 |
| tblFleetMix | MCY | 5.2190e-003 | 5.0208e-003 |
| tblFleetMix | MDV | 0.10 | 0.11 |
| tblFleetMix | MDV | 0.10 | 0.11 |
| tblFleetMix | MH | 6.9100e-004 | 7.4594e-004 |
| tblFleetMix | MH | 6.9100e-004 | 7.4594e-004 |
| tblFleetMix | MHD | 0.01 | 0.01 |
| tblFleetMix | MHD | 0.01 | 0.01 |
| tblFleetMix | OBUS | 2.1830e-003 | 1.5554e-003 |

| | | | |
|---|---|---|---|
| tblFleetMix | OBUS | 2.1830e-003 | 1.5554e-003 |
| tblFleetMix | SBUS | 6.3400e-004 | 9.1613e-004 |
| tblFleetMix | SBUS | 6.3400e-004 | 9.1613e-004 |
| tblFleetMix | UBUS | 1.5080e-003 | 1.2346e-003 |
| tblFleetMix | UBUS | 1.5080e-003 | 1.2346e-003 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 7.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblVehicleEF | HHD | 0.32 | 0.02 |
| tblVehicleEF | HHD | 0.05 | 0.05 |
| tblVehicleEF | HHD | 0.07 | 0.00 |
| tblVehicleEF | HHD | 1.54 | 6.32 |
| tblVehicleEF | HHD | 0.93 | 0.41 |
| tblVehicleEF | HHD | 3.69 | 5.9250e-003 |
| tblVehicleEF | HHD | 4,258.83 | 1,030.26 |
| tblVehicleEF | HHD | 1,538.25 | 1,386.58 |
| tblVehicleEF | HHD | 11.71 | 0.05 |
| tblVehicleEF | HHD | 13.31 | 5.35 |
| tblVehicleEF | HHD | 1.86 | 2.67 |
| tblVehicleEF | HHD | 19.34 | 2.32 |
| tblVehicleEF | HHD | 6.5900e-003 | 2.5050e-003 |
| tblVehicleEF | HHD | 0.06 | 0.06 |
| tblVehicleEF | HHD | 0.04 | 0.04 |
| tblVehicleEF | HHD | 6.0790e-003 | 0.02 |
| tblVehicleEF | HHD | 1.1100e-004 | 1.0000e-006 |
| tblVehicleEF | HHD | 6.3050e-003 | 2.3970e-003 |
| tblVehicleEF | HHD | 0.03 | 0.03 |

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|---|---|---|---|
| tblVehicleEF | HHD | 8.8400e-003 | 8.8870e-003 |
| tblVehicleEF | HHD | 5.8150e-003 | 0.02 |
| tblVehicleEF | HHD | 1.0200e-004 | 1.0000e-006 |
| tblVehicleEF | HHD | 9.5000e-005 | 2.0000e-006 |
| tblVehicleEF | HHD | 4.7640e-003 | 8.6000e-005 |
| tblVehicleEF | HHD | 0.40 | 0.43 |
| tblVehicleEF | HHD | 5.9000e-005 | 1.0000e-006 |
| tblVehicleEF | HHD | 0.09 | 0.03 |
| tblVehicleEF | HHD | 4.0600e-004 | 4.3400e-004 |
| tblVehicleEF | HHD | 0.08 | 2.0000e-006 |
| tblVehicleEF | HHD | 0.04 | 9.5860e-003 |
| tblVehicleEF | HHD | 0.01 | 0.01 |
| tblVehicleEF | HHD | 1.7700e-004 | 0.00 |
| tblVehicleEF | HHD | 9.5000e-005 | 2.0000e-006 |
| tblVehicleEF | HHD | 4.7640e-003 | 8.6000e-005 |
| tblVehicleEF | HHD | 0.46 | 0.49 |
| tblVehicleEF | HHD | 5.9000e-005 | 1.0000e-006 |
| tblVehicleEF | HHD | 0.15 | 0.08 |
| tblVehicleEF | HHD | 4.0600e-004 | 4.3400e-004 |
| tblVehicleEF | HHD | 0.09 | 3.0000e-006 |
| tblVehicleEF | LDA | 2.7870e-003 | 1.5230e-003 |
| tblVehicleEF | LDA | 3.6670e-003 | 0.04 |
| tblVehicleEF | LDA | 0.44 | 0.49 |
| tblVehicleEF | LDA | 0.90 | 2.01 |
| tblVehicleEF | LDA | 214.54 | 233.90 |
| tblVehicleEF | LDA | 50.82 | 49.70 |
| tblVehicleEF | LDA | 0.04 | 0.03 |
| tblVehicleEF | LDA | 0.05 | 0.16 |
| tblVehicleEF | LDA | 1.5710e-003 | 1.2450e-003 |
| tblVehicleEF | LDA | 2.2130e-003 | 1.6250e-003 |

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|---|---|---|---|
| tblVehicleEF | LDA | 1.4470e-003 | 1.1470e-003 |
| tblVehicleEF | LDA | 2.0350e-003 | 1.4940e-003 |
| tblVehicleEF | LDA | 0.02 | 0.03 |
| tblVehicleEF | LDA | 0.08 | 0.08 |
| tblVehicleEF | LDA | 0.02 | 0.03 |
| tblVehicleEF | LDA | 6.9950e-003 | 5.5810e-003 |
| tblVehicleEF | LDA | 0.03 | 0.19 |
| tblVehicleEF | LDA | 0.05 | 0.18 |
| tblVehicleEF | LDA | 2.1480e-003 | 9.3000e-005 |
| tblVehicleEF | LDA | 5.2300e-004 | 0.00 |
| tblVehicleEF | LDA | 0.02 | 0.03 |
| tblVehicleEF | LDA | 0.08 | 0.08 |
| tblVehicleEF | LDA | 0.02 | 0.03 |
| tblVehicleEF | LDA | 0.01 | 8.1120e-003 |
| tblVehicleEF | LDA | 0.03 | 0.19 |
| tblVehicleEF | LDA | 0.05 | 0.19 |
| tblVehicleEF | LDT1 | 6.2290e-003 | 3.1240e-003 |
| tblVehicleEF | LDT1 | 8.5310e-003 | 0.05 |
| tblVehicleEF | LDT1 | 0.83 | 0.78 |
| tblVehicleEF | LDT1 | 1.85 | 2.18 |
| tblVehicleEF | LDT1 | 271.39 | 280.79 |
| tblVehicleEF | LDT1 | 63.79 | 60.31 |
| tblVehicleEF | LDT1 | 0.08 | 0.06 |
| tblVehicleEF | LDT1 | 0.10 | 0.20 |
| tblVehicleEF | LDT1 | 2.0340e-003 | 1.5430e-003 |
| tblVehicleEF | LDT1 | 2.7490e-003 | 1.9900e-003 |
| tblVehicleEF | LDT1 | 1.8720e-003 | 1.4190e-003 |
| tblVehicleEF | LDT1 | 2.5270e-003 | 1.8300e-003 |
| tblVehicleEF | LDT1 | 0.07 | 0.07 |
| tblVehicleEF | LDT1 | 0.18 | 0.13 |

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|---|---|---|---|
| tblVehicleEF | LDT1 | 0.06 | 0.06 |
| tblVehicleEF | LDT1 | 0.02 | 0.01 |
| tblVehicleEF | LDT1 | 0.13 | 0.50 |
| tblVehicleEF | LDT1 | 0.12 | 0.25 |
| tblVehicleEF | LDT1 | 2.7230e-003 | 2.6170e-003 |
| tblVehicleEF | LDT1 | 6.7000e-004 | 0.00 |
| tblVehicleEF | LDT1 | 0.07 | 0.07 |
| tblVehicleEF | LDT1 | 0.18 | 0.13 |
| tblVehicleEF | LDT1 | 0.06 | 0.06 |
| tblVehicleEF | LDT1 | 0.02 | 0.02 |
| tblVehicleEF | LDT1 | 0.13 | 0.50 |
| tblVehicleEF | LDT1 | 0.13 | 0.27 |
| tblVehicleEF | LDT2 | 4.2320e-003 | 2.6570e-003 |
| tblVehicleEF | LDT2 | 5.1880e-003 | 0.06 |
| tblVehicleEF | LDT2 | 0.61 | 0.70 |
| tblVehicleEF | LDT2 | 1.22 | 2.62 |
| tblVehicleEF | LDT2 | 307.30 | 299.82 |
| tblVehicleEF | LDT2 | 71.92 | 64.96 |
| tblVehicleEF | LDT2 | 0.06 | 0.05 |
| tblVehicleEF | LDT2 | 0.08 | 0.23 |
| tblVehicleEF | LDT2 | 1.6620e-003 | 1.3110e-003 |
| tblVehicleEF | LDT2 | 2.3470e-003 | 1.6610e-003 |
| tblVehicleEF | LDT2 | 1.5280e-003 | 1.2070e-003 |
| tblVehicleEF | LDT2 | 2.1580e-003 | 1.5270e-003 |
| tblVehicleEF | LDT2 | 0.04 | 0.06 |
| tblVehicleEF | LDT2 | 0.09 | 0.11 |
| tblVehicleEF | LDT2 | 0.03 | 0.06 |
| tblVehicleEF | LDT2 | 0.01 | 0.01 |
| tblVehicleEF | LDT2 | 0.07 | 0.40 |
| tblVehicleEF | LDT2 | 0.07 | 0.26 |

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|---|---|---|---|
| tblVehicleEF | LDT2 | 3.0770e-003 | 0.01 |
| tblVehicleEF | LDT2 | 7.3900e-004 | 8.9000e-005 |
| tblVehicleEF | LDT2 | 0.04 | 0.06 |
| tblVehicleEF | LDT2 | 0.09 | 0.11 |
| tblVehicleEF | LDT2 | 0.03 | 0.06 |
| tblVehicleEF | LDT2 | 0.02 | 0.02 |
| tblVehicleEF | LDT2 | 0.07 | 0.40 |
| tblVehicleEF | LDT2 | 0.08 | 0.29 |
| tblVehicleEF | LHD1 | 4.8850e-003 | 4.8220e-003 |
| tblVehicleEF | LHD1 | 0.01 | 7.2910e-003 |
| tblVehicleEF | LHD1 | 0.02 | 0.01 |
| tblVehicleEF | LHD1 | 0.14 | 0.18 |
| tblVehicleEF | LHD1 | 0.88 | 0.66 |
| tblVehicleEF | LHD1 | 2.27 | 1.01 |
| tblVehicleEF | LHD1 | 8.98 | 8.77 |
| tblVehicleEF | LHD1 | 672.30 | 764.47 |
| tblVehicleEF | LHD1 | 30.64 | 11.28 |
| tblVehicleEF | LHD1 | 0.07 | 0.05 |
| tblVehicleEF | LHD1 | 0.91 | 0.57 |
| tblVehicleEF | LHD1 | 0.90 | 0.29 |
| tblVehicleEF | LHD1 | 8.5200e-004 | 8.5700e-004 |
| tblVehicleEF | LHD1 | 0.01 | 9.8070e-003 |
| tblVehicleEF | LHD1 | 0.01 | 9.0910e-003 |
| tblVehicleEF | LHD1 | 8.5600e-004 | 2.3900e-004 |
| tblVehicleEF | LHD1 | 8.1500e-004 | 8.2000e-004 |
| tblVehicleEF | LHD1 | 2.5500e-003 | 2.4520e-003 |
| tblVehicleEF | LHD1 | 0.01 | 8.6510e-003 |
| tblVehicleEF | LHD1 | 7.8700e-004 | 2.2000e-004 |
| tblVehicleEF | LHD1 | 2.4330e-003 | 1.8120e-003 |
| tblVehicleEF | LHD1 | 0.10 | 0.07 |

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|---|---|---|---|
| tblVehicleEF | LHD1 | 0.02 | 0.02 |
| tblVehicleEF | LHD1 | 1.2680e-003 | 9.4400e-004 |
| tblVehicleEF | LHD1 | 0.11 | 0.09 |
| tblVehicleEF | LHD1 | 0.31 | 0.48 |
| tblVehicleEF | LHD1 | 0.22 | 0.06 |
| tblVehicleEF | LHD1 | 9.0000e-005 | 8.5000e-005 |
| tblVehicleEF | LHD1 | 6.5890e-003 | 7.4620e-003 |
| tblVehicleEF | LHD1 | 3.4900e-004 | 1.1200e-004 |
| tblVehicleEF | LHD1 | 2.4330e-003 | 1.8120e-003 |
| tblVehicleEF | LHD1 | 0.10 | 0.07 |
| tblVehicleEF | LHD1 | 0.02 | 0.03 |
| tblVehicleEF | LHD1 | 1.2680e-003 | 9.4400e-004 |
| tblVehicleEF | LHD1 | 0.13 | 0.10 |
| tblVehicleEF | LHD1 | 0.31 | 0.48 |
| tblVehicleEF | LHD1 | 0.25 | 0.07 |
| tblVehicleEF | LHD2 | 3.0460e-003 | 2.9270e-003 |
| tblVehicleEF | LHD2 | 6.5970e-003 | 6.3420e-003 |
| tblVehicleEF | LHD2 | 5.2800e-003 | 7.0910e-003 |
| tblVehicleEF | LHD2 | 0.12 | 0.14 |
| tblVehicleEF | LHD2 | 0.51 | 0.56 |
| tblVehicleEF | LHD2 | 1.04 | 0.57 |
| tblVehicleEF | LHD2 | 13.87 | 13.74 |
| tblVehicleEF | LHD2 | 694.28 | 740.94 |
| tblVehicleEF | LHD2 | 23.21 | 7.36 |
| tblVehicleEF | LHD2 | 0.09 | 0.09 |
| tblVehicleEF | LHD2 | 0.50 | 0.68 |
| tblVehicleEF | LHD2 | 0.38 | 0.16 |
| tblVehicleEF | LHD2 | 1.1820e-003 | 1.4520e-003 |
| tblVehicleEF | LHD2 | 0.01 | 0.01 |
| tblVehicleEF | LHD2 | 0.01 | 0.01 |

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|---|---|---|---|
| tblVehicleEF | LHD2 | 3.9000e-004 | 1.2200e-004 |
| tblVehicleEF | LHD2 | 1.1310e-003 | 1.3890e-003 |
| tblVehicleEF | LHD2 | 2.6980e-003 | 2.6970e-003 |
| tblVehicleEF | LHD2 | 0.01 | 0.01 |
| tblVehicleEF | LHD2 | 3.5800e-004 | 1.1200e-004 |
| tblVehicleEF | LHD2 | 6.9200e-004 | 9.1300e-004 |
| tblVehicleEF | LHD2 | 0.03 | 0.04 |
| tblVehicleEF | LHD2 | 0.01 | 0.02 |
| tblVehicleEF | LHD2 | 3.8500e-004 | 4.8500e-004 |
| tblVehicleEF | LHD2 | 0.10 | 0.11 |
| tblVehicleEF | LHD2 | 0.06 | 0.23 |
| tblVehicleEF | LHD2 | 0.07 | 0.04 |
| tblVehicleEF | LHD2 | 1.3500e-004 | 1.3100e-004 |
| tblVehicleEF | LHD2 | 6.7490e-003 | 7.1520e-003 |
| tblVehicleEF | LHD2 | 2.5000e-004 | 7.3000e-005 |
| tblVehicleEF | LHD2 | 6.9200e-004 | 9.1300e-004 |
| tblVehicleEF | LHD2 | 0.03 | 0.04 |
| tblVehicleEF | LHD2 | 0.02 | 0.02 |
| tblVehicleEF | LHD2 | 3.8500e-004 | 4.8500e-004 |
| tblVehicleEF | LHD2 | 0.11 | 0.12 |
| tblVehicleEF | LHD2 | 0.06 | 0.23 |
| tblVehicleEF | LHD2 | 0.08 | 0.04 |
| tblVehicleEF | MCY | 0.45 | 0.32 |
| tblVehicleEF | MCY | 0.16 | 0.25 |
| tblVehicleEF | MCY | 18.24 | 18.37 |
| tblVehicleEF | MCY | 10.23 | 9.09 |
| tblVehicleEF | MCY | 170.37 | 210.00 |
| tblVehicleEF | MCY | 44.38 | 60.43 |
| tblVehicleEF | MCY | 1.14 | 1.14 |
| tblVehicleEF | MCY | 0.32 | 0.27 |

| | | | |
|---|---|---|---|
| tblVehicleEF | MCY | 2.0610e-003 | 2.0310e-003 |
| tblVehicleEF | MCY | 3.4990e-003 | 2.9300e-003 |
| tblVehicleEF | MCY | 1.9250e-003 | 1.8970e-003 |
| tblVehicleEF | MCY | 3.2870e-003 | 2.7510e-003 |
| tblVehicleEF | MCY | 0.89 | 1.80 |
| tblVehicleEF | MCY | 0.67 | 0.67 |
| tblVehicleEF | MCY | 0.48 | 0.97 |
| tblVehicleEF | MCY | 2.17 | 2.18 |
| tblVehicleEF | MCY | 0.56 | 1.82 |
| tblVehicleEF | MCY | 2.17 | 1.92 |
| tblVehicleEF | MCY | 2.0660e-003 | 2.0780e-003 |
| tblVehicleEF | MCY | 6.7500e-004 | 5.9800e-004 |
| tblVehicleEF | MCY | 0.89 | 1.80 |
| tblVehicleEF | MCY | 0.67 | 0.67 |
| tblVehicleEF | MCY | 0.48 | 0.97 |
| tblVehicleEF | MCY | 2.70 | 2.71 |
| tblVehicleEF | MCY | 0.56 | 1.82 |
| tblVehicleEF | MCY | 2.36 | 2.09 |
| tblVehicleEF | MDV | 7.6840e-003 | 2.9890e-003 |
| tblVehicleEF | MDV | 0.01 | 0.06 |
| tblVehicleEF | MDV | 0.90 | 0.72 |
| tblVehicleEF | MDV | 2.22 | 2.81 |
| tblVehicleEF | MDV | 414.29 | 362.20 |
| tblVehicleEF | MDV | 95.41 | 77.24 |
| tblVehicleEF | MDV | 0.11 | 0.06 |
| tblVehicleEF | MDV | 0.19 | 0.26 |
| tblVehicleEF | MDV | 1.7530e-003 | 1.3780e-003 |
| tblVehicleEF | MDV | 2.4300e-003 | 1.7330e-003 |
| tblVehicleEF | MDV | 1.6150e-003 | 1.2710e-003 |
| tblVehicleEF | MDV | 2.2340e-003 | 1.5940e-003 |

| | | | |
|---|---|---|---|
| tblVehicleEF | MDV | 0.06 | 0.07 |
| tblVehicleEF | MDV | 0.15 | 0.12 |
| tblVehicleEF | MDV | 0.06 | 0.06 |
| tblVehicleEF | MDV | 0.02 | 0.01 |
| tblVehicleEF | MDV | 0.10 | 0.41 |
| tblVehicleEF | MDV | 0.16 | 0.31 |
| tblVehicleEF | MDV | 4.1460e-003 | 3.4720e-003 |
| tblVehicleEF | MDV | 9.9300e-004 | 7.4100e-004 |
| tblVehicleEF | MDV | 0.06 | 0.07 |
| tblVehicleEF | MDV | 0.15 | 0.12 |
| tblVehicleEF | MDV | 0.06 | 0.06 |
| tblVehicleEF | MDV | 0.03 | 0.02 |
| tblVehicleEF | MDV | 0.10 | 0.41 |
| tblVehicleEF | MDV | 0.18 | 0.34 |
| tblVehicleEF | MH | 0.02 | 8.5740e-003 |
| tblVehicleEF | MH | 0.02 | 0.02 |
| tblVehicleEF | MH | 1.43 | 0.80 |
| tblVehicleEF | MH | 4.93 | 1.94 |
| tblVehicleEF | MH | 1,202.55 | 1,472.19 |
| tblVehicleEF | MH | 58.11 | 17.63 |
| tblVehicleEF | MH | 1.13 | 1.26 |
| tblVehicleEF | MH | 0.74 | 0.24 |
| tblVehicleEF | MH | 0.01 | 0.01 |
| tblVehicleEF | MH | 0.02 | 0.02 |
| tblVehicleEF | MH | 1.0400e-003 | 2.5000e-004 |
| tblVehicleEF | MH | 3.2210e-003 | 3.2830e-003 |
| tblVehicleEF | MH | 0.02 | 0.02 |
| tblVehicleEF | MH | 9.5600e-004 | 2.3000e-004 |
| tblVehicleEF | MH | 0.69 | 0.58 |
| tblVehicleEF | MH | 0.06 | 0.05 |

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|---|---|---|---|
| tblVehicleEF | MH | 0.25 | 0.21 |
| tblVehicleEF | MH | 0.07 | 0.06 |
| tblVehicleEF | MH | 0.02 | 1.16 |
| tblVehicleEF | MH | 0.29 | 0.09 |
| tblVehicleEF | MH | 0.01 | 0.01 |
| tblVehicleEF | MH | 6.6700e-004 | 1.7400e-004 |
| tblVehicleEF | MH | 0.69 | 0.58 |
| tblVehicleEF | MH | 0.06 | 0.05 |
| tblVehicleEF | MH | 0.25 | 0.21 |
| tblVehicleEF | MH | 0.10 | 0.08 |
| tblVehicleEF | MH | 0.02 | 1.16 |
| tblVehicleEF | MH | 0.31 | 0.10 |
| tblVehicleEF | MHD | 0.02 | 3.6170e-003 |
| tblVehicleEF | MHD | 3.7120e-003 | 1.5120e-003 |
| tblVehicleEF | MHD | 0.04 | 8.8700e-003 |
| tblVehicleEF | MHD | 0.37 | 0.39 |
| tblVehicleEF | MHD | 0.31 | 0.21 |
| tblVehicleEF | MHD | 4.99 | 1.02 |
| tblVehicleEF | MHD | 133.65 | 70.85 |
| tblVehicleEF | MHD | 1,182.56 | 1,065.91 |
| tblVehicleEF | MHD | 60.25 | 8.98 |
| tblVehicleEF | MHD | 0.36 | 0.40 |
| tblVehicleEF | MHD | 1.09 | 1.45 |
| tblVehicleEF | MHD | 10.18 | 1.70 |
| tblVehicleEF | MHD | 9.6000e-005 | 3.2300e-004 |
| tblVehicleEF | MHD | 3.1040e-003 | 7.0640e-003 |
| tblVehicleEF | MHD | 8.5200e-004 | 1.1300e-004 |
| tblVehicleEF | MHD | 9.1000e-005 | 3.0900e-004 |
| tblVehicleEF | MHD | 2.9630e-003 | 6.7520e-003 |
| tblVehicleEF | MHD | 7.8400e-004 | 1.0400e-004 |

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|---|---|---|---|
| tblVehicleEF | MHD | 7.8000e-004 | 3.5500e-004 |
| tblVehicleEF | MHD | 0.04 | 0.02 |
| tblVehicleEF | MHD | 0.02 | 0.02 |
| tblVehicleEF | MHD | 4.2300e-004 | 1.8800e-004 |
| tblVehicleEF | MHD | 0.04 | 0.01 |
| tblVehicleEF | MHD | 0.02 | 0.09 |
| tblVehicleEF | MHD | 0.30 | 0.05 |
| tblVehicleEF | MHD | 1.2870e-003 | 6.7200e-004 |
| tblVehicleEF | MHD | 0.01 | 0.01 |
| tblVehicleEF | MHD | 6.9000e-004 | 8.9000e-005 |
| tblVehicleEF | MHD | 7.8000e-004 | 3.5500e-004 |
| tblVehicleEF | MHD | 0.04 | 0.02 |
| tblVehicleEF | MHD | 0.03 | 0.02 |
| tblVehicleEF | MHD | 4.2300e-004 | 1.8800e-004 |
| tblVehicleEF | MHD | 0.05 | 0.02 |
| tblVehicleEF | MHD | 0.02 | 0.09 |
| tblVehicleEF | MHD | 0.33 | 0.05 |
| tblVehicleEF | OBUS | 0.01 | 7.0670e-003 |
| tblVehicleEF | OBUS | 5.3980e-003 | 3.3170e-003 |
| tblVehicleEF | OBUS | 0.02 | 0.02 |
| tblVehicleEF | OBUS | 0.24 | 0.60 |
| tblVehicleEF | OBUS | 0.39 | 0.39 |
| tblVehicleEF | OBUS | 4.64 | 1.79 |
| tblVehicleEF | OBUS | 101.21 | 94.25 |
| tblVehicleEF | OBUS | 1,288.15 | 1,303.83 |
| tblVehicleEF | OBUS | 66.36 | 14.82 |
| tblVehicleEF | OBUS | 0.22 | 0.39 |
| tblVehicleEF | OBUS | 0.92 | 1.46 |
| tblVehicleEF | OBUS | 2.67 | 1.10 |
| tblVehicleEF | OBUS | 2.0000e-005 | 1.2700e-004 |

| | | | |
|---|---|---|---|
| tblVehicleEF | OBUS | 2.8390e-003 | 7.4740e-003 |
| tblVehicleEF | OBUS | 8.5700e-004 | 1.4700e-004 |
| tblVehicleEF | OBUS | 1.9000e-005 | 1.2200e-004 |
| tblVehicleEF | OBUS | 2.6960e-003 | 7.1370e-003 |
| tblVehicleEF | OBUS | 7.8800e-004 | 1.3500e-004 |
| tblVehicleEF | OBUS | 1.1610e-003 | 1.0870e-003 |
| tblVehicleEF | OBUS | 0.02 | 0.02 |
| tblVehicleEF | OBUS | 0.03 | 0.05 |
| tblVehicleEF | OBUS | 5.1700e-004 | 4.8600e-004 |
| tblVehicleEF | OBUS | 0.04 | 0.02 |
| tblVehicleEF | OBUS | 0.03 | 0.18 |
| tblVehicleEF | OBUS | 0.29 | 0.09 |
| tblVehicleEF | OBUS | 9.7700e-004 | 8.9500e-004 |
| tblVehicleEF | OBUS | 0.01 | 0.01 |
| tblVehicleEF | OBUS | 7.4500e-004 | 1.4700e-004 |
| tblVehicleEF | OBUS | 1.1610e-003 | 1.0870e-003 |
| tblVehicleEF | OBUS | 0.02 | 0.02 |
| tblVehicleEF | OBUS | 0.04 | 0.06 |
| tblVehicleEF | OBUS | 5.1700e-004 | 4.8600e-004 |
| tblVehicleEF | OBUS | 0.05 | 0.03 |
| tblVehicleEF | OBUS | 0.03 | 0.18 |
| tblVehicleEF | OBUS | 0.32 | 0.09 |
| tblVehicleEF | SBUS | 0.82 | 0.06 |
| tblVehicleEF | SBUS | 0.01 | 5.7290e-003 |
| tblVehicleEF | SBUS | 0.07 | 5.1560e-003 |
| tblVehicleEF | SBUS | 8.35 | 2.37 |
| tblVehicleEF | SBUS | 0.87 | 0.47 |
| tblVehicleEF | SBUS | 8.98 | 0.74 |
| tblVehicleEF | SBUS | 1,084.06 | 345.98 |
| tblVehicleEF | SBUS | 1,038.50 | 1,037.30 |

| | | | |
|---|---|---|---|
| tblVehicleEF | SBUS | 57.91 | 4.26 |
| tblVehicleEF | SBUS | 7.20 | 3.34 |
| tblVehicleEF | SBUS | 3.06 | 4.41 |
| tblVehicleEF | SBUS | 11.67 | 0.90 |
| tblVehicleEF | SBUS | 5.9830e-003 | 3.3290e-003 |
| tblVehicleEF | SBUS | 0.01 | 0.01 |
| tblVehicleEF | SBUS | 0.02 | 0.03 |
| tblVehicleEF | SBUS | 9.4800e-004 | 5.1000e-005 |
| tblVehicleEF | SBUS | 5.7240e-003 | 3.1850e-003 |
| tblVehicleEF | SBUS | 2.6150e-003 | 2.7110e-003 |
| tblVehicleEF | SBUS | 0.02 | 0.03 |
| tblVehicleEF | SBUS | 8.7200e-004 | 4.7000e-005 |
| tblVehicleEF | SBUS | 3.3380e-003 | 5.9800e-004 |
| tblVehicleEF | SBUS | 0.03 | 5.7950e-003 |
| tblVehicleEF | SBUS | 0.99 | 0.26 |
| tblVehicleEF | SBUS | 1.5210e-003 | 2.6700e-004 |
| tblVehicleEF | SBUS | 0.10 | 0.08 |
| tblVehicleEF | SBUS | 0.02 | 0.04 |
| tblVehicleEF | SBUS | 0.45 | 0.03 |
| tblVehicleEF | SBUS | 0.01 | 3.2940e-003 |
| tblVehicleEF | SBUS | 0.01 | 9.9090e-003 |
| tblVehicleEF | SBUS | 7.3400e-004 | 4.2000e-005 |
| tblVehicleEF | SBUS | 3.3380e-003 | 5.9800e-004 |
| tblVehicleEF | SBUS | 0.03 | 5.7950e-003 |
| tblVehicleEF | SBUS | 1.43 | 0.38 |
| tblVehicleEF | SBUS | 1.5210e-003 | 2.6700e-004 |
| tblVehicleEF | SBUS | 0.12 | 0.09 |
| tblVehicleEF | SBUS | 0.02 | 0.04 |
| tblVehicleEF | SBUS | 0.49 | 0.03 |
| tblVehicleEF | UBUS | 0.23 | 1.66 |

| | | | |
|---|---|---|---|
| tblVehicleEF | UBUS | 0.04 | 1.6700e-003 |
| tblVehicleEF | UBUS | 3.99 | 12.57 |
| tblVehicleEF | UBUS | 7.27 | 0.14 |
| tblVehicleEF | UBUS | 2,026.89 | 1,657.49 |
| tblVehicleEF | UBUS | 110.88 | 1.39 |
| tblVehicleEF | UBUS | 7.88 | 0.71 |
| tblVehicleEF | UBUS | 14.06 | 0.01 |
| tblVehicleEF | UBUS | 0.58 | 0.07 |
| tblVehicleEF | UBUS | 0.01 | 0.03 |
| tblVehicleEF | UBUS | 0.17 | 5.2020e-003 |
| tblVehicleEF | UBUS | 1.1660e-003 | 1.5000e-005 |
| tblVehicleEF | UBUS | 0.25 | 0.03 |
| tblVehicleEF | UBUS | 3.0000e-003 | 8.3320e-003 |
| tblVehicleEF | UBUS | 0.16 | 4.9760e-003 |
| tblVehicleEF | UBUS | 1.0720e-003 | 1.4000e-005 |
| tblVehicleEF | UBUS | 2.0210e-003 | 2.4000e-005 |
| tblVehicleEF | UBUS | 0.03 | 2.0100e-004 |
| tblVehicleEF | UBUS | 1.0840e-003 | 1.1000e-005 |
| tblVehicleEF | UBUS | 0.41 | 0.02 |
| tblVehicleEF | UBUS | 7.6040e-003 | 1.1110e-003 |
| tblVehicleEF | UBUS | 0.57 | 6.9810e-003 |
| tblVehicleEF | UBUS | 0.02 | 0.01 |
| tblVehicleEF | UBUS | 1.2400e-003 | 1.4000e-005 |
| tblVehicleEF | UBUS | 2.0210e-003 | 2.4000e-005 |
| tblVehicleEF | UBUS | 0.03 | 2.0100e-004 |
| tblVehicleEF | UBUS | 1.0840e-003 | 1.1000e-005 |
| tblVehicleEF | UBUS | 0.68 | 1.70 |
| tblVehicleEF | UBUS | 7.6040e-003 | 1.1110e-003 |
| tblVehicleEF | UBUS | 0.62 | 7.6430e-003 |
| tblVehicleTrips | ST_TR | 2.46 | 1.50 |

| | | | |
|---|---|---|---|
| tblVehicleTrips | SU_TR | 1.05 | 0.64 |
| tblVehicleTrips | WD_TR | 11.03 | 6.74 |

## 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 | 0.2790 | 1.0000e-005 | 5.8000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 1.1300e-003 | 1.1300e-003 | 0.0000 | 0.0000 | 1.20E-03 |
| Energy | 5.4700e-003 | 0.0498 | 0.0418 | 3.0000e-004 | | 3.7800e-003 | 3.7800e-003 | | 3.7800e-003 | 3.7800e-003 | 0.0000 | 381.0743 | 381.0743 | 0.0158 | 4.0500e-003 | 382.6771 |
| Mobile | 0.1044 | 0.1700 | 0.8556 | 2.5700e-003 | 0.2819 | 2.0400e-003 | 0.2840 | 0.0754 | 1.9100e-003 | 0.0773 | 0.0000 | 249.6720 | 249.6720 | 0.0106 | 0.0000 | 249.9358 |
| Waste | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 11.7045 | 0.0000 | 11.7045 | 0.6917 | 0.0000 | 28.9973 |
| Water | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 3.4960 | 24.2228 | 27.7187 | 0.3602 | 8.7100e-003 | 39.317 |
| **Total** | **0.3889** | **0.2197** | **0.8980** | **2.8700e-003** | **0.2819** | **5.8200e-003** | **0.2878** | **0.0754** | **5.6900e-003** | **0.0811** | **15.2004** | **654.9702** | **670.1707** | **1.0783** | **0.0128** | **700.9284** |

**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 | 0.2790 | 1.0000e-005 | 5.8000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 1.1300e-003 | 1.1300e-003 | 0.0000 | 0.0000 | 1.2000e-003 |
| Energy | 5.4700e-003 | 0.0498 | 0.0418 | 3.0000e-004 | | 3.7800e-003 | 3.7800e-003 | | 3.7800e-003 | 3.7800e-003 | 0.0000 | 381.0743 | 381.0743 | 0.0158 | 4.0500e-003 | 382.6771 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mobile | 0.1044 | 0.1700 | 0.8556 | 2.5700e-003 | 0.2819 | 2.0400e-003 | 0.2840 | 0.0754 | 1.9100e-003 | 0.0773 | 0.0000 | 249.6720 | 249.6720 | 0.0106 | 0.0000 | 249.9358 |
| Waste | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 11.7045 | 0.0000 | 11.7045 | 0.6917 | 0.0000 | 28.9973 |
| Water | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 3.4960 | 24.2228 | 27.7187 | 0.3602 | 8.7100e-003 | 39.3170 |
| **Total** | **0.3889** | **0.2197** | **0.8980** | **2.8700e-003** | **0.2819** | **5.8200e-003** | **0.2878** | **0.0754** | **5.6900e-003** | **0.0811** | **15.2004** | **654.9702** | **670.1707** | **1.0783** | **0.0128** | **700.9284** |

| | 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 | 0.1044 | 0.1700 | 0.8556 | 2.5700e-003 | 0.2819 | 2.0400e-003 | 0.2840 | 0.0754 | 1.9100e-003 | 0.0773 | 0.0000 | 249.6720 | 249.6720 | 0.0106 | 0.0000 | 249.9358 |
| Unmitigated | 0.1044 | 0.1700 | 0.8556 | 2.5700e-003 | 0.2819 | 2.0400e-003 | 0.2840 | 0.0754 | 1.9100e-003 | 0.0773 | 0.0000 | 249.6720 | 249.6720 | 0.0106 | 0.0000 | 249.9358 |

### 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| General Office Building | 417.88 | 93.00 | 39.68 | 758,603 | 758,603 |
| Parking Lot | 0.00 | 0.00 | 0.00 | | |
| Total | 417.88 | 93.00 | 39.68 | 758,603 | 758,603 |

### 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 |
| General Office Building | 9.50 | 7.30 | 7.30 | 33.00 | 48.00 | 19.00 | 77 | 19 | 4 |
| Parking Lot | 9.50 | 7.30 | 7.30 | 0.00 | 0.00 | 0.00 | 0 | 0 | 0 |

### 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| General Office Building | 0.593223 | 0.053202 | 0.175286 | 0.106474 | 0.020914 | 0.005346 | 0.013515 | 0.022567 | 0.001555 | 0.001235 | 0.005021 | 0.000916 | 0.000746 |
| Parking Lot | 0.593223 | 0.053202 | 0.175286 | 0.106474 | 0.020914 | 0.005346 | 0.013515 | 0.022567 | 0.001555 | 0.001235 | 0.005021 | 0.000916 | 0.000746 |

## 5.0 Energy Detail

Historical Energy Use: Y

### 5.1 Mitigation Measures Energy

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Electricity Mitigated | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 326.9133 | 326.9133 | 0.0148 | 3.0600e-003 | 328.1942 |
| Electricity Unmitigated | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 326.9133 | 326.9133 | 0.0148 | 3.0600e-003 | 328.1942 |
| NaturalGas Mitigated | 5.4700e-003 | 0.0498 | 0.0418 | 3.0000e-004 | | 3.7800e-003 | 3.7800e-003 | | 3.7800e-003 | 3.7800e-003 | 0.0000 | 54.1611 | 54.1611 | 1.0400e-003 | 9.9000e-004 | 54.4829 |
| NaturalGas Unmitigated | 5.4700e-003 | 0.0498 | 0.0418 | 3.0000e-004 | | 3.7800e-003 | 3.7800e-003 | | 3.7800e-003 | 3.7800e-003 | 0.0000 | 54.1611 | 54.1611 | 1.0400e-003 | 9.9000e-004 | 54.4829 |

### 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 | | | | | |
| General Office Building | 1.01494e+006 | 5.4700e-003 | 0.0498 | 0.0418 | 3.0000e-004 | | 3.7800e-003 | 3.7800e-003 | | 3.7800e-003 | 3.7800e-003 | 0.0000 | 54.1611 | 54.1611 | 1.0400e-003 | 9.9000e-004 | 54.4829 |
| Parking Lot | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **5.4700e-003** | **0.0498** | **0.0418** | **3.0000e-004** | | **3.7800e-003** | **3.7800e-003** | | **3.7800e-003** | **3.7800e-003** | **0.0000** | **54.1611** | **54.1611** | **1.0400e-003** | **9.9000e-004** | **54.4829** |

**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 | | | | | |
| General Office Building | 1.01494e+006 | 5.4700e-003 | 0.0498 | 0.0418 | 3.0000e-004 | | 3.7800e-003 | 3.7800e-003 | | 3.7800e-003 | 3.7800e-003 | 0.0000 | 54.1611 | 54.1611 | 1.0400e-003 | 9.9000e-004 | 54.4829 |
| Parking Lot | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **5.4700e-003** | **0.0498** | **0.0418** | **3.0000e-004** | | **3.7800e-003** | **3.7800e-003** | | **3.7800e-003** | **3.7800e-003** | **0.0000** | **54.1611** | **54.1611** | **1.0400e-003** | **9.9000e-004** | **54.4829** |

## 5.3 Energy by Land Use - Electricity

**Unmitigated**

| | Electricity Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | kWh/yr | MT/yr | | | |

| | | | | | |
|---|---|---|---|---|---|
| General Office Building | 1.10546e+006 | 321.5910 | 0.0145 | 3.0100e-003 | 322.8511 |
| Parking Lot | 18295.2 | 5.3223 | 2.4000e-004 | 5.0000e-005 | 5.3431 |
| **Total** | | **326.9133** | **0.0148** | **3.0600e-003** | **328.1942** |

**Mitigated**

| | Electricity Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | kWh/yr | MT/yr | | | |
| General Office Building | 1.10546e+006 | 321.5910 | 0.0145 | 3.0100e-003 | 322.8511 |
| Parking Lot | 18295.2 | 5.3223 | 2.4000e-004 | 5.0000e-005 | 5.3431 |
| **Total** | | **326.9133** | **0.0148** | **3.0600e-003** | **328.1942** |

## 6.0 Area Detail

### 6.1 Mitigation Measures Area

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Mitigated | 0.2790 | 1.0000e-005 | 5.8000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 1.1300e-003 | 1.1300e-003 | 0.0000 | 0.0000 | 1.2000e-003 |
| Unmitigated | 0.2790 | 1.0000e-005 | 5.8000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 1.1300e-003 | 1.1300e-003 | 0.0000 | 0.0000 | 1.2000e-003 |

## 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 | 0.0334 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Consumer Products | 0.2455 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Landscaping | 5.0000e-005 | 1.0000e-005 | 5.8000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 1.1300e-003 | 1.1300e-003 | 0.0000 | 0.0000 | 1.2000e-003 |
| **Total** | **0.2790** | **1.0000e-005** | **5.8000e-004** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **1.1300e-003** | **1.1300e-003** | **0.0000** | **0.0000** | **1.2000e-003** |

**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 | 0.0334 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Consumer Products | 0.2455 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Landscaping | 5.0000e-005 | 1.0000e-005 | 5.8000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 1.1300e-003 | 1.1300e-003 | 0.0000 | 0.0000 | 1.2000e-003 |
| **Total** | **0.2790** | **1.0000e-005** | **5.8000e-004** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **1.1300e-003** | **1.1300e-003** | **0.0000** | **0.0000** | **1.2000e-003** |

# 7.0 Water Detail

## 7.1 Mitigation Measures Water

| | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|
| Category | MT/yr | | | |
| Mitigated | 27.7187 | 0.3602 | 8.7100e-003 | 39.3170 |
| Unmitigated | 27.7187 | 0.3602 | 8.7100e-003 | 39.3170 |

## 7.2 Water by Land Use

**Unmitigated**

| | Indoor/Outdoor Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | Mgal | MT/yr | | | |
| General Office Building | 11.0195 / 6.75388 | 27.7187 | 0.3602 | 8.7100e-003 | 39.3170 |
| Parking Lot | 0 / 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **27.7187** | **0.3602** | **8.7100e-003** | **39.3170** |

**Mitigated**

| | Indoor/Outdoor Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | Mgal | MT/yr | | | |
| General Office Building | 11.0195 / 6.75388 | 27.7187 | 0.3602 | 8.7100e-003 | 39.3170 |
| Parking Lot | 0 / 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **27.7187** | **0.3602** | **8.7100e-003** | **39.3170** |

## 8.0 Waste Detail

### 8.1 Mitigation Measures Waste

**Category/Year**

| | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|
| | MT/yr | | | |
| Mitigated | 11.7045 | 0.6917 | 0.0000 | 28.9973 |
| Unmitigated | 11.7045 | 0.6917 | 0.0000 | 28.9973 |

### 8.2 Waste by Land Use

**Unmitigated**

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

| | | | | | |
|---|---|---|---|---|---|
| General Office Building | 57.66 | 11.7045 | 0.6917 | 0.0000 | 28.9973 |
| Parking Lot | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **11.7045** | **0.6917** | **0.0000** | **28.9973** |

**Mitigated**

| | Waste Disposed | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | tons | MT/yr | | | |
| General Office Building | 57.66 | 11.7045 | 0.6917 | 0.0000 | 28.9973 |
| Parking Lot | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **11.7045** | **0.6917** | **0.0000** | **28.9973** |

## 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: EMFAC2017 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 | 10 | 0 | 60 | 0 | 118 | 10.8 | 7.3 | 20 | LD_Mix | HDT_Mix | HHDT | 648 | 0 | 2360 |
| Site Preparation | 10 | 0 | 650 | 0 | 0 | 10.8 | 7.3 | 20 | LD_Mix | HDT_Mix | HHDT | 7020 | 0 | 0 |
| Grading | 18 | 0 | 2520 | 0 | 22688 | 10.8 | 7.3 | 20 | LD_Mix | HDT_Mix | HHDT | 27216 | 0 | 453760 |
| Trenching | 10 | 0 | 300 | 0 | 1400 | 10.8 | 7.3 | 20 | LD_Mix | HDT_Mix | HHDT | 3240 | 0 | 28000 |
| Building Superstructure/Exterior | 240 | 113 | 91200 | 42940 | 3510 | 10.8 | 7.3 | 7.3 | LD_Mix | HDT_Mix | HHDT | 984960 | 313462 | 25623 |
| Building - Cores/Elevators | 48 | 0 | 14592 | 0 | 0 | 10.8 | 7.3 | 20 | LD_Mix | HDT_Mix | HHDT | 157593.6 | 0 | 0 |
| Sitework | 25 | 0 | 1250 | 0 | 400 | 10.8 | 7.3 | 7.3 | LD_Mix | HDT_Mix | HHDT | 13500 | 0 | 2920 |

| **Number of Days Per Year** | | | | | |
|---|---|---|---|---|---|
| 2022 | 1/3/22 | 12/31/22 | 363 | **311** | |
| 2023 | 1/1/23 | 12/31/23 | 365 | **313** | |
| 2024 | 1/1/24 | 7/22/24 | 204 | **175** | |
| | | | 932 | **799** | ***Total Workdays*** |

| Phase | Start Date | End Date | Days/Week | Workdays |
|---|---|---|---|---|
| Demolition | 1/3/2022 | 1/10/2022 | 6 | 6 |
| Site Preparation | 1/4/2022 | 4/4/2022 | 6 | 65 |
| Grading | 4/5/2022 | 10/17/2022 | 6 | 140 |
| Trenching | 10/18/2022 | 11/28/2022 | 6 | 30 |
| Building Superstructure/Exterior | 11/29/2022 | 5/13/2024 | 6 | 380 |
| Building - Cores/Elevators | 1/17/2023 | 3/15/2024 | 6 | 304 |
| Sitework | 5/14/2024 | 7/22/2024 | 6 | 50 |

## Summary of Construction Traffic Emissions (EMFAC2017)

| Pollutants<br>YEAR | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | NBio- CO2 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | *Tons* | | | | | | *Metric Tons* |
| **Criteria Pollutants** | | | | | | | | | | | |
| *2022* | 0.0832 | 1.4077 | 0.8009 | 0.0063 | 0.2593 | 0.0729 | 0.3323 | 0.0390 | 0.0356 | 0.0746 | 621.0942 |
| *2023* | 0.0586 | 1.1234 | 0.7331 | 0.0061 | 0.2608 | 0.0686 | 0.3293 | 0.0392 | 0.0312 | 0.0704 | 598.2083 |
| *2024* | 0.0311 | 0.6267 | 0.3951 | 0.0033 | 0.1457 | 0.0384 | 0.1841 | 0.0219 | 0.0175 | 0.0394 | 328.5310 |
| **Toxic Air Contaminants (0.5 Mile Trip Length)** | | | | | | | | | | | |
| *2022* | 0.0487 | 0.2607 | 0.2877 | 0.0005 | 0.0117 | 0.0034 | 0.0151 | 0.0018 | 0.0018 | 0.0035 | 52.1450 |
| *2023* | 0.0456 | 0.2460 | 0.2919 | 0.0005 | 0.0117 | 0.0032 | 0.0149 | 0.0018 | 0.0015 | 0.0033 | 50.4609 |
| *2024* | 0.0243 | 0.1365 | 0.1603 | 0.0003 | 0.0066 | 0.0018 | 0.0083 | 0.0010 | 0.0008 | 0.0018 | 27.7416 |

## CalEEMod EMFAC2017 Emission Factors Input — Year 2025

| Season | EmissionType | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | CH4_IDLEX | 0 | 0 | 0 | 0 | 0.004822 | 0.002927 | 0.003617 | 0.02464605 | 0.007067 | 0 | 0 | 0.056498 | 0 |
| A | CH4_RUNEX | 0.001523 | 0.003124 | 0.002657 | 0.002989 | 0.007291 | 0.006342 | 0.001512 | 0.048677066 | 0.003317 | 1.660437 | 0.323881 | 0.005729 | 0.008574 |
| A | CH4_STREX | 0.040667 | 0.052526 | 0.057581 | 0.064668 | 0.01284 | 0.007091 | 0.00887 | 4.41523E-07 | 0.016668 | 0.00167 | 0.252792 | 0.005156 | 0.021801 |
| A | CO_IDLEX | 0 | 0 | 0 | 0 | 0.182365 | 0.136086 | 0.393005 | 6.32251222 | 0.596079 | 0 | 0 | 2.374155 | 0 |
| A | CO_RUNEX | 0.494715 | 0.777443 | 0.695838 | 0.7236 | 0.660204 | 0.563432 | 0.21057 | 0.405296748 | 0.390599 | 12.57228 | 18.36541 | 0.4689 | 0.800187 |
| A | CO_STREX | 2.014259 | 2.177442 | 2.615829 | 2.812367 | 1.013976 | 0.573495 | 1.016411 | 0.005924916 | 1.786237 | 0.139137 | 9.087517 | 0.735658 | 1.944389 |
| A | CO2_NBIO_IDLEX | 0 | 0 | 0 | 0 | 8.765874 | 13.74458 | 70.84875 | 1030.262563 | 94.2452 | 0 | 0 | 345.9761 | 0 |
| A | CO2_NBIO_RUNEX | 233.9022 | 280.7897 | 299.8154 | 362.1973 | 764.4713 | 740.9438 | 1065.906 | 1386.581775 | 1303.826 | 1657.485 | 210.0048 | 1037.301 | 1472.191 |
| A | CO2_NBIO_STREX | 49.70012 | 60.30629 | 64.96089 | 77.23915 | 11.27772 | 7.363644 | 8.978453 | 0.047358602 | 14.81655 | 1.394527 | 60.42942 | 4.262882 | 17.62803 |
| A | NOX_IDLEX | 0 | 0 | 0 | 0 | 0.054625 | 0.090133 | 0.398341 | 5.350841808 | 0.390004 | 0 | 0 | 3.341612 | 0 |
| A | NOX_RUNEX | 0.026515 | 0.059243 | 0.053821 | 0.062054 | 0.570068 | 0.683941 | 1.449316 | 2.66986546 | 1.461172 | 0.714517 | 1.144207 | 4.410854 | 1.257808 |
| A | NOX_STREX | 0.155178 | 0.19851 | 0.230753 | 0.26498 | 0.288917 | 0.162019 | 1.699505 | 2.321621186 | 1.103362 | 0.011698 | 0.270585 | 0.902882 | 0.241831 |
| A | PM10_IDLEX | 0 | 0 | 0 | 0 | 0.000857 | 0.001452 | 0.000323 | 0.002505017 | 0.000127 | 0 | 0 | 0.003329 | 0 |
| A | PM10_PMBW | 0.03675 | 0.03675 | 0.03675 | 0.03675 | 0.07644 | 0.08918 | 0.13034 | 0.060982686 | 0.13034 | 0.069383 | 0.01176 | 0.7448 | 0.13034 |
| A | PM10_PMTW | 0.008 | 0.008 | 0.008 | 0.008 | 0.009807 | 0.010786 | 0.012 | 0.035549059 | 0.012 | 0.033326 | 0.004 | 0.010845 | 0.013133 |
| A | PM10_RUNEX | 0.001245 | 0.001543 | 0.001311 | 0.001378 | 0.009091 | 0.014865 | 0.007064 | 0.024929202 | 0.007474 | 0.005202 | 0.002031 | 0.028462 | 0.021441 |
| A | PM10_STREX | 0.001625 | 0.00199 | 0.001661 | 0.001733 | 0.000239 | 0.000122 | 0.000113 | 6.14002E-07 | 0.000147 | 1.52E-05 | 0.00293 | 5.12E-05 | 0.00025 |
| A | PM25_IDLEX | 0 | 0 | 0 | 0 | 0.00082 | 0.001389 | 0.000309 | 0.002396651 | 0.000122 | 0 | 0 | 0.003185 | 0 |
| A | PM25_PMBW | 0.01575 | 0.01575 | 0.01575 | 0.01575 | 0.03276 | 0.03822 | 0.05586 | 0.026135437 | 0.05586 | 0.029736 | 0.00504 | 0.3192 | 0.05586 |
| A | PM25_PMTW | 0.002 | 0.002 | 0.002 | 0.002 | 0.002452 | 0.002697 | 0.003 | 0.008887265 | 0.003 | 0.008332 | 0.001 | 0.002711 | 0.003283 |
| A | PM25_RUNEX | 0.001147 | 0.001419 | 0.001207 | 0.001271 | 0.008651 | 0.014197 | 0.006752 | 0.023850749 | 0.007137 | 0.004976 | 0.001897 | 0.027217 | 0.020471 |
| A | PM25_STREX | 0.001494 | 0.00183 | 0.001527 | 0.001594 | 0.00022 | 0.000112 | 0.000104 | 5.64552E-07 | 0.000135 | 1.4E-05 | 0.002751 | 4.71E-05 | 0.00023 |
| A | ROG_DIURN | 0.032999 | 0.068768 | 0.057774 | 0.065331 | 0.001812 | 0.000913 | 0.000355 | 1.89585E-06 | 0.001087 | 2.36E-05 | 1.799017 | 0.000598 | 0.578515 |
| A | ROG_HTSK | 0.079654 | 0.134588 | 0.111289 | 0.122391 | 0.067936 | 0.035787 | 0.017097 | 8.61222E-05 | 0.01601 | 0.000201 | 0.666814 | 0.005795 | 0.049409 |
| A | ROG_IDLEX | 0 | 0 | 0 | 0 | 0.01998 | 0.015044 | 0.018199 | 0.42661818 | 0.047139 | 0 | 0 | 0.262898 | 0 |
| A | ROG_RESTL | 0.029662 | 0.057099 | 0.055925 | 0.063792 | 0.000944 | 0.000485 | 0.000188 | 1.06649E-06 | 0.000486 | 1.06E-05 | 0.96962 | 0.000267 | 0.209543 |
| A | ROG_RUNEX | 0.005581 | 0.013119 | 0.01057 | 0.012264 | 0.085482 | 0.106025 | 0.014771 | 0.025498471 | 0.022265 | 0.024125 | 2.175798 | 0.079472 | 0.057969 |
| A | ROG_RUNLS | 0.190495 | 0.503679 | 0.398339 | 0.4104 | 0.476158 | 0.22573 | 0.094288 | 0.00043402 | 0.179932 | 0.001111 | 1.818229 | 0.03833 | 1.15767 |
| A | ROG_STREX | 0.17535 | 0.246845 | 0.262401 | 0.310432 | 0.064456 | 0.035082 | 0.046173 | 2.30919E-06 | 0.08516 | 0.006981 | 1.920785 | 0.029394 | 0.088103 |
| A | SO2_IDLEX | 0 | 0 | 0 | 0 | 8.5E-05 | 0.000131 | 0.000672 | 0.00958644 | 0.000895 | 0 | 0 | 0.003294 | 0 |
| A | SO2_RUNEX | 9.31E-05 | 0.002617 | 0.010164 | 0.003472 | 0.007462 | 0.007152 | 0.010164 | 0.012685964 | 0.012547 | 0.010941 | 0.002078 | 0.009909 | 0.014446 |
| A | SO2_STREX | 0 | 0 | 8.88E-05 | 0.000741 | 0.000112 | 7.29E-05 | 8.88E-05 | 4.68652E-07 | 0.000147 | 1.38E-05 | 0.000598 | 4.22E-05 | 0.000174 |
| A | TOG_DIURN | 0.032999 | 0.068768 | 0.057774 | 0.065331 | 0.001812 | 0.000913 | 0.000355 | 1.89585E-06 | 0.001087 | 2.36E-05 | 1.799017 | 0.000598 | 0.578515 |
| A | TOG_HTSK | 0.079654 | 0.134588 | 0.111289 | 0.122391 | 0.067936 | 0.035787 | 0.017097 | 8.61222E-05 | 0.01601 | 0.000201 | 0.666814 | 0.005795 | 0.049409 |
| A | TOG_IDLEX | 0 | 0 | 0 | 0 | 0.028067 | 0.020142 | 0.024755 | 0.490530737 | 0.060674 | 0 | 0 | 0.37681 | 0 |
| A | TOG_RESTL | 0.029662 | 0.057099 | 0.055925 | 0.063792 | 0.000944 | 0.000485 | 0.000188 | 1.06649E-06 | 0.000486 | 1.06E-05 | 0.96962 | 0.000267 | 0.209543 |
| A | TOG_RUNEX | 0.008112 | 0.019132 | 0.015387 | 0.017812 | 0.103774 | 0.123149 | 0.018396 | 0.076839219 | 0.029696 | 1.695059 | 2.708329 | 0.094607 | 0.075558 |
| A | TOG_RUNLS | 0.190495 | 0.503679 | 0.398339 | 0.4104 | 0.476158 | 0.22573 | 0.094288 | 0.00043402 | 0.179932 | 0.001111 | 1.818229 | 0.03833 | 1.15767 |
| A | TOG_STREX | 0.191986 | 0.270264 | 0.287296 | 0.339883 | 0.070571 | 0.03841 | 0.050553 | 2.52828E-06 | 0.093239 | 0.007643 | 2.090983 | 0.032183 | 0.096461 |

## CalEEMod EMFAC2017 Fleet Mix Input

**Year 2025**

| FleetMixLandUseSubType | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Enclosed Parking with Ele | 0.593223 | 0.053202 | 0.175286 | 0.106474 | 0.020914 | 0.005346 | 0.013515 | 0.022567 | 0.001555 | 0.001235 | 0.005021 | 0.000916 | 0.000746 |
| General Office Building | 0.593223 | 0.053202 | 0.175286 | 0.106474 | 0.020914 | 0.005346 | 0.013515 | 0.022567 | 0.001555 | 0.001235 | 0.005021 | 0.000916 | 0.000746 |
| Strip Mall | 0.593223 | 0.053202 | 0.175286 | 0.106474 | 0.020914 | 0.005346 | 0.013515 | 0.022567 | 0.001555 | 0.001235 | 0.005021 | 0.000916 | 0.000746 |

## CalEEMod EMFAC2017 Fleet Mix Input

**Year 2025**

| FleetMixLandUseSubType | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| General Office Building | 0.593223 | 0.053202 | 0.175286 | 0.106474 | 0.020914 | 0.005346 | 0.013515 | 0.022567 | 0.001555 | 0.001235 | 0.005021 | 0.000916 | 0.000746 |
| Parking Lot | 0.593223 | 0.053202 | 0.175286 | 0.106474 | 0.020914 | 0.005346 | 0.013515 | 0.022567 | 0.001555 | 0.001235 | 0.005021 | 0.000916 | 0.000746 |

| Adjustment Factors for EMFAC2017 Gasoline Light Duty Vehicles | | | | | | |
|---|---|---|---|---|---|---|
| Year | NOx Exhaust | TOG Evaporative | TOG Exhaust | PM Exhaust | CO Exhaust | CO2 Exhaust |
| NA | 1 | 1 | 1 | 1 | 1 | 1 |
| 2021 | 1.0002 | 1.0001 | 1.0002 | 1.0009 | 1.0005 | 1.0023 |
| 2022 | 1.0004 | 1.0003 | 1.0004 | 1.0018 | 1.0014 | 1.0065 |
| 2023 | 1.0007 | 1.0006 | 1.0007 | 1.0032 | 1.0027 | 1.0126 |
| 2024 | 1.0012 | 1.0010 | 1.0011 | 1.0051 | 1.0044 | 1.0207 |
| 2025 | 1.0018 | 1.0016 | 1.0016 | 1.0074 | 1.0065 | 1.0309 |
| 2026 | 1.0023 | 1.0022 | 1.0020 | 1.0091 | 1.0083 | 1.0394 |
| 2027 | 1.0028 | 1.0028 | 1.0024 | 1.0105 | 1.0102 | 1.0475 |
| 2028 | 1.0034 | 1.0035 | 1.0028 | 1.0117 | 1.0120 | 1.0554 |
| 2029 | 1.0040 | 1.0042 | 1.0032 | 1.0129 | 1.0138 | 1.0629 |
| 2030 | 1.0047 | 1.0051 | 1.0037 | 1.0142 | 1.0156 | 1.0702 |
| 2031 | 1.0054 | 1.0061 | 1.0042 | 1.0155 | 1.0173 | 1.0770 |
| 2032 | 1.0061 | 1.0072 | 1.0047 | 1.0169 | 1.0189 | 1.0834 |
| 2033 | 1.0068 | 1.0083 | 1.0052 | 1.0182 | 1.0204 | 1.0893 |
| 2034 | 1.0075 | 1.0095 | 1.0058 | 1.0196 | 1.0218 | 1.0947 |
| 2035 | 1.0081 | 1.0108 | 1.0063 | 1.0210 | 1.0232 | 1.0997 |
| 2036 | 1.0088 | 1.0121 | 1.0069 | 1.0223 | 1.0244 | 1.1041 |
| 2037 | 1.0094 | 1.0134 | 1.0074 | 1.0236 | 1.0255 | 1.1080 |
| 2038 | 1.0099 | 1.0148 | 1.0079 | 1.0248 | 1.0265 | 1.1114 |
| 2039 | 1.0104 | 1.0161 | 1.0085 | 1.0259 | 1.0274 | 1.1143 |
| 2040 | 1.0109 | 1.0174 | 1.0090 | 1.0270 | 1.0281 | 1.1168 |
| 2041 | 1.0113 | 1.0186 | 1.0095 | 1.0279 | 1.0288 | 1.1189 |
| 2042 | 1.0116 | 1.0198 | 1.0099 | 1.0286 | 1.0294 | 1.1207 |
| 2043 | 1.0119 | 1.0207 | 1.0103 | 1.0293 | 1.0299 | 1.1221 |
| 2044 | 1.0122 | 1.0216 | 1.0106 | 1.0299 | 1.0303 | 1.1233 |
| 2045 | 1.0124 | 1.0225 | 1.0109 | 1.0303 | 1.0306 | 1.1243 |
| 2046 | 1.0125 | 1.0233 | 1.0111 | 1.0308 | 1.0309 | 1.1251 |
| 2047 | 1.0127 | 1.0240 | 1.0113 | 1.0311 | 1.0311 | 1.1258 |
| 2048 | 1.0128 | 1.0246 | 1.0115 | 1.0314 | 1.0313 | 1.1263 |
| 2049 | 1.0128 | 1.0252 | 1.0116 | 1.0316 | 1.0315 | 1.1268 |
| 2050 | 1.0129 | 1.0257 | 1.0117 | 1.0318 | 1.0316 | 1.1272 |
| **Enter Year: 2022** | **1.0004** | **1.0003** | **1.0004** | **1.0018** | **1.0014** | **1.0065** |

*PM Exhaust off model factor is only applied to the PM Exhaust emissions not start/idle

The off-model adjustment factors need to be applied only to emissions from gasoline light duty vehicles (LDA, LDT1, LDT2 and MDV). Please note that the adjustment factors are by calendar year and includes all model years.

Enter NA in the date field if adjustments do not apply

Source: EMFAC2017 (v1.0.3) Emission Rates
Region Type: County
Region: Santa Clara
Calendar Year: 2022
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for VMT, trips/day for Trips, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HOTSOAK and RUNLOSS, g/vehicle/day for IDLEX, RESTLOSS and DIURN

| Region | Calendar Y | Vehicle Cat | Model Yea | Speed | Fuel | Population | VMT | Trips | NOx_RUNE | NOx_IDLE | NOx_STRE | PM2.5_RU | PM2.5_IDL | PM2.5_STR | PM2.5_PMP | PM2.5_PMW | PM10_RUP | PM10_IDL | PM10_STR | PM10_PMP | PM10_PMW | CO2_RUNE | CO2_IDLEX | CO2_STRE | CH4_RUNE | CH4_IDLEX | CH4_STRE | N2O_RUNE | N2O_IDLE | N2O_STRE | ROG_RUNI | ROG_IDLE | ROG_STRE | ROG_HOTS | ROG_RUNI | ROG_REST | ROG_DIUR | TOG_RUNI | TOG_IDLE | TOG_STRE | TOG_HOTS | TOG_RUNI | TOG_REST | TOG_DIUR | CO_RUNEX | CO_IDLEX | CO_STREX | SOx_RUNE | SOx_IDLEX | SOx_STREX |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Santa Clara | 2022 | HHDT | Aggregate | Aggregate | Gasoline | 4.973172 | 516.9338 | 99.50323 | 3.654204 | 0 | 0.338391 | 0.001236 | 0 | 0.000744 | 0.005 | 0.02646 | 0.001344 | 0 | 0.00081 | 0.02 | 0.06174 | 1964.961 | 0 | 46.86739 | 0.097725 | 0 | 0.00044 | 0.140899 | 0 | 0.010576 | 0.494672 | 0 | 0.002301 | 0.136891 | 0.830556 | 0.033943 | 0.061166 | 0.721824 | 0 | 0.00252 | 0.136891 | 0.830556 | 0.033943 | 0.061166 | 30.00648 | 0 | 5.27737 | 0.019445 | 0 | 0.000464 |
| Santa Clara | 2022 | HHDT | Aggregate | Aggregate | Diesel | 8277.463 | 1011013 | 88031.26 | 3.535499 | 63.08378 | 2.080194 | 0.033949 | 0.03347 | 0 | 0.008873 | 0.026088 | 0.035484 | 0.034983 | 0 | 0.035494 | 0.060872 | 1486.606 | 11783.13 | 0 | 0.003901 | 0.215524 | 0 | 0.233674 | 1.852143 | 0 | 0.08399 | 4.640183 | 0 | 0 | 0 | 0.095616 | 5.282495 | 0 | 0 | 0 | 0 | 0 | 0 | 0.366847 | 63.30293 | 0 | 0.014045 | 0.111321 | 0 |
| Santa Clara | 2022 | HHDT | Aggregate | Aggregate | Natural Ga | 348.7902 | 14223.14 | 1360.282 | 1.755776 | 21.14752 | 0 | 0.004789 | 0.030991 | 0 | 0.009 | 0.02646 | 0.005006 | 0.032392 | 0 | 0.036 | 0.06174 | 3203.692 | 4060.116 | 0 | 3.511574 | 1.248503 | 0 | 0.653093 | 0.827681 | 0 | 0.161697 | 0.045805 | 0 | 0 | 0 | 3.710887 | 1.306054 | 0 | 0 | 0 | 0 | 0 | 0 | 10.70122 | 21.55662 | 0 | 0 | 0 | 0 |
| Santa Clara | 2022 | LDA | Aggregate | Aggregate | Gasoline | 733557.7 | 26453304 | 3456649 | 0.03872 | 0 | 0.197227 | 0.001299 | 0 | 0.001748 | 0.002 | 0.01575 | 0.001413 | 0 | 0.001902 | 0.008 | 0.03675 | 259.2126 | 0 | 55.39361 | 0.002345 | 0 | 0.054199 | 0.004449 | 0 | 0.026685 | 0.009015 | 0 | 0.243726 | 0.100881 | 0.22086 | 0.178182 | 0.20337 | 0.013151 | 0 | 0.266848 | 0.100881 | 0.22086 | 0.178182 | 0.20337 | 0.63218 | 0 | 2.325265 | 0.002565 | 0 | 0.000548 |
| Santa Clara | 2022 | LDA | Aggregate | Aggregate | Diesel | 7146.668 | 268335.1 | 33963.02 | 0.071556 | 0 | 0 | 0.006579 | 0 | 0 | 0.002 | 0.01575 | 0.006877 | 0 | 0 | 0.008 | 0.03675 | 200.3149 | 0 | 0 | 0.000626 | 0 | 0 | 0.031487 | 0 | 0 | 0.013485 | 0 | 0 | 0 | 0 | 0.015352 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.198488 | 0 | 0 | 0.001894 | 0 | 0 |
| Santa Clara | 2022 | LDA | Aggregate | Aggregate | Electricity | 25894.61 | 943282.8 | 126428 | 0 | 0 | 0 | 0 | 0 | 0 | 0.002 | 0.01575 | 0 | 0 | 0 | 0.008 | 0.03675 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.004888 | 0 | 0.00456 | 0.017501 | 0 | 0 | 0 | 0.004888 | 0 | 0.00456 | 0.017501 | 0 | 0 | 0 | 0 | 0 | 0 |
| Santa Clara | 2022 | LDT1 | Aggregate | Aggregate | Gasoline | 73556.92 | 2443329 | 340743.8 | 0.091156 | 0 | 0.251292 | 0.001724 | 0 | 0.002226 | 0.002 | 0.01575 | 0.001875 | 0 | 0.002421 | 0.008 | 0.03675 | 300.527 | 0 | 64.49485 | 0.004882 | 0 | 0.070027 | 0.007217 | 0 | 0.028775 | 0.021236 | 0 | 0.344801 | 0.173613 | 0.628849 | 0.332831 | 0.420667 | 0.030964 | 0 | 0.377511 | 0.173613 | 0.628849 | 0.332831 | 0.420667 | 1.068397 | 0 | 2.450832 | 0.002974 | 0 | 0.000638 |
| Santa Clara | 2022 | LDT1 | Aggregate | Aggregate | Diesel | 36.8388 | 667.9121 | 121.0603 | 1.185315 | 0 | 0 | 0.157566 | 0 | 0 | 0.002 | 0.01575 | 0.164691 | 0 | 0 | 0.008 | 0.03675 | 408.3259 | 0 | 0 | 0.009501 | 0 | 0 | 0.064183 | 0 | 0 | 0.204561 | 0 | 0 | 0 | 0 | 0.232879 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1.159574 | 0 | 0 | 0.00386 | 0 | 0 |
| Santa Clara | 2022 | LDT1 | Aggregate | Aggregate | Electricity | 624.8771 | 24059.07 | 3099.469 | 0 | 0 | 0 | 0 | 0 | 0 | 0.002 | 0.01575 | 0 | 0 | 0 | 0.008 | 0.03675 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.004888 | 0 | 0.00456 | 0.017501 | 0 | 0 | 0 | 0.004888 | 0 | 0.00456 | 0.017501 | 0 | 0 | 0 | 0 | 0 | 0 |
| Santa Clara | 2022 | LDT2 | Aggregate | Aggregate | Gasoline | 250455.4 | 8295824 | 1167439 | 0.077278 | 0 | 0.299792 | 0.001307 | 0 | 0.001684 | 0.002 | 0.01575 | 0.001421 | 0 | 0.001831 | 0.008 | 0.03675 | 327.6413 | 0 | 71.42656 | 0.003665 | 0 | 0.072415 | 0.006473 | 0 | 0.033384 | 0.014906 | 0 | 0.339292 | 0.128171 | 0.436499 | 0.281495 | 0.299507 | 0.021744 | 0 | 0.371482 | 0.128171 | 0.436499 | 0.281495 | 0.299507 | 0.860463 | 0 | 2.923834 | 0.003242 | 0 | 0.000707 |
| Santa Clara | 2022 | LDT2 | Aggregate | Aggregate | Diesel | 1663.513 | 62652.21 | 8136.947 | 0.039252 | 0 | 0 | 0.004754 | 0 | 0 | 0.002 | 0.01575 | 0.004969 | 0 | 0 | 0.008 | 0.03675 | 275.5741 | 0 | 0 | 0.000647 | 0 | 0 | 0.043316 | 0 | 0 | 0.013935 | 0 | 0 | 0 | 0 | 0.015864 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.123161 | 0 | 0 | 0.002605 | 0 | 0 |
| Santa Clara | 2022 | LDT2 | Aggregate | Aggregate | Electricity | 2695.96 | 82111.52 | 13502.44 | 0 | 0 | 0 | 0 | 0 | 0 | 0.002 | 0.01575 | 0 | 0 | 0 | 0.008 | 0.03675 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.004888 | 0 | 0.00456 | 0.017501 | 0 | 0 | 0 | 0.004888 | 0 | 0.00456 | 0.017501 | 0 | 0 | 0 | 0 | 0 | 0 |
| Santa Clara | 2022 | LHDT1 | Aggregate | Aggregate | Gasoline | 16536.9 | 566343.8 | 246375.2 | 0.235238 | 0.038471 | 0.530556 | 0.002161 | 0 | 0.000388 | 0.002 | 0.03276 | 0.00235 | 0 | 0.000422 | 0.008 | 0.07644 | 1006.569 | 121.1222 | 18.98971 | 0.01086 | 0.121305 | 0.025473 | 0.014262 | 0.003125 | 0.041267 | 0.052874 | 0.440699 | 0.129054 | 0.125369 | 0.861898 | 0.025267 | 0.050121 | 0.077153 | 0.643067 | 0.141298 | 0.125369 | 0.861898 | 0.025267 | 0.050121 | 0.97349 | 3.751848 | 1.764958 | 0.009961 | 0.001199 | 0.000188 |
| Santa Clara | 2022 | LHDT1 | Aggregate | Aggregate | Diesel | 11104.44 | 423266.4 | 139679.8 | 1.613919 | 2.033114 | 0 | 0.021273 | 0.026869 | 0 | 0.003 | 0.03276 | 0.022235 | 0.028084 | 0 | 0.012 | 0.07644 | 544.3042 | 133.047 | 0 | 0.007318 | 0.005098 | 0 | 0.085557 | 0.020913 | 0 | 0.157544 | 0.10976 | 0 | 0 | 0 | 0.179353 | 0.124954 | 0 | 0 | 0 | 0 | 0 | 0 | 0.661457 | 0.909745 | 0 | 0.005146 | 0.001258 | 0 |
| Santa Clara | 2022 | LHDT2 | Aggregate | Aggregate | Gasoline | 2253.3 | 77523.96 | 33570.81 | 0.240034 | 0.037891 | 0.516259 | 0.002078 | 0 | 0.000346 | 0.002 | 0.03822 | 0.00226 | 0 | 0.000377 | 0.008 | 0.08918 | 1147.291 | 139.0737 | 21.54397 | 0.008737 | 0.120275 | 0.024583 | 0.015135 | 0.003045 | 0.039911 | 0.039365 | 0.434196 | 0.123837 | 0.121118 | 0.819863 | 0.023133 | 0.046225 | 0.057441 | 0.633578 | 0.135586 | 0.121118 | 0.819863 | 0.023133 | 0.046225 | 0.722025 | 3.75488 | 1.776904 | 0.011353 | 0.001376 | 0.000213 |
| Santa Clara | 2022 | LHDT2 | Aggregate | Aggregate | Diesel | 4438.985 | 166319.5 | 55836.85 | 1.346918 | 2.041795 | 0 | 0.021771 | 0.027131 | 0 | 0.003 | 0.03822 | 0.022756 | 0.028358 | 0 | 0.012 | 0.08918 | 612.5422 | 213.4891 | 0 | 0.007003 | 0.005098 | 0 | 0.096283 | 0.033558 | 0 | 0.150761 | 0.10976 | 0 | 0 | 0 | 0.171631 | 0.124954 | 0 | 0 | 0 | 0 | 0 | 0 | 0.634383 | 0.909745 | 0 | 0.005791 | 0.002018 | 0 |
| Santa Clara | 2022 | MCY | Aggregate | Aggregate | Gasoline | 32925.36 | 241011 | 65850.71 | 1.151611 | 0 | 0.270649 | 0.001812 | 0 | 0.002978 | 0.001 | 0.00504 | 0.001937 | 0 | 0.003161 | 0.004 | 0.01176 | 210.2729 | 0 | 61.39967 | 0.328946 | 0 | 0.256691 | 0.06628 | 0 | 0.015352 | 2.228751 | 0 | 1.954835 | 0.704215 | 2.060677 | 0.995009 | 1.817765 | 2.753726 | 0 | 2.127328 | 0.704215 | 2.060677 | 0.995009 | 1.817765 | 19.18808 | 0 | 9.0045 | 0.002081 | 0 | 0.000608 |
| Santa Clara | 2022 | MDV | Aggregate | Aggregate | Gasoline | 151961.1 | 4876240 | 702265.7 | 0.099589 | 0 | 0.371177 | 0.001397 | 0 | 0.001912 | 0.002 | 0.01575 | 0.001519 | 0 | 0.002079 | 0.008 | 0.03675 | 396.236 | 0 | 86.90417 | 0.004621 | 0 | 0.087878 | 0.007887 | 0 | 0.036541 | 0.019446 | 0 | 0.437645 | 0.147462 | 0.472734 | 0.331376 | 0.347901 | 0.028322 | 0 | 0.479161 | 0.147462 | 0.472734 | 0.331376 | 0.347901 | 0.980018 | 0 | 3.406111 | 0.003921 | 0 | 0.00086 |
| Santa Clara | 2022 | MDV | Aggregate | Aggregate | Diesel | 3721.225 | 135478.8 | 18101.22 | 0.038775 | 0 | 0 | 0.004203 | 0 | 0 | 0.002 | 0.01575 | 0.004393 | 0 | 0 | 0.008 | 0.03675 | 360.3121 | 0 | 0 | 0.000478 | 0 | 0 | 0.056636 | 0 | 0 | 0.010285 | 0 | 0 | 0 | 0 | 0.011709 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.184421 | 0 | 0 | 0.003406 | 0 | 0 |
| Santa Clara | 2022 | MDV | Aggregate | Aggregate | Electricity | 1080.167 | 34834.41 | 5508.057 | 0 | 0 | 0 | 0 | 0 | 0 | 0.002 | 0.01575 | 0 | 0 | 0 | 0.008 | 0.03675 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.004888 | 0 | 0.00456 | 0.017501 | 0 | 0 | 0 | 0.004888 | 0 | 0.00456 | 0.017501 | 0 | 0 | 0 | 0 | 0 | 0 |
| Santa Clara | 2022 | MH | Aggregate | Aggregate | Gasoline | 2891.835 | 26265.33 | 289.2991 | 0.413359 | 0 | 0.334516 | 0.001633 | 0 | 0.000362 | 0.003 | 0.05586 | 0.001776 | 0 | 0.000394 | 0.012 | 0.13034 | 1756.095 | 0 | 25.97914 | 0.015124 | 0 | 0.032419 | 0.025426 | 0 | 0.034963 | 0.066433 | 0 | 0.137518 | 0.088945 | 2.156488 | 0.036513 | 0.106238 | 0.096939 | 0 | 0.150564 | 0.088945 | 2.156488 | 0.036513 | 0.106238 | 1.697423 | 0 | 3.037213 | 0.017378 | 0 | 0.000257 |
| Santa Clara | 2022 | MH | Aggregate | Aggregate | Diesel | 1019.353 | 9712.32 | 101.9353 | 4.184918 | 0 | 0 | 0.085576 | 0 | 0 | 0.004 | 0.05586 | 0.089445 | 0 | 0 | 0.016 | 0.13034 | 1018.587 | 0 | 0 | 0.005027 | 0 | 0 | 0.160108 | 0 | 0 | 0.108225 | 0 | 0 | 0 | 0 | 0.123206 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.382773 | 0 | 0 | 0.009629 | 0 | 0 |
| Santa Clara | 2022 | MHDT | Aggregate | Aggregate | Gasoline | 1456.112 | 75284.48 | 29133.88 | 0.474932 | 0.088412 | 0.377896 | 0.001319 | 0 | 0.000449 | 0.003 | 0.05586 | 0.001435 | 0 | 0.00051 | 0.012 | 0.13034 | 1722.789 | 532.6547 | 39.05903 | 0.014881 | 0.262553 | 0.04023 | 0.023376 | 0.007484 | 0.029181 | 0.072945 | 1.011617 | 0.219187 | 0.087649 | 0.506692 | 0.018903 | 0.038182 | 0.106442 | 1.47615 | 0.239982 | 0.087649 | 0.506692 | 0.018903 | 0.038182 | 1.680953 | 15.10368 | 4.939745 | 0.017048 | 0.005271 | 0.000287 |
| Santa Clara | 2022 | MHDT | Aggregate | Aggregate | Diesel | 9430.024 | 551923.8 | 94917.85 | 2.277066 | 7.413096 | 1.687822 | 0.039812 | 0.015538 | 0 | 0.003 | 0.05586 | 0.041612 | 0.01624 | 0 | 0.012 | 0.13034 | 1050.628 | 914.98 | 0 | 0.004378 | 0.004667 | 0 | 0.165144 | 0.143822 | 0 | 0.094265 | 0.100481 | 0 | 0 | 0 | 0.107314 | 0.11439 | 0 | 0 | 0 | 0 | 0 | 0 | 0.32147 | 2.58681 | 0 | 0.009926 | 0.008644 | 0 |
| Santa Clara | 2022 | OBUS | Aggregate | Aggregate | Gasoline | 501.9655 | 24150.25 | 10043.33 | 0.443255 | 0.065137 | 0.32561 | 0.000952 | 0 | 0.000213 | 0.003 | 0.05586 | 0.001035 | 0 | 0.000232 | 0.012 | 0.13034 | 1767.375 | 377.9272 | 26.38965 | 0.013022 | 0.200837 | 0.030332 | 0.022732 | 0.005646 | 0.026387 | 0.061436 | 0.747416 | 0.156088 | 0.026802 | 0.295531 | 0.015889 | 0.036065 | 0.089647 | 1.090627 | 0.170897 | 0.026802 | 0.295531 | 0.015889 | 0.036065 | 1.365657 | 5.781487 | 3.261978 | 0.01749 | 0.00374 | 0.000261 |
| Santa Clara | 2022 | OBUS | Aggregate | Aggregate | Diesel | 762.3964 | 53839.19 | 6991.348 | 2.314382 | 10.4182 | 2.005848 | 0.021086 | 0.015288 | 0 | 0.003 | 0.05586 | 0.02204 | 0.015979 | 0 | 0.012 | 0.13034 | 1185.916 | 1892.098 | 0 | 0.002538 | 0.027964 | 0 | 0.18641 | 0.297411 | 0 | 0.054653 | 0.602048 | 0 | 0 | 0 | 0.062218 | 0.685386 | 0 | 0 | 0 | 0 | 0 | 0 | 0.239321 | 8.657847 | 0 | 0.011204 | 0.017876 | 0 |
| Santa Clara | 2022 | SBUS | Aggregate | Aggregate | Gasoline | 249.3134 | 11500.83 | 997.2534 | 0.430325 | 0.924415 | 0.566946 | 0.001196 | 0 | 0.000498 | 0.002 | 0.3192 | 0.001301 | 0 | 0.000541 | 0.008 | 0.7448 | 865.5448 | 2582.545 | 48.67377 | 0.011856 | 2.442701 | 0.058309 | 0.024366 | 0.088243 | 0.053528 | 0.058325 | 10.61061 | 0.332747 | 0.061157 | 0.415506 | 0.010413 | 0.025261 | 0.085108 | 15.48298 | 0.364316 | 0.061157 | 0.415506 | 0.010413 | 0.025261 | 1.259002 | 82.05319 | 8.624782 | 0.008565 | 0.025556 | 0.000482 |
| Santa Clara | 2022 | SBUS | Aggregate | Aggregate | Diesel | 1014.086 | 31965.96 | 11702.42 | 6.765334 | 45.00081 | 0.786274 | 0.042018 | 0.05033 | 0 | 0.003 | 0.3192 | 0.043917 | 0.052605 | 0 | 0.012 | 0.7448 | 1145.085 | 3716.49 | 0 | 0.004669 | 0.013069 | 0 | 0.179991 | 0.584181 | 0 | 0.100532 | 0.281366 | 0 | 0 | 0 | 0.114448 | 0.320314 | 0 | 0 | 0 | 0 | 0 | 0 | 0.27746 | 5.867721 | 0 | 0.010818 | 0.035112 | 0 |
| Santa Clara | 2022 | UBUS | Aggregate | Aggregate | Gasoline | 8.419396 | 1059.849 | 33.67758 | 0.491737 | 0 | 1.236285 | 0.000328 | 0 | 9.7E-05 | 0.003 | 0.05586 | 0.000356 | 0 | 0.000105 | 0.012 | 0.13034 | 2351.817 | 0 | 104.599 | 0.006789 | 0 | 0.178596 | 0.036386 | 0 | 0.091633 | 0.022728 | 0 | 0.768536 | 0.190076 | 1.35875 | 0.031079 | 0.049249 | 0.033164 | 0 | 0.84145 | 0.190076 | 1.35875 | 0.031079 | 0.049249 | 0.527722 | 0 | 8.852622 | 0.023273 | 0 | 0.001035 |
| Santa Clara | 2022 | UBUS | Aggregate | Aggregate | Diesel | 423.2358 | 46482.16 | 1692.943 | 0.803453 | 0 | 0 | 0.005651 | 0 | 0 | 0.008415 | 0.029326 | 0.005907 | 0 | 0 | 0.033661 | 0.068427 | 1481.178 | 0 | 0 | 0.077358 | 0 | 0 | 0.232821 | 0 | 0 | 0.001105 | 0 | 0 | 0 | 0 | 0.078949 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.131304 | 0 | 0 | 0.014002 | 0 | 0 |
| Santa Clara | 2022 | UBUS | Aggregate | Aggregate | Natural Ga | 104.0289 | 12325.91 | 416.1154 | 0.48934 | 0 | 0 | 0.003183 | 0 | 0 | 0.008475 | 0.029034 | 0.003327 | 0 | 0 | 0.033899 | 0.067746 | 2016.3 | 0 | 0 | 6.413607 | 0 | 0 | 0.411036 | 0 | 0 | 0.091638 | 0 | 0 | 0 | 0 | 6.545556 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 49.80397 | 0 | 0 | 0 | 0 | 0 |

Source: EMFAC2017 (v1.0.3) Emission Rates
Region Type: County
Region: Santa Clara
Calendar Year: 2023
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for VMT, trips/day for Trips, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HOTSOAK and RUNLOSS, g/vehicle/day for IDLEX, RESTLOSS and DIURN

| Region | Calendar Y | Vehicle Cat | Model Yea | Speed | Fuel | Population | VMT | Trips | NOx_RUNE | NOx_IDLE | NOx_STRE | PM2.5_RU | PM2.5_IDL | PM2.5_STR | PM2.5_PMB | PM2.5_PMT | PM10_RUP | PM10_IDL | PM10_STR | PM10_PMB | PM10_PMT | CO2_RUNE | CO2_IDLEX | CO2_STRE | CH4_RUNE | CH4_IDLEX | CH4_STRE | N2O_RUNE | N2O_IDLEX | N2O_STRE | ROG_RUNI | ROG_IDLE | ROG_STRE | ROG_HOTS | ROG_RUNI | ROG_REST | ROG_DIUR | TOG_RUNE | TOG_IDLEX | TOG_STRE | TOG_HOTS | TOG_RUNI | TOG_REST | TOG_DIUR | CO_RUNEX | CO_IDLEX | CO_STREX | SOx_RUNE | SOx_IDLEX | SOx_STREX |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Santa Clara | 2023 | HHDT | Aggregate | Aggregate | Gasoline | 4.815448 | 553.4124 | 96.34748 | 3.178298 | 0 | 0.254165 | 0.001157 | 0 | 0.000623 | 0.005 | 0.02646 | 0.001259 | 0 | 0.000677 | 0.02 | 0.06174 | 1915.642 | 0 | 46.38676 | 0.084318 | 0 | 0.000462 | 0.130889 | 0 | 0.008571 | 0.409676 | 0 | 0.002416 | 0.109047 | 0.558691 | 0.026465 | 0.047808 | 0.597798 | 0 | 0.002645 | 0.109047 | 0.558691 | 0.026465 | 0.047808 | 27.8207 | 0 | 5.57125 | 0.018957 | 0 | 0.000459 |
| Santa Clara | 2023 | HHDT | Aggregate | Aggregate | Diesel | 8401.79 | 1034051 | 89180.29 | 2.696198 | 57.80539 | 2.360147 | 0.023887 | 0.026373 | 0 | 0.008879 | 0.026103 | 0.024967 | 0.027565 | 0 | 0.035514 | 0.060907 | 1411.729 | 11326.45 | 0 | 0.001106 | 0.214953 | 0 | 0.221904 | 1.78036 | 0 | 0.023817 | 4.627869 | 0 | 0 | 0 | 0 | 0.027114 | 5.268477 | 0 | 0 | 0 | 0 | 0 | 0.233741 | 67.52667 | 0 | 0.013337 | 0.107007 | 0 |
| Santa Clara | 2023 | HHDT | Aggregate | Aggregate | Natural Ga | 360.3246 | 14693.25 | 1405.266 | 1.588314 | 20.76108 | 0 | 0.004529 | 0.028055 | 0 | 0.009 | 0.02646 | 0.004734 | 0.029323 | 0 | 0.036 | 0.06174 | 3174.275 | 4018.428 | 0 | 3.456549 | 1.237751 | 0 | 0.647097 | 0.819183 | 0 | 0.148044 | 0.042416 | 0 | 0 | 0 | 3.64007 | 1.291393 | 0 | 0 | 0 | 0 | 0 | 10.76049 | 21.60789 | 0 | 0 | 0 | 0 |
| Santa Clara | 2023 | LDA | Aggregate | Aggregate | Gasoline | 751359.6 | 26739811 | 3542534 | 0.034059 | 0 | 0.184615 | 0.001247 | 0 | 0.001682 | 0.002 | 0.01575 | 0.001356 | 0 | 0.001829 | 0.008 | 0.03675 | 252.091 | 0 | 53.87356 | 0.002048 | 0 | 0.050071 | 0.004113 | 0 | 0.025656 | 0.007696 | 0 | 0.221504 | 0.094205 | 0.212597 | 0.166193 | 0.187545 | 0.011228 | 0 | 0.242518 | 0.094205 | 0.212597 | 0.166193 | 0.187545 | 0.586148 | 0 | 2.259775 | 0.002495 | 0 | 0.000533 |
| Santa Clara | 2023 | LDA | Aggregate | Aggregate | Diesel | 7591.987 | 280497.7 | 36090.42 | 0.058679 | 0 | 0 | 0 | 0.005598 | 0 | 0 | 0.002 | 0.01575 | 0.005851 | 0 | 0 | 0.008 | 0.03675 | 195.1926 | 0 | 0 | 0.000552 | 0 | 0 | 0.030682 | 0 | 0 | 0.011887 | 0 | 0 | 0 | 0 | 0.013532 | 0 | 0 | 0 | 0 | 0 | 0.188023 | 0 | 0 | 0.001845 | 0 | 0 |
| Santa Clara | 2023 | LDA | Aggregate | Aggregate | Electricity | 28074.67 | 1034348 | 136585.9 | 0 | 0 | 0 | 0 | 0 | 0 | 0.002 | 0.01575 | 0 | 0 | 0 | 0.008 | 0.03675 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.004888 | 0 | 0.00456 | 0.017501 | 0 | 0 | 0 | 0.004888 | 0 | 0.00456 | 0.017501 | 0 | 0 | 0 | 0 | 0 | 0 |
| Santa Clara | 2023 | LDT1 | Aggregate | Aggregate | Gasoline | 75517.84 | 2475367 | 350251 | 0.078745 | 0 | 0.232751 | 0.001604 | 0 | 0.002087 | 0.002 | 0.01575 | 0.001745 | 0 | 0.00227 | 0.008 | 0.03675 | 292.8794 | 0 | 62.80265 | 0.004214 | 0 | 0.063907 | 0.006493 | 0 | 0.02759 | 0.018087 | 0 | 0.309393 | 0.159698 | 0.584022 | 0.309209 | 0.384203 | 0.026384 | 0 | 0.338746 | 0.159698 | 0.584022 | 0.309209 | 0.384203 | 0.955745 | 0 | 2.366858 | 0.002898 | 0 | 0.000621 |
| Santa Clara | 2023 | LDT1 | Aggregate | Aggregate | Diesel | 34.1777 | 620.5176 | 112.4335 | 1.098891 | 0 | 0 | 0.146297 | 0 | 0 | 0.002 | 0.01575 | 0.152912 | 0 | 0 | 0.008 | 0.03675 | 401.6268 | 0 | 0 | 0.008837 | 0 | 0 | 0.06313 | 0 | 0 | 0.190256 | 0 | 0 | 0 | 0 | 0.216594 | 0 | 0 | 0 | 0 | 0 | 0 | 1.080107 | 0 | 0 | 0.003797 | 0 | 0 |
| Santa Clara | 2023 | LDT1 | Aggregate | Aggregate | Electricity | 788.4144 | 31182.48 | 3917.01 | 0 | 0 | 0 | 0 | 0 | 0 | 0.002 | 0.01575 | 0 | 0 | 0 | 0.008 | 0.03675 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.004888 | 0 | 0.00456 | 0.017501 | 0 | 0 | 0 | 0.004888 | 0 | 0.00456 | 0.017501 | 0 | 0 | 0 | 0 | 0 | 0 |
| Santa Clara | 2023 | LDT2 | Aggregate | Aggregate | Gasoline | 254167.5 | 8294772 | 1184412 | 0.06837 | 0 | 0.275999 | 0.001263 | 0 | 0.001639 | 0.002 | 0.01575 | 0.001374 | 0 | 0.001783 | 0.008 | 0.03675 | 316.8848 | 0 | 69.17216 | 0.003305 | 0 | 0.067695 | 0.00592 | 0 | 0.031692 | 0.013288 | 0 | 0.313842 | 0.123254 | 0.427158 | 0.276975 | 0.291298 | 0.019387 | 0 | 0.343617 | 0.123254 | 0.427158 | 0.276975 | 0.291298 | 0.800025 | 0 | 2.837237 | 0.003136 | 0 | 0.000685 |
| Santa Clara | 2023 | LDT2 | Aggregate | Aggregate | Diesel | 1802.688 | 66004.69 | 8781.203 | 0.037098 | 0 | 0 | 0.004581 | 0 | 0 | 0.002 | 0.01575 | 0.004788 | 0 | 0 | 0.008 | 0.03675 | 268.3329 | 0 | 0 | 0.000636 | 0 | 0 | 0.042178 | 0 | 0 | 0.01369 | 0 | 0 | 0 | 0 | 0.015585 | 0 | 0 | 0 | 0 | 0 | 0 | 0.124122 | 0 | 0 | 0.002537 | 0 | 0 |
| Santa Clara | 2023 | LDT2 | Aggregate | Aggregate | Electricity | 3304.555 | 98384.64 | 16510.28 | 0 | 0 | 0 | 0 | 0 | 0 | 0.002 | 0.01575 | 0 | 0 | 0 | 0.008 | 0.03675 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.004888 | 0 | 0.00456 | 0.017501 | 0 | 0 | 0 | 0.004888 | 0 | 0.00456 | 0.017501 | 0 | 0 | 0 | 0 | 0 | 0 |
| Santa Clara | 2023 | LHDT1 | Aggregate | Aggregate | Gasoline | 16555.13 | 562142 | 246646.7 | 0.210457 | 0.037398 | 0.511224 | 0.002137 | 0 | 0.000377 | 0.002 | 0.03276 | 0.002324 | 0 | 0.00041 | 0.008 | 0.07644 | 994.5276 | 120.0678 | 18.82225 | 0.009676 | 0.118805 | 0.02387 | 0.012895 | 0.003089 | 0.040194 | 0.046707 | 0.428491 | 0.120584 | 0.120359 | 0.829144 | 0.024473 | 0.047994 | 0.068155 | 0.625253 | 0.132025 | 0.120359 | 0.829144 | 0.024473 | 0.047994 | 0.867722 | 3.754766 | 1.724 | 0.009842 | 0.001188 | 0.000186 |
| Santa Clara | 2023 | LHDT1 | Aggregate | Aggregate | Diesel | 11594.64 | 435998.6 | 145846 | 1.400562 | 1.919948 | 0 | 0.019496 | 0.026734 | 0 | 0.003 | 0.03276 | 0.020378 | 0.027943 | 0 | 0.012 | 0.07644 | 535.8142 | 131.265 | 0 | 0.007088 | 0.005098 | 0 | 0.084223 | 0.020633 | 0 | 0.152594 | 0.10976 | 0 | 0 | 0 | 0.173718 | 0.124954 | 0 | 0 | 0 | 0 | 0 | 0.641529 | 0.909745 | 0 | 0.005065 | 0.001241 | 0 |
| Santa Clara | 2023 | LHDT2 | Aggregate | Aggregate | Gasoline | 2285.018 | 77947.41 | 34043.37 | 0.21093 | 0.036728 | 0.496392 | 0.002042 | 0 | 0.000334 | 0.002 | 0.03822 | 0.00222 | 0 | 0.000363 | 0.008 | 0.08918 | 1132.921 | 137.76 | 21.32176 | 0.007566 | 0.117557 | 0.022949 | 0.013529 | 0.00301 | 0.038884 | 0.03359 | 0.420989 | 0.114958 | 0.114086 | 0.752468 | 0.022171 | 0.043386 | 0.049014 | 0.614306 | 0.125864 | 0.114086 | 0.752468 | 0.022171 | 0.043386 | 0.620201 | 3.758932 | 1.718516 | 0.011211 | 0.001363 | 0.000211 |
| Santa Clara | 2023 | LHDT2 | Aggregate | Aggregate | Diesel | 4660.728 | 171541.4 | 58626.09 | 1.17888 | 1.93121 | 0 | 0.020832 | 0.02707 | 0 | 0.003 | 0.03822 | 0.021774 | 0.028294 | 0 | 0.012 | 0.08918 | 603.2432 | 210.8377 | 0 | 0.00683 | 0.005098 | 0 | 0.094821 | 0.033141 | 0 | 0.147052 | 0.10976 | 0 | 0 | 0 | 0.167409 | 0.124954 | 0 | 0 | 0 | 0 | 0 | 0.621451 | 0.909745 | 0 | 0.005703 | 0.001993 | 0 |
| Santa Clara | 2023 | MCY | Aggregate | Aggregate | Gasoline | 33683.49 | 242470.7 | 67366.97 | 1.148719 | 0 | 0.270672 | 0.00184 | 0 | 0.002859 | 0.001 | 0.00504 | 0.001969 | 0 | 0.003039 | 0.004 | 0.01176 | 210.1672 | 0 | 61.03922 | 0.326994 | 0 | 0.255241 | 0.066143 | 0 | 0.01536 | 2.208057 | 0 | 1.941958 | 0.689105 | 1.969445 | 0.985054 | 1.809555 | 2.736079 | 0 | 2.11358 | 0.689105 | 1.969445 | 0.985054 | 1.809555 | 18.86893 | 0 | 9.034026 | 0.00208 | 0 | 0.000604 |
| Santa Clara | 2023 | MDV | Aggregate | Aggregate | Gasoline | 154431.4 | 4896063 | 714241.1 | 0.085683 | 0 | 0.336488 | 0.001332 | 0 | 0.001823 | 0.002 | 0.01575 | 0.001448 | 0 | 0.001982 | 0.008 | 0.03675 | 383.1839 | 0 | 84.08131 | 0.004049 | 0 | 0.08064 | 0.007039 | 0 | 0.034344 | 0.016817 | 0 | 0.396565 | 0.140569 | 0.457303 | 0.323766 | 0.336538 | 0.024505 | 0 | 0.434185 | 0.140569 | 0.457303 | 0.323766 | 0.336538 | 0.891357 | 0 | 3.240031 | 0.003792 | 0 | 0.000832 |
| Santa Clara | 2023 | MDV | Aggregate | Aggregate | Diesel | 4004.429 | 142223.9 | 19410.39 | 0.034292 | 0 | 0 | 0.003829 | 0 | 0 | 0.002 | 0.01575 | 0.004002 | 0 | 0 | 0.008 | 0.03675 | 350.448 | 0 | 0 | 0.000445 | 0 | 0 | 0.055086 | 0 | 0 | 0.009578 | 0 | 0 | 0 | 0 | 0.010904 | 0 | 0 | 0 | 0 | 0 | 0 | 0.180483 | 0 | 0 | 0.003313 | 0 | 0 |
| Santa Clara | 2023 | MDV | Aggregate | Aggregate | Electricity | 1532.638 | 48234.63 | 7794.674 | 0 | 0 | 0 | 0 | 0 | 0 | 0.002 | 0.01575 | 0 | 0 | 0 | 0.008 | 0.03675 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.004888 | 0 | 0.00456 | 0.017501 | 0 | 0 | 0 | 0.004888 | 0 | 0.00456 | 0.017501 | 0 | 0 | 0 | 0 | 0 | 0 |
| Santa Clara | 2023 | MH | Aggregate | Aggregate | Gasoline | 2857.04 | 26157.03 | 285.8182 | 0.361451 | 0 | 0.336127 | 0.001555 | 0 | 0.000345 | 0.003 | 0.05586 | 0.001691 | 0 | 0.000375 | 0.012 | 0.13034 | 1731.827 | 0 | 25.56622 | 0.013045 | 0 | 0.031746 | 0.02323 | 0 | 0.035777 | 0.05596 | 0 | 0.132332 | 0.081683 | 1.97006 | 0.033844 | 0.096831 | 0.081657 | 0 | 0.144887 | 0.081683 | 1.97006 | 0.033844 | 0.096831 | 1.390474 | 0 | 2.91812 | 0.017138 | 0 | 0.000253 |
| Santa Clara | 2023 | MH | Aggregate | Aggregate | Diesel | 1053.778 | 9907.819 | 105.3778 | 4.0099 | 0 | 0 | 0.079211 | 0 | 0 | 0.004 | 0.05586 | 0.082793 | 0 | 0 | 0.016 | 0.13034 | 1007.175 | 0 | 0 | 0.004873 | 0 | 0 | 0.158314 | 0 | 0 | 0.104917 | 0 | 0 | 0 | 0 | 0.119441 | 0 | 0 | 0 | 0 | 0 | 0 | 0.367033 | 0 | 0 | 0.009521 | 0 | 0 |
| Santa Clara | 2023 | MHDT | Aggregate | Aggregate | Gasoline | 1507.68 | 78317.15 | 30165.67 | 0.385258 | 0.088623 | 0.367592 | 0.001293 | 0 | 0.000446 | 0.003 | 0.05586 | 0.001406 | 0 | 0.000485 | 0.012 | 0.13034 | 1697.438 | 526.34 | 38.16999 | 0.011942 | 0.266499 | 0.038604 | 0.019927 | 0.007724 | 0.029367 | 0.057622 | 1.014767 | 0.206928 | 0.080059 | 0.455824 | 0.017154 | 0.033931 | 0.084081 | 1.480746 | 0.22656 | 0.080059 | 0.455824 | 0.017154 | 0.033931 | 1.316681 | 15.14023 | 4.623501 | 0.016798 | 0.005209 | 0.000378 |
| Santa Clara | 2023 | MHDT | Aggregate | Aggregate | Diesel | 9262.822 | 558718.8 | 92583.75 | 1.59247 | 5.703996 | 2.12952 | 0.007398 | 0.005414 | 0 | 0.003 | 0.05586 | 0.007733 | 0.005658 | 0 | 0.012 | 0.13034 | 1010.629 | 886.4048 | 0 | 0.000529 | 0.003602 | 0 | 0.158857 | 0.13933 | 0 | 0.011387 | 0.077551 | 0 | 0 | 0 | 0.012963 | 0.088286 | 0 | 0 | 0 | 0 | 0 | 0.113094 | 2.687765 | 0 | 0.009548 | 0.008374 | 0 |
| Santa Clara | 2023 | OBUS | Aggregate | Aggregate | Gasoline | 503.4572 | 23697.77 | 10073.17 | 0.401971 | 0.065148 | 0.321785 | 0.000992 | 0 | 0.000219 | 0.003 | 0.05586 | 0.001079 | 0 | 0.000239 | 0.012 | 0.13034 | 1743.614 | 374.6133 | 26.08015 | 0.011771 | 0.201157 | 0.029667 | 0.020963 | 0.005691 | 0.026276 | 0.05538 | 0.74759 | 0.152323 | 0.027045 | 0.299878 | 0.01619 | 0.03654 | 0.080811 | 1.090882 | 0.166775 | 0.027045 | 0.299878 | 0.01619 | 0.03654 | 1.211154 | 5.782545 | 3.193149 | 0.017254 | 0.003707 | 0.000258 |
| Santa Clara | 2023 | OBUS | Aggregate | Aggregate | Diesel | 753.4001 | 53354.33 | 6899.877 | 1.902854 | 8.28017 | 2.210652 | 0.009253 | 0.002588 | 0 | 0.003 | 0.05586 | 0.009671 | 0.002705 | 0 | 0.012 | 0.13034 | 1163.247 | 1820.683 | 0 | 0.000567 | 0.024706 | 0 | 0.182846 | 0.286186 | 0 | 0.012205 | 0.533913 | 0 | 0 | 0 | 0.013895 | 0.605542 | 0 | 0 | 0 | 0 | 0 | 0.141032 | 9.053135 | 0 | 0.01099 | 0.017201 | 0 |
| Santa Clara | 2023 | SBUS | Aggregate | Aggregate | Gasoline | 263.5229 | 11968.77 | 1054.092 | 0.420713 | 0.924728 | 0.578334 | 0.001201 | 0 | 0.000506 | 0.002 | 0.3192 | 0.001307 | 0 | 0.00055 | 0.008 | 0.7448 | 859.0893 | 2565.057 | 48.16666 | 0.011122 | 2.441451 | 0.057864 | 0.023879 | 0.088232 | 0.054355 | 0.054742 | 10.61517 | 0.330464 | 0.063152 | 0.426847 | 0.010977 | 0.026004 | 0.07988 | 15.48964 | 0.361817 | 0.063152 | 0.426847 | 0.010977 | 0.026004 | 1.167899 | 82.08092 | 8.465591 | 0.008501 | 0.025383 | 0.000477 |
| Santa Clara | 2023 | SBUS | Aggregate | Aggregate | Diesel | 1013.614 | 31894.7 | 11696.96 | 6.544978 | 44.13946 | 0.832887 | 0.040645 | 0.046993 | 0 | 0.003 | 0.3192 | 0.042483 | 0.049118 | 0 | 0.012 | 0.7448 | 1136.76 | 3703.284 | 0 | 0.004568 | 0.012858 | 0 | 0.178683 | 0.582105 | 0 | 0.098352 | 0.27682 | 0 | 0 | 0 | 0.111967 | 0.315138 | 0 | 0 | 0 | 0 | 0 | 0.275014 | 6.038953 | 0 | 0.01074 | 0.034987 | 0 |
| Santa Clara | 2023 | UBUS | Aggregate | Aggregate | Gasoline | 8.423223 | 1060.331 | 33.69289 | 0.150806 | 0 | 0.638272 | 0.002209 | 0 | 0.000888 | 0.003 | 0.05586 | 0.002402 | 0 | 0.000966 | 0.012 | 0.13034 | 1956.542 | 0 | 88.49758 | 0.007038 | 0 | 0.09018 | 0.015696 | 0 | 0.066738 | 0.022728 | 0 | 0.374288 | 0.008476 | 0.037646 | 0.001991 | 0.00493 | 0.033164 | 0 | 0.409798 | 0.008476 | 0.037646 | 0.001991 | 0.00493 | 0.258128 | 0 | 8.852622 | 0.019362 | 0 | 0.000876 |
| Santa Clara | 2023 | UBUS | Aggregate | Aggregate | Diesel | 430.5287 | 46874.38 | 1722.115 | 0.802545 | 0 | 0 | 0.005646 | 0 | 0 | 0.008399 | 0.029403 | 0.005901 | 0 | 0 | 0.033598 | 0.068607 | 1480.062 | 0 | 0 | 0.077245 | 0 | 0 | 0.232645 | 0 | 0 | 0.001104 | 0 | 0 | 0 | 0 | 0.078834 | 0 | 0 | 0 | 0 | 0 | 0 | 0.131094 | 0 | 0 | 0.013992 | 0 | 0 |
| Santa Clara | 2023 | UBUS | Aggregate | Aggregate | Natural Ga | 96.97562 | 11960.41 | 387.9025 | 0.491564 | 0 | 0 | 0.003197 | 0 | 0 | 0.008538 | 0.028723 | 0.003341 | 0 | 0 | 0.034153 | 0.06702 | 2024.074 | 0 | 0 | 6.451045 | 0 | 0 | 0.412621 | 0 | 0 | 0.092173 | 0 | 0 | 0 | 0 | 6.583765 | 0 | 0 | 0 | 0 | 0 | 0 | 50.12464 | 0 | 0 | 0 | 0 | 0 |

Source: EMFAC2017 (v1.0.3) Emission Rates
Region Type: County
Region: Santa Clara
Calendar Year: 2024
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for VMT, trips/day for Trips, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HOTSOAK and RUNLOSS, g/vehicle/day for IDLEX, RESTLOSS and DIURN

| Region | Calendar Y | Vehicle Cat | Model Yea | Speed | Fuel | Population | VMT | Trips | NOx_RUNE | NOx_IDLE | NOx_STRE | PM2.5_RU | PM2.5_IDL | PM2.5_STR | PM2.5_PMB | PM2.5_PMT | PM10_RUP | PM10_IDLE | PM10_STR | PM10_PMB | PM10_PMT | CO2_RUNE | CO2_IDLEX | CO2_STRE | CH4_RUNE | CH4_IDLEX | CH4_STRE | N2O_RUNE | N2O_IDLE | N2O_STRE | ROG_RUNI | ROG_IDLE | ROG_STRE | ROG_HOTS | ROG_RUNI | ROG_REST | ROG_DIUR | TOG_RUNE | TOG_IDLEX | TOG_STRE | TOG_HOTS | TOG_RUNI | TOG_REST | TOG_DIUR | CO_RUNEX | CO_IDLEX | CO_STREX | SOx_RUNE | SOx_IDLEX | SOx_STREX |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Santa Clara | 2024 | HHDT | Aggregate | Aggregate | Gasoline | 4.841478 | 594.9439 | 96.86829 | 3.020299 | 0 | 0.189099 | 0.00112 | 0 | 0.000551 | 0.005 | 0.02646 | 0.001219 | 0 | 0.0006 | 0.02 | 0.06174 | 1864.547 | 0 | 45.62595 | 0.076898 | 0 | 0.000429 | 0.12764 | 0 | 0.006341 | 0.362275 | 0 | 0.002245 | 0.090273 | 0.457367 | 0.02213 | 0.039608 | 0.528631 | 0 | 0.002458 | 0.090273 | 0.457367 | 0.02213 | 0.039608 | 27.06461 | 0 | 5.743732 | 0.018451 | 0 | 0.000452 |
| Santa Clara | 2024 | HHDT | Aggregate | Aggregate | Diesel | 8656.54 | 1058418 | 92089.71 | 2.703911 | 57.44438 | 2.359952 | 0.02415 | 0.025633 | 0 | 0.008883 | 0.026117 | 0.025242 | 0.026792 | 0 | 0.035534 | 0.06094 | 1388.989 | 11174.98 | 0 | 0.001112 | 0.214832 | 0 | 0.21833 | 1.756551 | 0 | 0.023933 | 4.625274 | 0 | 0 | 0 | 0 | 0 | 0.027246 | 5.265522 | 0 | 0 | 0 | 0 | 0 | 0.237639 | 67.56762 | 0 | 0.013122 | 0.105576 | 0 |
| Santa Clara | 2024 | HHDT | Aggregate | Aggregate | Natural Ga | 370.7651 | 15119.11 | 1445.984 | 1.4401 | 20.42228 | 0 | 0.004303 | 0.025442 | 0 | 0.009 | 0.02646 | 0.004498 | 0.026593 | 0 | 0.036 | 0.06174 | 3139.748 | 3971.23 | 0 | 3.408101 | 1.228196 | 0 | 0.640058 | 0.809561 | 0 | 0.135992 | 0.039404 | 0 | 0 | 0 | 0 | 0 | 3.577682 | 1.278365 | 0 | 0 | 0 | 0 | 0 | 10.81294 | 21.6569 | 0 | 0 | 0 | 0 |
| Santa Clara | 2024 | LDA | Aggregate | Aggregate | Gasoline | 768835.9 | 26997720 | 3625782 | 0.030395 | 0 | 0.173438 | 0.0012 | 0 | 0.001624 | 0.002 | 0.01575 | 0.001305 | 0 | 0.001766 | 0.008 | 0.03675 | 244.9997 | 0 | 52.35424 | 0.001806 | 0 | 0.046341 | 0.003843 | 0 | 0.024653 | 0.006637 | 0 | 0.202005 | 0.088504 | 0.205724 | 0.155728 | 0.174002 | 0.54881 | 0 | 0.22117 | 0.088504 | 0.205724 | 0.155728 | 0.174002 | 0.54881 | 0 | 2.188955 | 0.002424 | 0 | 0.000518 |
| Santa Clara | 2024 | LDA | Aggregate | Aggregate | Diesel | 8011.408 | 291515.9 | 38101.09 | 0.048102 | 0 | 0 | 0 | 0.004683 | 0 | 0 | 0.002 | 0.01575 | 0.004895 | 0 | 0 | 0.008 | 0.03675 | 190.0661 | 0 | 0 | 0.000484 | 0 | 0 | 0.029876 | 0 | 0 | 0.010417 | 0 | 0 | 0 | 0 | 0.011859 | 0 | 0 | 0 | 0 | 0 | 0 | 0.179098 | 0 | 0 | 0.001797 | 0 | 0 |
| Santa Clara | 2024 | LDA | Aggregate | Aggregate | Electricity | 30564.28 | 1142137 | 148311.4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.002 | 0.01575 | 0 | 0 | 0 | 0.008 | 0.03675 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.004888 | 0 | 0.00456 | 0.017501 | 0 | 0 | 0 | 0 | 0 | 0 | 0.004888 | 0 | 0.00456 | 0.017501 | 0 | 0 | 0 |
| Santa Clara | 2024 | LDT1 | Aggregate | Aggregate | Gasoline | 77491.49 | 2505905 | 359687.4 | 0.068518 | 0 | 0.216191 | 0.0015 | 0 | 0.001965 | 0.002 | 0.01575 | 0.001632 | 0 | 0.002137 | 0.008 | 0.03675 | 285.2357 | 0 | 61.12483 | 0.003656 | 0 | 0.0584 | 0.005889 | 0 | 0.026446 | 0.015495 | 0 | 0.278192 | 0.147313 | 0.544925 | 0.287739 | 0.351787 | 0.022607 | 0 | 0.304585 | 0.147313 | 0.544925 | 0.287739 | 0.351787 | 0.864479 | 0 | 2.286362 | 0.002823 | 0 | 0.000605 |
| Santa Clara | 2024 | LDT1 | Aggregate | Aggregate | Diesel | 31.54053 | 577.7803 | 104.3445 | 1.003934 | 0 | 0 | 0.132094 | 0 | 0 | 0.002 | 0.01575 | 0.138066 | 0 | 0 | 0.008 | 0.03675 | 393.8059 | 0 | 0 | 0.007979 | 0 | 0 | 0.061901 | 0 | 0 | 0.171786 | 0 | 0 | 0 | 0 | 0.195567 | 0 | 0 | 0 | 0 | 0 | 0 | 0.993473 | 0 | 0 | 0.003723 | 0 | 0 |
| Santa Clara | 2024 | LDT1 | Aggregate | Aggregate | Electricity | 971.3075 | 39285.07 | 4827.402 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.002 | 0.01575 | 0 | 0 | 0 | 0.008 | 0.03675 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.004888 | 0 | 0.00456 | 0.017501 | 0 | 0 | 0 | 0 | 0 | 0 | 0.004888 | 0 | 0.00456 | 0.017501 | 0 | 0 | 0 |
| Santa Clara | 2024 | LDT2 | Aggregate | Aggregate | Gasoline | 257922.1 | 8298132 | 1201453 | 0.060942 | 0 | 0.254985 | 0.001226 | 0 | 0.001602 | 0.002 | 0.01575 | 0.001333 | 0 | 0.001742 | 0.008 | 0.03675 | 306.3042 | 0 | 66.94798 | 0.002992 | 0 | 0.063272 | 0.005453 | 0 | 0.030095 | 0.011904 | 0 | 0.290499 | 0.118569 | 0.418242 | 0.272186 | 0.28339 | 0.017369 | 0 | 0.31806 | 0.118569 | 0.418242 | 0.272186 | 0.28339 | 0.750324 | 0 | 2.754987 | 0.003031 | 0 | 0.000663 |
| Santa Clara | 2024 | LDT2 | Aggregate | Aggregate | Diesel | 1933.864 | 68985.44 | 9385.607 | 0.034803 | 0 | 0 | 0.004306 | 0 | 0 | 0.002 | 0.01575 | 0.004501 | 0 | 0 | 0.008 | 0.03675 | 261.017 | 0 | 0 | 0.000618 | 0 | 0 | 0.041028 | 0 | 0 | 0.013297 | 0 | 0 | 0 | 0 | 0.015138 | 0 | 0 | 0 | 0 | 0 | 0 | 0.124646 | 0 | 0 | 0.002468 | 0 | 0 |
| Santa Clara | 2024 | LDT2 | Aggregate | Aggregate | Electricity | 3976.567 | 115838.7 | 19819.4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.002 | 0.01575 | 0 | 0 | 0 | 0.008 | 0.03675 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.004888 | 0 | 0.00456 | 0.017501 | 0 | 0 | 0 | 0 | 0 | 0 | 0.004888 | 0 | 0.00456 | 0.017501 | 0 | 0 | 0 |
| Santa Clara | 2024 | LHDT1 | Aggregate | Aggregate | Gasoline | 16595.29 | 558796.3 | 247245.2 | 0.188441 | 0.036329 | 0.492017 | 0.002119 | 0 | 0.000367 | 0.002 | 0.03276 | 0.002304 | 0 | 0.0004 | 0.008 | 0.07644 | 981.413 | 118.8928 | 18.64229 | 0.008635 | 0.116255 | 0.022385 | 0.011684 | 0.00305 | 0.039132 | 0.041266 | 0.416309 | 0.11274 | 0.115621 | 0.802453 | 0.023685 | 0.04598 | 0.060215 | 0.607477 | 0.123436 | 0.115621 | 0.802453 | 0.023685 | 0.04598 | 0.775411 | 3.757388 | 1.688646 | 0.009712 | 0.001177 | 0.000184 |
| Santa Clara | 2024 | LHDT1 | Aggregate | Aggregate | Diesel | 12077.34 | 447738.5 | 151917.7 | 1.216004 | 1.816109 | 0 | 0.017946 | 0.026621 | 0 | 0.003 | 0.03276 | 0.018757 | 0.027824 | 0 | 0.012 | 0.07644 | 527.1415 | 129.4169 | 0 | 0.006889 | 0.005098 | 0 | 0.082859 | 0.020343 | 0 | 0.148312 | 0.10976 | 0 | 0 | 0 | 0 | 0 | 0.168843 | 0.124954 | 0 | 0 | 0 | 0 | 0 | 0.625521 | 0.909745 | 0 | 0.004983 | 0.001223 | 0 |
| Santa Clara | 2024 | LHDT2 | Aggregate | Aggregate | Gasoline | 2318.351 | 78374.99 | 34539.98 | 0.186009 | 0.035621 | 0.477152 | 0.002016 | 0 | 0.000324 | 0.002 | 0.03822 | 0.002192 | 0 | 0.000352 | 0.008 | 0.08918 | 1117.473 | 136.319 | 21.08444 | 0.006588 | 0.114918 | 0.021458 | 0.012162 | 0.002973 | 0.037878 | 0.028759 | 0.40841 | 0.106844 | 0.107467 | 0.691039 | 0.021248 | 0.040757 | 0.041965 | 0.595951 | 0.11698 | 0.107467 | 0.691039 | 0.021248 | 0.040757 | 0.534699 | 3.762482 | 1.666987 | 0.011058 | 0.001349 | 0.000209 |
| Santa Clara | 2024 | LHDT2 | Aggregate | Aggregate | Diesel | 4877.312 | 176304.8 | 61350.45 | 1.033956 | 1.829953 | 0 | 0.02008 | 0.027033 | 0 | 0.003 | 0.03822 | 0.020988 | 0.028255 | 0 | 0.012 | 0.08918 | 593.7458 | 208.0708 | 0 | 0.006684 | 0.005098 | 0 | 0.093329 | 0.032706 | 0 | 0.143898 | 0.10976 | 0 | 0 | 0 | 0 | 0 | 0.163818 | 0.124954 | 0 | 0 | 0 | 0 | 0 | 0.61131 | 0.909745 | 0 | 0.005613 | 0.001967 | 0 |
| Santa Clara | 2024 | MCY | Aggregate | Aggregate | Gasoline | 34431.37 | 243797 | 68862.74 | 1.146289 | 0 | 0.270709 | 0.001865 | 0 | 0.002752 | 0.001 | 0.00504 | 0.001997 | 0 | 0.00293 | 0.004 | 0.01176 | 210.0772 | 0 | 60.71341 | 0.325313 | 0 | 0.253919 | 0.066025 | 0 | 0.015366 | 2.190481 | 0 | 1.930344 | 0.676373 | 1.887358 | 0.97629 | 1.802995 | 2.721006 | 0 | 2.101179 | 0.676373 | 1.887358 | 0.97629 | 1.802995 | 18.59611 | 0 | 9.061179 | 0.002079 | 0 | 0.000601 |
| Santa Clara | 2024 | MDV | Aggregate | Aggregate | Gasoline | 156824.5 | 4915330 | 725874.3 | 0.073555 | 0 | 0.30496 | 0.001269 | 0 | 0.001735 | 0.002 | 0.01575 | 0.00138 | 0 | 0.001887 | 0.008 | 0.03675 | 370.2473 | 0 | 81.24522 | 0.003533 | 0 | 0.07385 | 0.006301 | 0 | 0.032254 | 0.014431 | 0 | 0.358405 | 0.133918 | 0.442951 | 0.315236 | 0.324744 | 0.021047 | 0 | 0.392407 | 0.133918 | 0.442951 | 0.315236 | 0.324744 | 0.809607 | 0 | 3.072017 | 0.003664 | 0 | 0.000804 |
| Santa Clara | 2024 | MDV | Aggregate | Aggregate | Diesel | 4279.344 | 148384.4 | 20665.8 | 0.030793 | 0 | 0 | 0.003552 | 0 | 0 | 0.002 | 0.01575 | 0.003712 | 0 | 0 | 0.008 | 0.03675 | 340.7089 | 0 | 0 | 0.00042 | 0 | 0 | 0.053555 | 0 | 0 | 0.009041 | 0 | 0 | 0 | 0 | 0 | 0 | 0.010293 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1773 | 0 | 0 | 0.003221 | 0 | 0 |
| Santa Clara | 2024 | MDV | Aggregate | Aggregate | Electricity | 2041.893 | 62655.19 | 10349.93 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.002 | 0.01575 | 0 | 0 | 0 | 0.008 | 0.03675 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.004888 | 0 | 0.00456 | 0.017501 | 0 | 0 | 0 | 0 | 0 | 0 | 0.004888 | 0 | 0.00456 | 0.017501 | 0 | 0 | 0 |
| Santa Clara | 2024 | MH | Aggregate | Aggregate | Gasoline | 2827.424 | 26048.95 | 282.8555 | 0.319474 | 0 | 0.337369 | 0.001496 | 0 | 0.000332 | 0.003 | 0.05586 | 0.001627 | 0 | 0.000361 | 0.012 | 0.13034 | 1698.665 | 0 | 25.10838 | 0.011423 | 0 | 0.03111 | 0.021443 | 0 | 0.036462 | 0.047898 | 0 | 0.127627 | 0.075126 | 1.794574 | 0.031457 | 0.088456 | 0.069892 | 0 | 0.139736 | 0.075126 | 1.794574 | 0.031457 | 0.088456 | 1.158649 | 0 | 2.813821 | 0.01681 | 0 | 0.000248 |
| Santa Clara | 2024 | MH | Aggregate | Aggregate | Diesel | 1087.572 | 10089.67 | 108.7572 | 3.8575 | 0 | 0 | 0.073619 | 0 | 0 | 0.004 | 0.05586 | 0.076948 | 0 | 0 | 0.016 | 0.13034 | 992.182 | 0 | 0 | 0.004739 | 0 | 0 | 0.155957 | 0 | 0 | 0.102018 | 0 | 0 | 0 | 0 | 0 | 0 | 0.116141 | 0 | 0 | 0 | 0 | 0 | 0 | 0.353157 | 0 | 0 | 0.00938 | 0 | 0 |
| Santa Clara | 2024 | MHDT | Aggregate | Aggregate | Gasoline | 1564.857 | 81219.94 | 31309.66 | 0.31759 | 0.088787 | 0.357983 | 0.00128 | 0 | 0.000432 | 0.003 | 0.05586 | 0.001392 | 0 | 0.000469 | 0.012 | 0.13034 | 1664.466 | 518.4053 | 37.21256 | 0.009834 | 0.269491 | 0.03713 | 0.017321 | 0.007911 | 0.029454 | 0.046731 | 1.017203 | 0.195989 | 0.074177 | 0.415581 | 0.016077 | 0.031122 | 0.06819 | 1.484301 | 0.214584 | 0.074177 | 0.415581 | 0.016077 | 0.031122 | 1.055715 | 15.16855 | 4.34781 | 0.016471 | 0.00513 | 0.000368 |
| Santa Clara | 2024 | MHDT | Aggregate | Aggregate | Diesel | 9624.848 | 566389.2 | 95988.07 | 1.610171 | 5.459844 | 2.136352 | 0.007492 | 0.004673 | 0 | 0.003 | 0.05586 | 0.00783 | 0.004884 | 0 | 0.012 | 0.13034 | 997.0565 | 869.0377 | 0 | 0.000527 | 0.003515 | 0 | 0.156723 | 0.136601 | 0 | 0.01135 | 0.075674 | 0 | 0 | 0 | 0 | 0 | 0.012921 | 0.086149 | 0 | 0 | 0 | 0 | 0 | 0.114514 | 2.701556 | 0 | 0.00942 | 0.00821 | 0 |
| Santa Clara | 2024 | OBUS | Aggregate | Aggregate | Gasoline | 504.7356 | 23300.26 | 10098.75 | 0.360432 | 0.065159 | 0.318556 | 0.00103 | 0 | 0.000226 | 0.003 | 0.05586 | 0.00112 | 0 | 0.000245 | 0.012 | 0.13034 | 1712.694 | 370.3334 | 25.70448 | 0.010554 | 0.201432 | 0.02907 | 0.019268 | 0.00573 | 0.026194 | 0.04937 | 0.747749 | 0.148852 | 0.027254 | 0.303972 | 0.016446 | 0.036927 | 0.07204 | 1.091114 | 0.162974 | 0.027254 | 0.303972 | 0.016446 | 0.036927 | 1.073358 | 5.783505 | 3.116445 | 0.016948 | 0.003665 | 0.000254 |
| Santa Clara | 2024 | OBUS | Aggregate | Aggregate | Diesel | 763.9429 | 53010.14 | 7005.878 | 1.952588 | 8.368625 | 2.211523 | 0.009711 | 0.002619 | 0 | 0.003 | 0.05586 | 0.01015 | 0.002738 | 0 | 0.012 | 0.13034 | 1156.149 | 1829.903 | 0 | 0.000579 | 0.025071 | 0 | 0.181731 | 0.287635 | 0 | 0.01246 | 0.539782 | 0 | 0 | 0 | 0 | 0 | 0.014185 | 0.6145 | 0 | 0 | 0 | 0 | 0 | 0.143603 | 9.166694 | 0 | 0.010923 | 0.017288 | 0 |
| Santa Clara | 2024 | SBUS | Aggregate | Aggregate | Gasoline | 277.2219 | 12408.76 | 1108.888 | 0.391846 | 0.925198 | 0.582393 | 0.001195 | 0 | 0.000512 | 0.002 | 0.3192 | 0.0013 | 0 | 0.000557 | 0.008 | 0.7448 | 849.9257 | 2540.147 | 47.46214 | 0.010004 | 2.441578 | 0.057304 | 0.022787 | 0.088525 | 0.054796 | 0.049026 | 10.62205 | 0.32698 | 0.063489 | 0.424105 | 0.011364 | 0.026144 | 0.071538 | 15.49967 | 0.358002 | 0.063489 | 0.424105 | 0.011364 | 0.026144 | 1.061031 | 82.12266 | 8.250612 | 0.008411 | 0.025137 | 0.00047 |
| Santa Clara | 2024 | SBUS | Aggregate | Aggregate | Diesel | 1011.343 | 31782.11 | 11670.76 | 6.305713 | 43.19427 | 0.882346 | 0.039225 | 0.043673 | 0 | 0.003 | 0.3192 | 0.040998 | 0.045648 | 0 | 0.012 | 0.7448 | 1127.045 | 3685.79 | 0 | 0.004462 | 0.012671 | 0 | 0.177156 | 0.579355 | 0 | 0.09606 | 0.272808 | 0 | 0 | 0 | 0 | 0 | 0.109357 | 0.310572 | 0 | 0 | 0 | 0 | 0 | 0.272311 | 6.223874 | 0 | 0.010648 | 0.034822 | 0 |
| Santa Clara | 2024 | UBUS | Aggregate | Aggregate | Gasoline | 8.427049 | 1060.813 | 33.7082 | 0.179651 | 0 | 0.688867 | 0.002209 | 0 | 0.000888 | 0.003 | 0.05586 | 0.002402 | 0 | 0.000966 | 0.012 | 0.13034 | 1956.507 | 0 | 88.60685 | 0.007013 | 0 | 0.097882 | 0.017812 | 0 | 0.068509 | 0.022728 | 0 | 0.407643 | 0.01024 | 0.051815 | 0.002284 | 0.005364 | 0.033164 | 0 | 0.446318 | 0.01024 | 0.051815 | 0.002284 | 0.005364 | 0.280937 | 0 | 8.852622 | 0.019361 | 0 | 0.000877 |
| Santa Clara | 2024 | UBUS | Aggregate | Aggregate | Diesel | 430.6994 | 46893.42 | 1722.798 | 0.802546 | 0 | 0 | 0.005646 | 0 | 0 | 0.008399 | 0.029403 | 0.005901 | 0 | 0 | 0 | 0.033598 | 0.068607 | 1480.079 | 0 | 0 | 0.077245 | 0 | 0 | 0.232648 | 0 | 0 | 0.001104 | 0 | 0 | 0 | 0 | 0 | 0.078834 | 0 | 0 | 0 | 0 | 0 | 0 | 0.131094 | 0 | 0 | 0.013992 | 0 | 0 |
| Santa Clara | 2024 | UBUS | Aggregate | Aggregate | Natural Ga | 97.04458 | 11968.1 | 388.1783 | 0.491562 | 0 | 0 | 0.003197 | 0 | 0 | 0.008538 | 0.028723 | 0.003341 | 0 | 0 | 0 | 0.034153 | 0.06702 | 2024.066 | 0 | 0 | 6.451003 | 0 | 0 | 0.412619 | 0 | 0 | 0.092172 | 0 | 0 | 0 | 0 | 0 | 6.583722 | 0 | 0 | 0 | 0 | 0 | 0 | 50.12428 | 0 | 0 | 0 | 0 | 0 |

Source: EMFAC2017 (v1.0.3) Emission Rates
Region Type: County
Region: Santa Clara
Calendar Year: 2025
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for VMT, trips/day for Trips, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HOTSOAK and RUNLOSS, g/vehicle/day for IDLEX, RESTLOSS and DIURN

| Region | Calendar Y | Vehicle Cat | Model Yea | Speed | Fuel | Population | VMT | Trips | NOx_RUNE | NOx_IDLE | NOx_STRE | PM2.5_RU | PM2.5_IDL | PM2.5_STR | PM2.5_PM | PM2.5_PM | PM10_RUP | PM10_IDLE | PM10_STR | PM10_PM | PM10_PM | CO2_RUNE | CO2_IDLEX | CO2_STRE | CH4_RUNE | CH4_IDLEX | CH4_STRE | N2O_RUNE | N2O_IDLEX | N2O_STRE | ROG_RUNI | ROG_IDLE | ROG_STRE | ROG_HOTS | ROG_RUNI | ROG_REST | ROG_DIUR | TOG_RUNE | TOG_IDLEX | TOG_STRE | TOG_HOTS | TOG_RUNI | TOG_REST | TOG_DIUR | CO_RUNEX | CO_IDLEX | CO_STREX | SOx_RUNE | SOx_IDLEX | SOx_STREX |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Santa Clara | 2025 | HHDT | Aggregate | Aggregate | Gasoline | 5.092026 | 640.9591 | 101.8812 | 2.919948 | 0 | 0.157583 | 0.001116 | 0 | 0.00053 | 0.005 | 0.02646 | 0.001214 | 0 | 0.000577 | 0.02 | 0.06174 | 1825.867 | 0 | 44.49464 | 0.073801 | 0 | 0.000415 | 0.125671 | 0 | 0.005317 | 0.342518 | 0 | 0.00217 | 0.080914 | 0.407773 | 0.020048 | 0.035638 | 0.499802 | 0 | 0.002375 | 0.080914 | 0.407773 | 0.020048 | 0.035638 | 27.21952 | 0 | 5.566613 | 0.018068 | 0 | 0.00044 |
| Santa Clara | 2025 | HHDT | Aggregate | Aggregate | Diesel | 8817.731 | 1079688 | 94137.56 | 2.689248 | 57.21961 | 2.360479 | 0.024147 | 0.025022 | 0 | 0.008888 | 0.026131 | 0.025239 | 0.026153 | 0 | 0.035552 | 0.060971 | 1361.701 | 11015.05 | 0 | 0.001109 | 0.21503 | 0 | 0.21404 | 1.731413 | 0 | 0.02388 | 4.629535 | 0 | 0 | 0 | 0.027185 | 5.270373 | 0 | 0 | 0 | 0 | 0 | 0 | 0.239469 | 67.69892 | 0 | 0.012865 | 0.104065 | 0 |
| Santa Clara | 2025 | HHDT | Aggregate | Aggregate | Natural Ga | 379.6544 | 15481.95 | 1480.652 | 1.307834 | 20.11278 | 0 | 0.004103 | 0.023104 | 0 | 0.009 | 0.02646 | 0.004289 | 0.024149 | 0 | 0.036 | 0.06174 | 3103.536 | 3922.175 | 0 | 3.364949 | 1.219652 | 0 | 0.632676 | 0.799561 | 0 | 0.12525 | 0.036711 | 0 | 0 | 0 | 3.522105 | 1.266717 | 0 | 0 | 0 | 0 | 0 | 0 | 10.85973 | 21.70548 | 0 | 0 | 0 | 0 |
| Santa Clara | 2025 | LDA | Aggregate | Aggregate | Gasoline | 786105.4 | 27236278 | 3706855 | 0.027552 | 0 | 0.163324 | 0.001159 | 0 | 0.001575 | 0.002 | 0.01575 | 0.001261 | 0 | 0.001713 | 0.008 | 0.03675 | 237.9166 | 0 | 50.83268 | 0.001606 | 0 | 0.042879 | 0.003629 | 0 | 0.023647 | 0.00579 | 0 | 0.184593 | 0.083639 | 0.200535 | 0.147048 | 0.163063 | 0.517934 | 0 | 2.110104 | 0.002354 | 0 | 0.000503 |
| Santa Clara | 2025 | LDA | Aggregate | Aggregate | Diesel | 8408.263 | 301340.6 | 39989.41 | 0.039798 | 0 | 0 | 0.004032 | 0 | 0 | 0.002 | 0.01575 | 0.004215 | 0 | 0 | 0.008 | 0.03675 | 184.9022 | 0 | 0 | 0.000435 | 0 | 0 | 0.029064 | 0 | 0 | 0.009373 | 0 | 0 | 0 | 0 | 0.01067 | 0 | 0 | 0 | 0 | 0 | 0 | 0.171859 | 0 | 0 | 0.001748 | 0 | 0 |
| Santa Clara | 2025 | LDA | Aggregate | Aggregate | Electricity | 33370.49 | 1267724 | 161634.6 | 0 | 0 | 0 | 0 | 0 | 0 | 0.002 | 0.01575 | 0 | 0 | 0 | 0.008 | 0.03675 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.004888 | 0 | 0.00456 | 0.017501 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Santa Clara | 2025 | LDT1 | Aggregate | Aggregate | Gasoline | 79443.86 | 2534356 | 368884.5 | 0.060086 | 0 | 0.20134 | 0.001411 | 0 | 0.00186 | 0.002 | 0.01575 | 0.001534 | 0 | 0.002022 | 0.008 | 0.03675 | 277.5553 | 0 | 59.43963 | 0.003183 | 0 | 0.053371 | 0.005387 | 0 | 0.025325 | 0.013318 | 0 | 0.250415 | 0.136457 | 0.510963 | 0.268896 | 0.323671 | 0.019433 | 0 | 0.274173 | 0.136457 | 0.510963 | 0.268896 | 0.323671 | 0.787157 | 0 | 2.198178 | 0.002747 | 0 | 0.000588 |
| Santa Clara | 2025 | LDT1 | Aggregate | Aggregate | Diesel | 29.01082 | 540.1586 | 96.9227 | 0.906563 | 0 | 0 | 0.119117 | 0 | 0 | 0.002 | 0.01575 | 0.124503 | 0 | 0 | 0.008 | 0.03675 | 384.823 | 0 | 0 | 0.007233 | 0 | 0 | 0.060489 | 0 | 0 | 0.155733 | 0 | 0 | 0 | 0 | 0.177292 | 0 | 0 | 0 | 0 | 0 | 0 | 0.910026 | 0 | 0 | 0.003638 | 0 | 0 |
| Santa Clara | 2025 | LDT1 | Aggregate | Aggregate | Electricity | 1175.118 | 48439.55 | 5836.574 | 0 | 0 | 0 | 0 | 0 | 0 | 0.002 | 0.01575 | 0 | 0 | 0 | 0.008 | 0.03675 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.004888 | 0 | 0.00456 | 0.017501 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Santa Clara | 2025 | LDT2 | Aggregate | Aggregate | Gasoline | 261669.8 | 8305167 | 1218340 | 0.05477 | 0 | 0.236657 | 0.001191 | 0 | 0.001569 | 0.002 | 0.01575 | 0.001296 | 0 | 0.001707 | 0.008 | 0.03675 | 295.8626 | 0 | 64.74241 | 0.002718 | 0 | 0.05916 | 0.005064 | 0 | 0.028625 | 0.010701 | 0 | 0.269168 | 0.114065 | 0.408613 | 0.267022 | 0.275618 | 0.707429 | 0 | 2.670232 | 0.002928 | 0 | 0.000641 |
| Santa Clara | 2025 | LDT2 | Aggregate | Aggregate | Diesel | 2060.035 | 71668.54 | 9958.002 | 0.033505 | 0 | 0 | 0.004246 | 0 | 0 | 0.002 | 0.01575 | 0.004438 | 0 | 0 | 0.008 | 0.03675 | 253.7132 | 0 | 0 | 0.000614 | 0 | 0 | 0.03988 | 0 | 0 | 0.013214 | 0 | 0 | 0 | 0 | 0.015043 | 0 | 0 | 0 | 0 | 0 | 0 | 0.125847 | 0 | 0 | 0.002399 | 0 | 0 |
| Santa Clara | 2025 | LDT2 | Aggregate | Aggregate | Electricity | 4719.984 | 134602.3 | 23464.47 | 0 | 0 | 0 | 0 | 0 | 0 | 0.002 | 0.01575 | 0 | 0 | 0 | 0.008 | 0.03675 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.004888 | 0 | 0.00456 | 0.017501 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Santa Clara | 2025 | LHDT1 | Aggregate | Aggregate | Gasoline | 16670.08 | 556704.7 | 248359.3 | 0.169211 | 0.035277 | 0.472669 | 0.002107 | 0 | 0.00036 | 0.002 | 0.03276 | 0.002292 | 0 | 0.000391 | 0.008 | 0.07644 | 967.3498 | 117.6043 | 18.45036 | 0.007764 | 0.113694 | 0.021006 | 0.010624 | 0.003009 | 0.03807 | 0.036731 | 0.404312 | 0.10545 | 0.111143 | 0.778995 | 0.023007 | 0.044168 | 0.053598 | 0.589971 | 0.115454 | 0.111143 | 0.778995 | 0.023007 | 0.044168 | 0.699373 | 3.75965 | 1.658867 | 0.009573 | 0.001164 | 0.000183 |
| Santa Clara | 2025 | LHDT1 | Aggregate | Aggregate | Diesel | 12557.44 | 458805.3 | 157956.8 | 1.056459 | 1.720637 | 0 | 0.016591 | 0.026543 | 0 | 0.003 | 0.03276 | 0.017341 | 0.027743 | 0 | 0.012 | 0.07644 | 518.3028 | 127.5135 | 0 | 0.006718 | 0.005098 | 0 | 0.08147 | 0.020043 | 0 | 0.144635 | 0.10976 | 0 | 0 | 0 | 0.164657 | 0.124954 | 0 | 0 | 0 | 0 | 0 | 0 | 0.612677 | 0.909745 | 0 | 0.0049 | 0.001205 | 0 |
| Santa Clara | 2025 | LHDT2 | Aggregate | Aggregate | Gasoline | 2350.687 | 78766.4 | 35021.74 | 0.164861 | 0.034559 | 0.458423 | 0.002001 | 0 | 0.000317 | 0.002 | 0.03822 | 0.002176 | 0 | 0.000345 | 0.008 | 0.08918 | 1101.004 | 134.7497 | 20.83503 | 0.005841 | 0.112336 | 0.020064 | 0.010996 | 0.002935 | 0.0369 | 0.025143 | 0.396329 | 0.099263 | 0.101257 | 0.638691 | 0.020438 | 0.03848 | 0.036689 | 0.578322 | 0.10868 | 0.101257 | 0.638691 | 0.020438 | 0.03848 | 0.471051 | 3.765359 | 1.622672 | 0.010895 | 0.001333 | 0.000206 |
| Santa Clara | 2025 | LHDT2 | Aggregate | Aggregate | Diesel | 5093.542 | 180822.6 | 64070.35 | 0.910052 | 1.737542 | 0 | 0.01951 | 0.027031 | 0 | 0.003 | 0.03822 | 0.020392 | 0.028253 | 0 | 0.012 | 0.08918 | 584.1014 | 205.2058 | 0 | 0.006561 | 0.005098 | 0 | 0.091813 | 0.032255 | 0 | 0.141257 | 0.10976 | 0 | 0 | 0 | 0.160811 | 0.124954 | 0 | 0 | 0 | 0 | 0 | 0 | 0.603673 | 0.909745 | 0 | 0.005522 | 0.00194 | 0 |
| Santa Clara | 2025 | MCY | Aggregate | Aggregate | Gasoline | 35193.54 | 245144.5 | 70387.08 | 1.144207 | 0 | 0.270585 | 0.001897 | 0 | 0.002751 | 0.001 | 0.00504 | 0.002031 | 0 | 0.00293 | 0.004 | 0.01176 | 210.0048 | 0 | 60.42942 | 0.323881 | 0 | 0.252792 | 0.065921 | 0 | 0.015365 | 2.175798 | 0 | 1.920785 | 0.666814 | 1.818229 | 0.96962 | 1.799017 | 18.36541 | 0 | 9.087517 | 0.002078 | 0 | 0.000598 |
| Santa Clara | 2025 | MDV | Aggregate | Aggregate | Gasoline | 159353.4 | 4938255 | 737907 | 0.063986 | 0 | 0.27705 | 0.001219 | 0 | 0.001669 | 0.002 | 0.01575 | 0.001325 | 0 | 0.001816 | 0.008 | 0.03675 | 357.5234 | 0 | 78.47795 | 0.003117 | 0 | 0.067735 | 0.005703 | 0 | 0.030326 | 0.012553 | 0 | 0.324637 | 0.127905 | 0.429181 | 0.308843 | 0.316083 | 0.018315 | 0 | 0.355437 | 0.127905 | 0.429181 | 0.308843 | 0.316083 | 0.747249 | 0 | 2.926745 | 0.003538 | 0 | 0.000777 |
| Santa Clara | 2025 | MDV | Aggregate | Aggregate | Diesel | 4539.599 | 153903.5 | 21844.52 | 0.027748 | 0 | 0 | 0.003286 | 0 | 0 | 0.002 | 0.01575 | 0.003434 | 0 | 0 | 0.008 | 0.03675 | 330.9311 | 0 | 0 | 0.000397 | 0 | 0 | 0.052018 | 0 | 0 | 0.008545 | 0 | 0 | 0 | 0 | 0.009728 | 0 | 0 | 0 | 0 | 0 | 0 | 0.174315 | 0 | 0 | 0.003128 | 0 | 0 |
| Santa Clara | 2025 | MDV | Aggregate | Aggregate | Electricity | 2605.246 | 77957.64 | 13157.39 | 0 | 0 | 0 | 0 | 0 | 0 | 0.002 | 0.01575 | 0 | 0 | 0 | 0.008 | 0.03675 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.004888 | 0 | 0.00456 | 0.017501 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Santa Clara | 2025 | MH | Aggregate | Aggregate | Gasoline | 2804.725 | 25962.4 | 280.5847 | 0.284441 | 0 | 0.338374 | 0.00145 | 0 | 0.000322 | 0.003 | 0.05586 | 0.001577 | 0 | 0.00035 | 0.012 | 0.13034 | 1667.641 | 0 | 24.6655 | 0.010137 | 0 | 0.030504 | 0.019937 | 0 | 0.037073 | 0.041598 | 0 | 0.123275 | 0.069134 | 1.619836 | 0.029331 | 0.080979 | 0.060699 | 0 | 0.134971 | 0.069134 | 1.619836 | 0.029331 | 0.080979 | 0.981783 | 0 | 2.72063 | 0.016503 | 0 | 0.000244 |
| Santa Clara | 2025 | MH | Aggregate | Aggregate | Diesel | 1120.152 | 10258.27 | 112.0152 | 3.721278 | 0 | 0 | 0.068611 | 0 | 0 | 0.004 | 0.05586 | 0.071713 | 0 | 0 | 0.016 | 0.13034 | 977.5306 | 0 | 0 | 0.004617 | 0 | 0 | 0.153654 | 0 | 0 | 0.099404 | 0 | 0 | 0 | 0 | 0.113165 | 0 | 0 | 0 | 0 | 0 | 0 | 0.340592 | 0 | 0 | 0.009241 | 0 | 0 |
| Santa Clara | 2025 | MHDT | Aggregate | Aggregate | Gasoline | 1625.583 | 84052.77 | 32524.67 | 0.265984 | 0.088924 | 0.349428 | 0.001273 | 0 | 0.000421 | 0.003 | 0.05586 | 0.001385 | 0 | 0.000457 | 0.012 | 0.13034 | 1634.243 | 510.7588 | 36.34684 | 0.008233 | 0.271859 | 0.035906 | 0.015329 | 0.00806 | 0.029502 | 0.038458 | 1.019238 | 0.186917 | 0.069212 | 0.381699 | 0.015194 | 0.028782 | 0.856117 | 1.48727 | 0.204651 | 0.069212 | 0.381699 | 0.015194 | 0.028782 | 0.857049 | 15.19219 | 4.114665 | 0.016172 | 0.005054 | 0.00036 |
| Santa Clara | 2025 | MHDT | Aggregate | Aggregate | Diesel | 9962.606 | 572190 | 99142.65 | 1.623143 | 5.250027 | 2.142411 | 0.007557 | 0.004081 | 0 | 0.003 | 0.05586 | 0.007898 | 0.004265 | 0 | 0.012 | 0.13034 | 982.4191 | 853.0081 | 0 | 0.000524 | 0.003447 | 0 | 0.154423 | 0.134081 | 0 | 0.011292 | 0.074218 | 0 | 0 | 0 | 0.012855 | 0.084492 | 0 | 0 | 0 | 0 | 0 | 0 | 0.115604 | 2.715124 | 0 | 0.009281 | 0.008059 | 0 |
| Santa Clara | 2025 | OBUS | Aggregate | Aggregate | Gasoline | 506.3512 | 22978.17 | 10131.07 | 0.327074 | 0.065168 | 0.315008 | 0.001066 | 0 | 0.000232 | 0.003 | 0.05586 | 0.00116 | 0 | 0.000252 | 0.012 | 0.13034 | 1681.342 | 365.8664 | 25.34402 | 0.009574 | 0.201653 | 0.02851 | 0.017866 | 0.005766 | 0.026079 | 0.044553 | 0.747887 | 0.145668 | 0.027385 | 0.307778 | 0.016648 | 0.037216 | 0.065012 | 1.091315 | 0.159488 | 0.027385 | 0.307778 | 0.016648 | 0.037216 | 0.954434 | 5.784337 | 3.055397 | 0.016638 | 0.003621 | 0.000251 |
| Santa Clara | 2025 | OBUS | Aggregate | Aggregate | Diesel | 782.1911 | 52548.02 | 7198.345 | 1.95709 | 8.598349 | 2.212905 | 0.009792 | 0.0027 | 0 | 0.003 | 0.05586 | 0.010235 | 0.002822 | 0 | 0.012 | 0.13034 | 1138.746 | 1851.156 | 0 | 0.000581 | 0.026021 | 0 | 0.178995 | 0.290976 | 0 | 0.012519 | 0.560218 | 0 | 0 | 0 | 0.014252 | 0.637766 | 0 | 0 | 0 | 0 | 0 | 0 | 0.144046 | 9.461612 | 0 | 0.010758 | 0.017489 | 0 |
| Santa Clara | 2025 | SBUS | Aggregate | Aggregate | Gasoline | 290.9191 | 12845.38 | 1163.676 | 0.367517 | 0.925641 | 0.585868 | 0.001189 | 0 | 0.000518 | 0.002 | 0.3192 | 0.001293 | 0 | 0.000563 | 0.008 | 0.7448 | 841.5393 | 2517.353 | 46.87031 | 0.009128 | 2.441397 | 0.056689 | 0.021807 | 0.088923 | 0.055087 | 0.04463 | 10.62852 | 0.323186 | 0.063718 | 0.42144 | 0.011749 | 0.026293 | 0.960805 | 82.16193 | 8.088543 | 0.008328 | 0.024911 | 0.000464 |
| Santa Clara | 2025 | SBUS | Aggregate | Aggregate | Diesel | 1007.891 | 31639.37 | 11630.92 | 6.052423 | 42.15267 | 0.934599 | 0.037784 | 0.040436 | 0 | 0.003 | 0.3192 | 0.039493 | 0.042264 | 0 | 0.012 | 0.7448 | 1116.779 | 3665.356 | 0 | 0.004348 | 0.012518 | 0 | 0.175542 | 0.576143 | 0 | 0.093618 | 0.269508 | 0 | 0 | 0 | 0.106577 | 0.306814 | 0 | 0 | 0 | 0 | 0 | 0 | 0.269189 | 6.423201 | 0 | 0.010551 | 0.034628 | 0 |
| Santa Clara | 2025 | UBUS | Aggregate | Aggregate | Gasoline | 8.430876 | 1061.294 | 33.7235 | 0.211238 | 0 | 0.744273 | 0.002209 | 0 | 0.000888 | 0.003 | 0.05586 | 0.002402 | 0 | 0.000966 | 0.012 | 0.13034 | 1956.474 | 0 | 88.72677 | 0.006987 | 0 | 0.106267 | 0.020012 | 0 | 0.070643 | 0.022728 | 0 | 0.44417 | 0.012793 | 0.070677 | 0.002709 | 0.005994 | 0.033164 | 0 | 0.48631 | 0.012793 | 0.070677 | 0.002709 | 0.005994 | 0.305915 | 0 | 8.852622 | 0.019361 | 0 | 0.000878 |
| Santa Clara | 2025 | UBUS | Aggregate | Aggregate | Diesel | 410.7255 | 44103.54 | 1642.902 | 0.800339 | 0 | 0 | 0.005633 | 0 | 0 | 0.008361 | 0.02959 | 0.005887 | 0 | 0 | 0.033445 | 0.069044 | 1523.804 | 0 | 0 | 0.076969 | 0 | 0 | 0.239521 | 0 | 0 | 0.0011 | 0 | 0 | 0 | 0 | 0.078552 | 0 | 0 | 0 | 0 | 0 | 0 | 0.130582 | 0 | 0 | 0.014405 | 0 | 0 |
| Santa Clara | 2025 | UBUS | Aggregate | Aggregate | Natural Ga | 117.2581 | 14784.71 | 469.0324 | 0.494633 | 0 | 0 | 0.003215 | 0 | 0 | 0.008626 | 0.028293 | 0.00336 | 0 | 0 | 0.034503 | 0.066018 | 2034.799 | 0 | 0 | 6.502692 | 0 | 0 | 0.414807 | 0 | 0 | 0.092911 | 0 | 0 | 0 | 0 | 6.636474 | 0 | 0 | 0 | 0 | 0 | 0 | 50.56702 | 0 | 0 | 0 | 0 | 0 |

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

## Construction Health Risk Assessment and Calculations

Arbor Office, 255 W. Julian Street, San Jose, CA

| Year | Unmitigated DPM | DPM EMFAC2017 | Unmitigated Emissions | Unmitigated Fug PM2.5 | Fug PM2.5 EMFAC2017 | Unmitigated Emissions |
|---|---|---|---|---|---|---|
| 2022 | 0.0381 | 0.0034 | 0.0415 | 0.0975 | 0.0018 | 0.0993 |
| 2023 | 0.0732 | 0.0032 | 0.0764 | 0.0000 | 0.0018 | 0.0018 |
| 2024 | 0.0228 | 0.0018 | 0.0246 | 0.0000 | 0.0010 | 0.0010 |

| Year | Mitigated DPM | DPM EMFAC2017 | Mitigated Emissions | Mitigated Fug PM2.5 | Fug PM2.5 EMFAC2017 | Mitigated Emissions |
|---|---|---|---|---|---|---|
| 2022 | 0.0018 | 0.0034 | 0.0052 | 0.0190 | 0.0018 | 0.0208 |
| 2023 | 0.0038 | 0.0032 | 0.0070 | 0.0000 | 0.0018 | 0.0018 |
| 2024 | 0.0012 | 0.0018 | 0.0030 | 0.0000 | 0.0010 | 0.0010 |

### Arbor Office, 255 W. Julian Street, San Jose, CA

### DPM Construction Emissions and Modeling Emission Rates

| Construction Year | Activity | DPM (ton/year) | Source Type | No. Sources | DPM Emissions (lb/yr) | (lb/hr) | (g/s) | Emissions per Point Source (g/s) |
|---|---|---|---|---|---|---|---|---|
| ***2022*** | Construction | 0.0415 | Point | 115 | 83.1 | 0.01832 | 2.31E-03 | 2.01E-05 |
| ***2023*** | Construction | 0.0764 | Point | 115 | 152.8 | 0.03369 | 4.24E-03 | 3.69E-05 |
| ***2024*** | Construction | 0.0246 | Point | 115 | 49.2 | 0.01084 | 1.37E-03 | 1.19E-05 |
| ***Total*** | | ***0.1425*** | | | ***285.1*** | ***0.0629*** | ***0.0079*** | |

Emissions assumed to be evenly distributed over each construction areas

hr/day = 12.4 (7am - 10pm M-F, 7am-7pm Sat)
days/yr = 365
hours/year = 4536

### Arbor Office, 255 W. Julian Street, San Jose, CA

### PM2.5 Fugitive Dust Construction Emissions for Modeling

| Construction Year | Activity | Area Source | PM2.5 Emissions (ton/year) | (lb/yr) | (lb/hr) | (g/s) | Modeled Area ($m^2$) | DPM Emission Rate $g/s/m^2$ |
|---|---|---|---|---|---|---|---|---|
| ***2022*** | Construction | CON_FUG | 0.0993 | 198.5 | 0.04376 | 5.51E-03 | 5747.668 | 9.59E-07 |
| ***2023*** | Construction | CON_FUG | 0.0018 | 3.5 | 0.00078 | 9.80E-05 | 5747.668 | 1.70E-08 |
| ***2024*** | Construction | CON_FUG | 0.0010 | 2.0 | 0.00043 | 5.48E-05 | 5747.668 | 9.53E-09 |
| ***Total*** | | | ***0.1020*** | ***204.0*** | ***0.0450*** | ***0.0057*** | | |

Emissions assumed to be evenly distributed over each construction areas

hr/day = 12.4 (7am - 10pm M-F, 7am-7pm Sat)
days/yr = 365
hours/year = 4536

## 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) |
|---|---|---|---|---|---|---|---|---|
| ***2022*** | Construction | 0.0052 | Point | 115 | 10.4 | 0.00230 | 2.90E-04 | 2.52E-06 |
| ***2023*** | Construction | 0.0070 | Point | 115 | 14.0 | 0.00309 | 3.89E-04 | 3.38E-06 |
| ***2024*** | Construction | 0.0030 | Point | 115 | 5.9 | 0.00131 | 1.65E-04 | 1.44E-06 |
| ***Total*** | | ***0.0152*** | | | ***30.4*** | ***0.0067*** | ***0.0008*** | |

Emissions assumed to be evenly distributed over each construction areas

| | | |
|---|---|---|
| hr/day = | 12.4 | (7am - 10pm M-F, 7am-7pm Sat) |
| days/yr = | 365 | |
| hours/year = | 4536 | |

## 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 $g/s/m^2$ |
|---|---|---|---|---|---|---|---|---|
| ***2022*** | Construction | CON_FUG | 0.0208 | 41.5 | 0.00915 | 1.15E-03 | 5747.668 | 2.01E-07 |
| ***2023*** | Construction | CON_FUG | 0.0018 | 3.5 | 0.00078 | 9.80E-05 | 5747.668 | 1.70E-08 |
| ***2024*** | Construction | CON_FUG | 0.0010 | 2.0 | 0.00043 | 5.48E-05 | 5747.668 | 9.53E-09 |
| ***Total*** | | | ***0.0235*** | ***47.0*** | ***0.0104*** | ***0.0013*** | | |

Emissions assumed to be evenly distributed over each construction areas

| | | |
|---|---|---|
| hr/day = | 12.4 | (7am - 10pm M-F, 7am-7pm Sat) |
| days/yr = | 365 | |
| hours/year = | 4536 | |

## Arbor Office, 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 |

**Arbor Office, 255 W. Julian Street, San Jose, CA - Construction Health Impact Summary**

**Maximum Impacts at MEI Residential Location - Without Mitigation**

| Emissions Year | Maximum Concentrations | | Cancer Risk* (per million) | | Hazard Index | Maximum Annual PM2.5 Concentration* |
|---|---|---|---|---|---|---|
| | Exhaust PM10/DPM ($\mu g/m^3$) | Fugitive PM2.5 ($\mu g/m^3$) | Infant/Child | Adult | (-) | ($\mu g/m^3$) |
| 2022 | 0.0929 | 0.2362 | 16.52 | 0.27 | 0.02 | 0.74 |
| 2023 | 0.1709 | 0.0042 | 28.06 | 0.49 | 0.03 | 0.14 |
| 2024 | 0.0550 | 0.0024 | 1.42 | 0.16 | 0.01 | 0.05 |
| **Total** | - | - | **46.01** | **0.9** | - | - |
| **Maximum** | 0.1709 | 0.2362 | **-** | **-** | **0.03** | **0.74** |

* Maximum cancer risk and maximum PM2.5 concentration occur at same receptor on different floors.

**Maximum Impacts at MEI Residential Location - With Mitigation**

| Emissions Year | Maximum Concentrations | | Cancer Risk* (per million) | | Hazard Index | Maximum Annual PM2.5 Concentration* |
|---|---|---|---|---|---|---|
| | Exhaust PM10/DPM ($\mu g/m^3$) | Fugitive PM2.5 ($\mu g/m^3$) | Infant/Child | Adult | (-) | ($\mu g/m^3$) |
| 2022 | 0.0117 | 0.0495 | 2.08 | 0.03 | 0.002 | 0.15 |
| 2023 | 0.0157 | 0.0042 | 2.57 | 0.04 | 0.003 | 0.02 |
| 2024 | 0.0067 | 0.0024 | 0.17 | 0.02 | 0.001 | 0.01 |
| **Total** | - | - | **4.82** | **0.1** | - | - |
| **Maximum** | 0.0157 | 0.0495 | **-** | **-** | **0.003** | **0.15** |

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

* Maximum cancer risk and maximum PM2.5 concentration occur at same receptor on different floors.

**Arbor Office, 255 W. Julian Street, San Jose, CA - Construction Impacts - Without Mitigation**
**Maximum DPM Cancer Risk and PM2.5 Calculations From Construction**
**Impacts at Off-Site 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 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* | 2022 | 0.0722 | 10 | 0.98 | 2022 | 0.0722 | - | - | | | |
| 1 | 1 | 0 - 1 | 2022 | 0.0722 | 10 | 11.86 | 2022 | 0.0722 | 1 | 0.21 | 0.0144 | 0.6680 | 0.7361 |
| 2 | 1 | 1 - 2 | 2023 | 0.1328 | 10 | 21.81 | 2023 | 0.1328 | 1 | 0.38 | 0.0266 | 0.0118 | 0.1445 |
| 3 | 1 | 2 - 3 | 2024 | 0.0427 | 3 | 1.11 | 2024 | 0.0427 | 1 | 0.12 | 0.0085 | 0.0066 | 0.0493 |
| 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** | | | | | | **35.8** | | | | **0.71** | | | |

* Third trimester of pregnancy

**Arbor Office, 255 W. Julian Street, San Jose, CA - Construction Impacts - Without Mitigation**
**Maximum DPM Cancer Risk and PM2.5 Calculations From Construction**
**Impacts at Off-Site MEI Location - 5.2 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 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* | 2022 | 0.0918 | 10 | 1.25 | 2022 | 0.0918 | - | - | | | |
| 1 | 1 | 0 - 1 | 2022 | 0.0918 | 10 | 15.08 | 2022 | 0.0918 | 1 | 0.26 | 0.0184 | 0.4204 | 0.5122 |
| 2 | 1 | 1 - 2 | 2023 | 0.1689 | 10 | 27.74 | 2023 | 0.1689 | 1 | 0.48 | 0.0338 | 0.0075 | 0.1763 |
| 3 | 1 | 2 - 3 | 2024 | 0.0544 | 3 | 1.41 | 2024 | 0.0544 | 1 | 0.16 | 0.0109 | 0.0042 | 0.0585 |
| 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** | | | | | | **45.5** | | | | **0.90** | | | |

* Third trimester of pregnancy

**Arbor Office, 255 W. Julian Street, San Jose, CA - Construction Impacts - Without Mitigation**
**Maximum DPM Cancer Risk and PM2.5 Calculations From Construction**
**Impacts at Off-Site MEI Location - 8.2 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 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* | 2022 | 0.0929 | 10 | 1.26 | 2022 | 0.0929 | - | - | | | |
| 1 | 1 | 0 - 1 | 2022 | 0.0929 | 10 | 15.26 | 2022 | 0.0929 | 1 | 0.27 | 0.0186 | 0.2362 | 0.3291 |
| 2 | 1 | 1 - 2 | 2023 | 0.1709 | 10 | 28.06 | 2023 | 0.1709 | 1 | 0.49 | 0.0342 | 0.0042 | 0.1751 |
| 3 | 1 | 2 - 3 | 2024 | 0.0550 | 3 | 1.42 | 2024 | 0.0550 | 1 | 0.16 | 0.0110 | 0.0024 | 0.0573 |
| 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** | | | | | | **46.01** | | | | **0.92** | | | |

* Third trimester of pregnancy

**Arbor Office, 255 W. Julian Street, San Jose, CA - Construction Impacts - With Mitigation**
**Maximum DPM Cancer Risk and PM2.5 Calculations From Construction**
**Impacts at Off-Site 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 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* | 2022 | 0.0091 | 10 | 0.12 | 2022 | 0.0091 | - | - | | | |
| 1 | 1 | 0 - 1 | 2022 | 0.0091 | 10 | 1.49 | 2022 | 0.0091 | 1 | 0.03 | 0.0018 | 0.1400 | 0.1485 |
| 2 | 1 | 1 - 2 | 2023 | 0.0122 | 10 | 2.00 | 2023 | 0.0122 | 1 | 0.03 | 0.0024 | 0.0118 | 0.0238 |
| 3 | 1 | 2 - 3 | 2024 | 0.0052 | 3 | 0.13 | 2024 | 0.0052 | 1 | 0.01 | 0.0010 | 0.0066 | 0.0117 |
| 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** | | | | | | **3.7** | | | | **0.08** | | | |

* Third trimester of pregnancy

**Arbor Office, 255 W. Julian Street, San Jose, CA - Construction Impacts - With Mitigation**
**Maximum DPM Cancer Risk and PM2.5 Calculations From Construction**
**Impacts at Off-Site MEI Location - 8.2 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 Cancer | Modeled DPM Conc (ug/m3) | | Age | Adult Cancer | | | |
| Exposure Year | Exposure Duration (years) | Age | Year | Annual | Sensitivity Factor | Risk (per million) | Year | Annual | Sensitivity Factor | Risk (per million) | Hazard Index | Fugitive PM2.5 | Total PM2.5 |
| 0 | 0.25 | -0.25 - 0* | 2022 | 0.0117 | 10 | 0.16 | 2022 | 0.0117 | - | - | | | |
| 1 | 1 | 0 - 1 | 2022 | 0.0117 | 10 | 1.92 | 2022 | 0.0117 | 1 | 0.03 | 0.0023 | 0.0495 | 0.0612 |
| 2 | 1 | 1 - 2 | 2023 | 0.0157 | 10 | 2.57 | 2023 | 0.0157 | 1 | 0.04 | 0.0031 | 0.0042 | 0.0198 |
| 3 | 1 | 2 - 3 | 2024 | 0.0067 | 3 | 0.17 | 2024 | 0.0067 | 1 | 0.02 | 0.0013 | 0.0024 | 0.0090 |
| 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** | | | | | | **4.8** | | | | **0.10** | | | |

* Third trimester of pregnancy

## Project Traffic Health Risk Assessment and Calculations

CT-EMFAC2017 Emissions Factors for Project Traffic on Terraine Street for 2025

| | |
|---|---|
| File Name: | Arbor Project Traffic - Santa Clara (SF) - 2025 - Annual.EF |
| CT-EMFAC2017 Version: | 1.0.2.27401 |
| Run Date: | 4/8/2021 12:00 |
| Area: | Santa Clara (SF) |
| Analysis Year: | 2025 |
| Season: | Annual |

| Vehicle Category | VMT Fraction Across Category | Diesel VMT Fraction Within Category | Gas VMT Fraction Within Category |
|---|---|---|---|
| Truck 1 | 0.015 | 0.502 | 0.498 |
| Truck 2 | 0.02 | 0.936 | 0.048 |
| Non-Truck | 0.965 | 0.015 | 0.951 |

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

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

| Pollutant Name | <= 5 mph | 10 mph | 15 mph | 20 mph | 25 mph | 30 mph | 35 mph |
|---|---|---|---|---|---|---|---|
| PM2.5 | 0.008489 | 0.005501 | 0.00373 | 0.002665 | 0.00202 | 0.001628 | 0.001397 |
| TOG | 0.172619 | 0.113109 | 0.076066 | 0.0539 | 0.040836 | 0.03264 | 0.027389 |
| Diesel PM | 0.000788 | 0.00065 | 0.000505 | 0.000405 | 0.00035 | 0.000326 | 0.000328 |

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

| Pollutant Name | Emission Factor |
|---|---|
| TOG | 1.255395 |

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 | 0.016801 |

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

| Pollutant Name | Emission Factor |
|---|---|
| PM2.5 | 0.014826 |

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

# Terraine Street Emissions and Health Risk Calculations

**Analysis Year =** ***2025***

| Vehicle Type | 2021 Caltrans Vehicles (veh/day) | 2025 Vehicles (veh/day) |
|---|---|---|
| Truck 1 (MDT) | 433 | 450 |
| Truck 2 (HDT) | 116 | 121 |
| Non-Truck | 15,096 | 15,700 |
| **Total** | **15,645** | **16,271** |

| | |
|---|---|
| Increase From 2021 | 1.04 |
| **Vehicles/Direction** | **8,135** |
| Avg Vehicles/Hour/Direction | 339 |

**Traffic Data Year =** ***2021***

| ***Proejct Traffic Backgrond Plus Project ADT*** | AADT Total | Total Truck |
|---|---|---|
| Terraine Street | 15,645 | 549 |
| | | |
| | Percent of Total Vehicles | 3.51% |

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

**Arbor Office, 255 W. Julian Street, San Jose - Offsite Residential Roadway Modeling**
**Project Operation - Terraine Street**
**DPM Modeling - Roadway Links, Traffic Volumes, and DPM Emissions**
**Year = 2025**

| | | | | | | | | | | | Line Area | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | Area (sq m) | Area (sq ft) | Emission (g/s/m2) | Emission (lb/hr/ft2) | Initial Vertical height (m) | (Sigma z) Initial Vertical Dimension |
| DPM_TER | Terraine Street | NB/SB | 2 | 303.5 | 0.19 | 15.2 | 50.0 | 3.4 | 25 | 3,586 | 4,625 | 49,787 | 5.923E-10 | 4.367E-10 | 6.8 | 3.16 |
| | | | | | | | | | | | | | | | | |

**Emission Factors - DPM**

| **Speed Category** | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| **Travel Speed (mph)** | 25 | | | |
| **Emissions per Vehicle (g/VMT)** | 0.00035 | | | |

Emisson Factors from CT-EMFAC2017

**2025 Hourly Traffic Volumes and DPM Emissions - DPM_TER**

| Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 3.93% | 141 | 2.58E-06 | 9 | 6.41% | 230 | 4.21E-06 | 17 | 5.55% | 199 | 3.65E-06 |
| 2 | 2.62% | 94 | 1.72E-06 | 10 | 7.36% | 264 | 4.84E-06 | 18 | 3.16% | 113 | 2.08E-06 |
| 3 | 2.85% | 102 | 1.87E-06 | 11 | 6.34% | 227 | 4.17E-06 | 19 | 2.36% | 85 | 1.55E-06 |
| 4 | 3.31% | 119 | 2.18E-06 | 12 | 6.92% | 248 | 4.55E-06 | 20 | 0.87% | 31 | 5.72E-07 |
| 5 | 2.17% | 78 | 1.43E-06 | 13 | 6.29% | 226 | 4.14E-06 | 21 | 3.09% | 111 | 2.03E-06 |
| 6 | 3.36% | 120 | 2.21E-06 | 14 | 6.23% | 223 | 4.10E-06 | 22 | 4.12% | 148 | 2.71E-06 |
| 7 | 6.00% | 215 | 3.94E-06 | 15 | 5.15% | 185 | 3.39E-06 | 23 | 2.58% | 93 | 1.70E-06 |
| 8 | 4.58% | 164 | 3.01E-06 | 16 | 3.84% | 138 | 2.52E-06 | 24 | 0.92% | 33 | 6.05E-07 |
| | | | | | | | | Total | | 3,586 | |

**Arbor Office, 255 W. Julian Street, San Jose - Offsite Residential Roadway Modeling**
**Project Operation - Terraine Street**
**PM2.5 Modeling - Roadway Links, Traffic Volumes, and PM2.5 Emissions**
**Year = 2025**

| | | | | | | | | | | | Line Area | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | Area (sq m) | Area (sq ft) | Emission (g/s/m2) | Emission (lb/hr/ft2) | Initial Vertical height (m) | (Sigma z) Initial Vertical Dimension |
| PM25_TER | Terraine Street | NB/SB | 2 | 303.5 | 0.19 | 15.2 | 50 | 1.3 | 25 | 3,586 | 4,625 | 49,787 | 3.418E-09 | 2.520E-09 | 2.6 | 1.21 |
| | | | | | | | | | | | | | | | | |

## Emission Factors - PM2.5

| Speed Category | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Travel Speed (mph) | 25 | | | |
| Emissions per Vehicle (g/VMT) | 0.002020 | | | |

Emisson Factors from CT-EMFAC2017

### 2025 Hourly Traffic Volumes and PM2.5 Emissions - PM25_TER

| Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.15% | 41 | 4.36E-06 | 9 | 7.11% | 255 | 2.70E-05 | 17 | 7.39% | 265 | 2.80E-05 |
| 2 | 0.42% | 15 | 1.59E-06 | 10 | 4.39% | 157 | 1.67E-05 | 18 | 8.18% | 293 | 3.10E-05 |
| 3 | 0.41% | 15 | 1.56E-06 | 11 | 4.66% | 167 | 1.77E-05 | 19 | 5.69% | 204 | 2.16E-05 |
| 4 | 0.26% | 9 | 9.87E-07 | 12 | 5.89% | 211 | 2.24E-05 | 20 | 4.28% | 153 | 1.62E-05 |
| 5 | 0.50% | 18 | 1.90E-06 | 13 | 6.15% | 221 | 2.33E-05 | 21 | 3.25% | 117 | 1.23E-05 |
| 6 | 0.91% | 33 | 3.45E-06 | 14 | 6.04% | 217 | 2.29E-05 | 22 | 3.30% | 118 | 1.25E-05 |
| 7 | 3.79% | 136 | 1.44E-05 | 15 | 7.01% | 251 | 2.66E-05 | 23 | 2.46% | 88 | 9.33E-06 |
| 8 | 7.77% | 279 | 2.95E-05 | 16 | 7.14% | 256 | 2.71E-05 | 24 | 1.86% | 67 | 7.06E-06 |
| | | | | | | | | Total | | 3,586 | |

**Arbor Office, 255 W. Julian Street, San Jose - Offsite Residential Roadway Modeling**
**Project Operation - Terraine Street**
**TOG Exhaust Modeling - Roadway Links, Traffic Volumes, and TOG Exhaust Emissions**
**Year = 2025**

| | | | | | | | | | | | Line Area | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | Area (sq m) | Area (sq ft) | Emission (g/s/m2) | Emission (lb/hr/ft2) | Initial Vertical height | (Sigma z) Initial Vertical Dimension |
| TEXH_TER | Terraine Street | NB/SB | 2 | 303.5 | 0.19 | 15.2 | 50 | 1.3 | 25 | 3,586 | 4,625 | 49,787 | 6.910E-08 | 5.095E-08 | 2.6 | 1.21 |
| | | | | | | | | | | | | | | | | |

## Emission Factors - TOG Exhaust

| Speed Category | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Travel Speed (mph) | 25 | | | |
| Emissions per Vehicle (g/VMT) | 0.04084 | | | |

Emisson Factors from CT-EMFAC2017

### 2025 Hourly Traffic Volumes and TOG Exhaust Emissions - TEXH_TER

| Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.15% | 41 | 8.82E-05 | 9 | 7.11% | 255 | 5.45E-04 | 17 | 7.39% | 265 | 5.67E-04 |
| 2 | 0.42% | 15 | 3.22E-05 | 10 | 4.39% | 157 | 3.37E-04 | 18 | 8.18% | 293 | 6.28E-04 |
| 3 | 0.41% | 15 | 3.15E-05 | 11 | 4.66% | 167 | 3.57E-04 | 19 | 5.69% | 204 | 4.36E-04 |
| 4 | 0.26% | 9 | 1.99E-05 | 12 | 5.89% | 211 | 4.52E-04 | 20 | 4.28% | 153 | 3.28E-04 |
| 5 | 0.50% | 18 | 3.84E-05 | 13 | 6.15% | 221 | 4.72E-04 | 21 | 3.25% | 117 | 2.49E-04 |
| 6 | 0.91% | 33 | 6.98E-05 | 14 | 6.04% | 217 | 4.63E-04 | 22 | 3.30% | 118 | 2.53E-04 |
| 7 | 3.79% | 136 | 2.91E-04 | 15 | 7.01% | 251 | 5.38E-04 | 23 | 2.46% | 88 | 1.89E-04 |
| 8 | 7.77% | 279 | 5.96E-04 | 16 | 7.14% | 256 | 5.48E-04 | 24 | 1.86% | 67 | 1.43E-04 |
| | | | | | | | | Total | | 3,586 | |

**Arbor Office, 255 W. Julian Street, San Jose - Offsite Residential Roadway Modeling**
**Project Operation - Terraine Street**
**TOG Evaporative Emissions Modeling - Roadway Links, Traffic Volumes, and TOG Evaporative Emissions**
**Year = 2025**

| | | | | | | | | | | | Line Area | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | Area (sq m) | Area (sq ft) | Emission (g/s/m2) | Emission (lb/hr/ft2) | Initial Vertical height | (Sigma z) Initial Vertical Dimension |
| TEVAP_TER | Terraine Street | NB/SB | 2 | 303.5 | 0.19 | 15.2 | 50 | 1.3 | 25 | 3,586 | 4,625 | 49,787 | 8.498E-08 | 6.266E-08 | 2.6 | 1.21 |

## Emission Factors - PM2.5 - Evaporative TOG

| Speed Category | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Travel Speed (mph) | 25 | | | |
| Emissions per Vehicle per Hour (g/hour) | 1.25540 | | | |
| Emissions per Vehicle per Mile (g/VMT) | 0.05022 | | | |

Emisson Factors from CT-EMFAC2017

## 2025 Hourly Traffic Volumes and TOG Evaporative Emissions - TEVAP_TER

| Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.15% | 41 | 1.08E-04 | 9 | 7.11% | 255 | 6.71E-04 | 17 | 7.39% | 265 | 6.97E-04 |
| 2 | 0.42% | 15 | 3.96E-05 | 10 | 4.39% | 157 | 4.14E-04 | 18 | 8.18% | 293 | 7.72E-04 |
| 3 | 0.41% | 15 | 3.87E-05 | 11 | 4.66% | 167 | 4.40E-04 | 19 | 5.69% | 204 | 5.37E-04 |
| 4 | 0.26% | 9 | 2.45E-05 | 12 | 5.89% | 211 | 5.56E-04 | 20 | 4.28% | 153 | 4.04E-04 |
| 5 | 0.50% | 18 | 4.72E-05 | 13 | 6.15% | 221 | 5.80E-04 | 21 | 3.25% | 117 | 3.07E-04 |
| 6 | 0.91% | 33 | 8.58E-05 | 14 | 6.04% | 217 | 5.70E-04 | 22 | 3.30% | 118 | 3.11E-04 |
| 7 | 3.79% | 136 | 3.58E-04 | 15 | 7.01% | 251 | 6.61E-04 | 23 | 2.46% | 88 | 2.32E-04 |
| 8 | 7.77% | 279 | 7.33E-04 | 16 | 7.14% | 256 | 6.74E-04 | 24 | 1.86% | 67 | 1.75E-04 |
| | | | | | | | | Total | | 3,586 | |

**Arbor Office, 255 W. Julian Street, San Jose - Offsite Residential Roadway Modeling**
**Project Operation - Terraine Street**
**Fugitive Road PM2.5 Modeling - Roadway Links, Traffic Volumes, and Fugitive Road PM2.5 Emissions**
**Year = 2025**

| | | | | | | | | | | | Line Area | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | Area (sq m) | Area (sq ft) | Emission (g/s/m2) | Emission (lb/hr/ft2) | Initial Vertical height (m) | (Sigma z) Initial Vertical Dimension |
| FUG_TER | Terraine Street | NB/SB | 2 | 303.5 | 0.19 | 15.2 | 50 | 1.3 | 25 | 3,586 | 4,625 | 49,787 | 5.709E-08 | 4.209E-08 | 2.6 | 1.21 |

## Emission Factors - Fugitive PM2.5

| Speed Category | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Travel Speed (mph) | 25 | | | |
| 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) | 0.01483 | | | |
| Total Fugitive PM2.5 - Emissions per Vehicle (g/VMT) | 0.03374 | | | |

Emisson Factors from CT-EMFAC2017

## 2025 Hourly Traffic Volumes and Fugitive PM2.5 Emissions - FUG_TER

| Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.15% | 41 | 7.29E-05 | 9 | 7.11% | 255 | 4.51E-04 | 17 | 7.39% | 265 | 4.68E-04 |
| 2 | 0.42% | 15 | 2.66E-05 | 10 | 4.39% | 157 | 2.78E-04 | 18 | 8.18% | 293 | 5.18E-04 |
| 3 | 0.41% | 15 | 2.60E-05 | 11 | 4.66% | 167 | 2.95E-04 | 19 | 5.69% | 204 | 3.61E-04 |
| 4 | 0.26% | 9 | 1.65E-05 | 12 | 5.89% | 211 | 3.73E-04 | 20 | 4.28% | 153 | 2.71E-04 |
| 5 | 0.50% | 18 | 3.17E-05 | 13 | 6.15% | 221 | 3.90E-04 | 21 | 3.25% | 117 | 2.06E-04 |
| 6 | 0.91% | 33 | 5.77E-05 | 14 | 6.04% | 217 | 3.83E-04 | 22 | 3.30% | 118 | 2.09E-04 |
| 7 | 3.79% | 136 | 2.40E-04 | 15 | 7.01% | 251 | 4.44E-04 | 23 | 2.46% | 88 | 1.56E-04 |
| 8 | 7.77% | 279 | 4.92E-04 | 16 | 7.14% | 256 | 4.52E-04 | 24 | 1.86% | 67 | 1.18E-04 |
| | | | | | | | | Total | | 3,586 | |

**Arbor Office, 255 W. Julian Street, San Jose, CA - Terraine Street Traffic - TACs & PM2.5 AERMOD Risk Modeling Parameters and Maximum Concentrations - Project Traffic at Construction MEI Receptors (PM2.5 1.5m receptor height, Cancer Risk 8.2m height)**

| | |
|---|---|
| **Emission Year** | 2025 |
| **Receptor Information** | Construction MEI receptor |
| Number of Receptors | 1 |
| Receptor Height | PM2.5 1.5 meters, Cancer Risk 8.2 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 - 8.2m**

| Meteorological Data Years | Concentration (µg/m3)* | | |
|---|---|---|---|
| | DPM | Exhaust TOG | Evaporative TOG |
| 2013-2017 | 0.0003 | 0.0212 | 0.0261 |

**Construction MEI PM2.5 Maximum Concentrations - 1.5m**

| Meteorological Data Years | PM2.5 Concentration (µg/m3)* | | |
|---|---|---|---|
| | Total PM2.5 | Fugitive PM2.5 | Vehicle PM2.5 |
| 2013-2017 | 0.0814 | 0.0768 | 0.0046 |

**Arbor Office, 255 W. Julian Street, San Jose, CA - Terraine Street Cancer Risk**
**Impacts at Construction MEI - PM2.5 1.5 meter receptor height, Cancer Risk 8.2m height**
**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* | 2022 | 10 | 0.0000 | 0.0000 | 0.0000 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 1 | 1 | 0 - 1 | 2022 | 10 | 0.0000 | 0.0000 | 0.0000 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 2 | 1 | 1 - 2 | 2023 | 10 | 0.0000 | 0.0000 | 0.0000 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 3 | 1 | 2 - 3 | 2024 | 3 | 0.0000 | 0.0000 | 0.0000 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 4 | 1 | 3 - 4 | 2025 | 3 | 0.0003 | 0.0212 | 0.0261 | 0.005 | 0.002 | 0.0002 | 0.01 |
| 5 | 1 | 4 - 5 | 2026 | 3 | 0.0003 | 0.0212 | 0.0261 | 0.005 | 0.002 | 0.0002 | 0.01 |
| 6 | 1 | 5 - 6 | 2027 | 3 | 0.0003 | 0.0212 | 0.0261 | 0.005 | 0.002 | 0.0002 | 0.01 |
| 7 | 1 | 6 - 7 | 2028 | 3 | 0.0003 | 0.0212 | 0.0261 | 0.005 | 0.002 | 0.0002 | 0.01 |
| 8 | 1 | 7 - 8 | 2029 | 3 | 0.0003 | 0.0212 | 0.0261 | 0.005 | 0.002 | 0.0002 | 0.01 |
| 9 | 1 | 8 - 9 | 2030 | 3 | 0.0003 | 0.0212 | 0.0261 | 0.005 | 0.002 | 0.0002 | 0.01 |
| 10 | 1 | 9 - 10 | 2031 | 3 | 0.0003 | 0.0212 | 0.0261 | 0.005 | 0.002 | 0.0002 | 0.01 |
| 11 | 1 | 10 - 11 | 2032 | 3 | 0.0003 | 0.0212 | 0.0261 | 0.005 | 0.002 | 0.0002 | 0.01 |
| 12 | 1 | 11 - 12 | 2033 | 3 | 0.0003 | 0.0212 | 0.0261 | 0.005 | 0.002 | 0.0002 | 0.01 |
| 13 | 1 | 12 - 13 | 2034 | 3 | 0.0003 | 0.0212 | 0.0261 | 0.005 | 0.002 | 0.0002 | 0.01 |
| 14 | 1 | 13 - 14 | 2035 | 3 | 0.0003 | 0.0212 | 0.0261 | 0.005 | 0.002 | 0.0002 | 0.01 |
| 15 | 1 | 14 - 15 | 2036 | 3 | 0.0003 | 0.0212 | 0.0261 | 0.005 | 0.002 | 0.0002 | 0.01 |
| 16 | 1 | 15 - 16 | 2037 | 3 | 0.0003 | 0.0212 | 0.0261 | 0.005 | 0.002 | 0.0002 | 0.01 |
| 17 | 1 | 16-17 | 2038 | 1 | 0.0003 | 0.0212 | 0.0261 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 18 | 1 | 17-18 | 2039 | 1 | 0.0003 | 0.0212 | 0.0261 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 19 | 1 | 18-19 | 2040 | 1 | 0.0003 | 0.0212 | 0.0261 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 20 | 1 | 19-20 | 2041 | 1 | 0.0003 | 0.0212 | 0.0261 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 21 | 1 | 20-21 | 2042 | 1 | 0.0003 | 0.0212 | 0.0261 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 22 | 1 | 21-22 | 2043 | 1 | 0.0003 | 0.0212 | 0.0261 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 23 | 1 | 22-23 | 2044 | 1 | 0.0003 | 0.0212 | 0.0261 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 24 | 1 | 23-24 | 2045 | 1 | 0.0003 | 0.0212 | 0.0261 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 25 | 1 | 24-25 | 2046 | 1 | 0.0003 | 0.0212 | 0.0261 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 26 | 1 | 25-26 | 2047 | 1 | 0.0003 | 0.0212 | 0.0261 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 27 | 1 | 26-27 | 2048 | 1 | 0.0003 | 0.0212 | 0.0261 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 28 | 1 | 27-28 | 2049 | 1 | 0.0003 | 0.0212 | 0.0261 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 29 | 1 | 28-29 | 2050 | 1 | 0.0003 | 0.0212 | 0.0261 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 30 | 1 | 29-30 | 2051 | 1 | 0.0003 | 0.0212 | 0.0261 | 0.001 | 0.000 | 0.0000 | 0.00 |
| **Total Increased Cancer Risk** | | | | | | | | 0.07 | 0.034 | 0.002 | **0.11** |

| Maximum Hazard Index | Maximum Fugitive PM2.5 | Total PM2.5 |
|---|---|---|
| 0.00005 | 0.08 | 0.08 |

* Third trimester of pregnancy

**Project Generator Health Risk Assessment and Calculations**

## Arbor Offices, 255 W. Julian Street, San Jose, CA

**Standby Emergency Generator Impacts**

**Off-site Sensitive Receptors**

**MEI Location = 1.5 meter PM2.5 receptor height, 8.2 meter Cancer risk 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 Generators | 0.089 | 32.40 |
| CalEEMod DPM Emissions | 1.62E-02 | 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) | 12.00 | near ground level release |
| Stack Diameter (ft)** | 0.60 | |
| Exhaust Gas Flowrate (CFM)* | 2527.73 | |
| Stack Exit Velocity (ft/sec)** | 149.00 | |
| Exhaust Temperature (˚F)** | 872.00 | |
| Emissions Rate (lb/hr) | 0.0037 | 0.0018 each generator |

* AERMOD default

**BAAQMD default generator parameters

**Arbor Offices, 255 W. Julian Street, San Jose, CA - Cancer Risks from Project Operation**
**Project Emergency Generator**
**Impacts at Off-Site MEI Receptors- 1.5m PM2.5, 8.2m Cancer Risk MEI Receptor Heights**
**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

**Construction Cancer Risk by Year - Maximum Impact Receptor Location**

| Exposure Year | Exposure Duration (years) | Age | Infant/Child - Exposure Information: DPM Conc (ug/m3) Year | DPM Conc (ug/m3) Annual | Age Sensitivity Factor | Infant/Child Cancer Risk (per million) | | Hazard Index | Fugitive PM2.5 | Total PM2.5 |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 0.25 | -0.25 - 0* | 2022 | 0.00000 | 10 | 0.00 | | | | |
| 1 | 1 | 0 - 1 | 2022 | 0.00000 | 10 | 0.00 | | | | |
| 2 | 1 | 1 - 2 | 2023 | 0.00000 | 10 | 0.00 | | | | |
| 3 | 1 | 2 - 3 | 2024 | 0.00000 | 3 | 0.00 | | | | |
| 4 | 1 | 3 - 4 | 2025 | 0.00955 | 3 | 0.18 | | 0.0019 | 0.008 | 0.018 |
| 5 | 1 | 4 - 5 | 2026 | 0.00955 | 3 | 0.18 | | 0.0019 | 0.008 | 0.018 |
| 6 | 1 | 5 - 6 | 2027 | 0.00955 | 3 | 0.18 | | 0.0019 | 0.008 | 0.018 |
| 7 | 1 | 6 - 7 | 2028 | 0.00955 | 3 | 0.18 | | 0.0019 | 0.008 | 0.018 |
| 8 | 1 | 7 - 8 | 2029 | 0.00955 | 3 | 0.18 | | 0.0019 | 0.008 | 0.018 |
| 9 | 1 | 8 - 9 | 2030 | 0.00955 | 3 | 0.18 | | 0.0019 | 0.008 | 0.018 |
| 10 | 1 | 9 - 10 | 2031 | 0.00955 | 3 | 0.18 | | 0.0019 | 0.008 | 0.018 |
| 11 | 1 | 10 - 11 | 2032 | 0.00955 | 3 | 0.18 | | 0.0019 | 0.008 | 0.018 |
| 12 | 1 | 11 - 12 | 2033 | 0.00955 | 3 | 0.18 | | 0.0019 | 0.008 | 0.018 |
| 13 | 1 | 12 - 13 | 2034 | 0.00955 | 3 | 0.18 | | 0.0019 | 0.008 | 0.018 |
| 14 | 1 | 13 - 14 | 2035 | 0.00955 | 3 | 0.18 | | 0.0019 | 0.008 | 0.018 |
| 15 | 1 | 14 - 15 | 2036 | 0.00955 | 3 | 0.18 | | 0.0019 | 0.008 | 0.018 |
| 16 | 1 | 15 - 16 | 2037 | 0.00955 | 3 | 0.18 | | 0.0019 | 0.008 | 0.018 |
| 17 | 1 | 16-17 | 2038 | 0.00955 | 1 | 0.03 | | 0.0019 | 0.008 | 0.018 |
| 18 | 1 | 17-18 | 2039 | 0.00955 | 1 | 0.03 | | 0.0019 | 0.008 | 0.018 |
| 19 | 1 | 18-19 | 2040 | 0.00955 | 1 | 0.03 | | 0.0019 | 0.008 | 0.018 |
| 20 | 1 | 19-20 | 2041 | 0.00955 | 1 | 0.03 | | 0.0019 | 0.008 | 0.018 |
| 21 | 1 | 20-21 | 2042 | 0.00955 | 1 | 0.03 | | 0.0019 | 0.008 | 0.018 |
| 22 | 1 | 21-22 | 2043 | 0.00955 | 1 | 0.03 | | 0.0019 | 0.008 | 0.018 |
| 23 | 1 | 22-23 | 2044 | 0.00955 | 1 | 0.03 | | 0.0019 | 0.008 | 0.018 |
| 24 | 1 | 23-24 | 2045 | 0.00955 | 1 | 0.03 | | 0.0019 | 0.008 | 0.018 |
| 25 | 1 | 24-25 | 2046 | 0.00955 | 1 | 0.03 | | 0.0019 | 0.008 | 0.018 |
| 26 | 1 | 25-26 | 2047 | 0.00955 | 1 | 0.03 | | 0.0019 | 0.008 | 0.018 |
| 27 | 1 | 26-27 | 2048 | 0.00955 | 1 | 0.03 | | 0.0019 | 0.008 | 0.018 |
| 28 | 1 | 27-28 | 2049 | 0.00955 | 1 | 0.03 | | 0.0019 | 0.008 | 0.018 |
| 29 | 1 | 28-29 | 2050 | 0.00955 | 1 | 0.03 | | 0.0019 | 0.008 | 0.018 |
| 30 | 1 | 29-30 | 2051 | 0.00955 | 1 | 0.03 | | 0.0019 | 0.008 | 0.018 |
| **Total Increased Cancer Risk** | | | | | | **2.70** | **Max** | **0.002** | **0.01** | **0.02** |

* Third trimester of pregnancy

# Attachment 5: Cumulative Community Risk from Existing TAC Sources

# CT-EMFAC2017 Emissions Factors for S.R. 87 2022

File Name: SR87 - Arbor- Santa Clara (SF) - 2022 - Annual.EF
CT-EMFAC2017 Version: 1.0.2.27401
Run Date: 4/11/2021 13:11
Area: Santa Clara (SF)
Analysis Year: 2022
Season: Annual

| Vehicle Category | VMT Fraction Across Category | Diesel VMT Fraction Within Category | Gas VMT Fraction Within Category |
|---|---|---|---|
| Truck 1 | 0.01 | 0.478 | 0.522 |
| Truck 2 | 0.027 | 0.94 | 0.046 |
| Non-Truck | 0.963 | 0.014 | 0.961 |

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 | 45 mph | 50 mph | 55 mph | 60 mph | 65 mph | 70 mph |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PM2.5 | 0.010573 | 0.007072 | 0.004856 | 0.003503 | 0.002711 | 0.002236 | 0.00196 | 0.001827 | 0.001806 | 0.00188 | 0.002044 | 0.002266 | 0.002546 | 0.002656 |
| TOG | 0.223068 | 0.147103 | 0.098368 | 0.069276 | 0.052368 | 0.041705 | 0.034809 | 0.030457 | 0.027959 | 0.026954 | 0.027312 | 0.029137 | 0.032669 | 0.03522 |
| Diesel PM | 0.001952 | 0.001644 | 0.001248 | 0.000975 | 0.000844 | 0.000784 | 0.00077 | 0.0008 | 0.00087 | 0.000982 | 0.001134 | 0.001289 | 0.001433 | 0.001433 |

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

| Pollutant Name | Emission Factor |
|---|---|
| TOG | 1.39513 |

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

| Pollutant Name | Emission Factor |
|---|---|
| PM2.5 | 0.002138 |

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

| Pollutant Name | Emission Factor |
|---|---|
| PM2.5 | 0.016874 |

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

| Pollutant Name | Emission Factor |
|---|---|
| PM2.5 | 0.007801 |

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

# S.R. 87 Emissions and Health Risk Calculations

**Analysis Year =** ***2022***

| Vehicle Type | 2019 Caltrans Vehicles (veh/day) | 2022 Vehicles (veh/day) |
|---|---|---|
| Truck 1 (MDT) | 3,294 | 3,393 |
| Truck 2 (HDT) | 1,294 | 1,333 |
| Non-Truck | 119,412 | 122,994 |
| **Total** | **124,000** | **127,720** |

| | |
|---|---|
| Increase From 2019 | 1.03 |
| **Vehicles/Direction** | **63,860** |
| Avg Vehicles/Hour/Direction | 2,661 |

**Traffic Data Year =** ***2019***

| ***Caltrans AADT (2019) & Truck %s (2018)*** | | Total | Trucks by Axle | | | |
|---|---|---|---|---|---|---|
| | AADT Total | Truck | 2 | 3 | 4 | 5 |
| SAN JOSE, JULIAN STREET Ahead / SAN JOSE, JCT. RTE. 280 Ahead | 124,000 | 4,588 | 3,294 | 597 | 156 | 542 |
| | | | 71.80% | 13.00% | 3.39% | 11.81% |
| Percent of Total Vehicles | | 3.70% | 2.66% | 0.48% | 0.13% | 0.44% |

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

**Arbor Office, 255 W. Julian Street, San Jose - Offsite Residential Roadway Modeling**
**Cumulative Operation - S.R. 87**
**DPM Modeling - Roadway Links, Traffic Volumes, and DPM Emissions**
**Year =** **2022** 20.63

| 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_87 | S.R. 87 Northbound | NB | 4 | 723.7 | 0.45 | 20.6 | 67.7 | 3.4 | Varied | 63,860 |
| DPM_87 | S.R. 87 Southbound | SB | 4 | 706.7 | 0.44 | 20.6 | 67.7 | 3.4 | Varied | 63,860 |
| | | | | | | | | | Total | 127,720 |

**Emission Factors - DPM**

| Speed Category | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Travel Speed (mph) | 65 | 60 | 25 | |
| Emissions per Vehicle (g/VMT) | 0.00143 | 0.001289 | 0.000844 | |

Emisson Factors from CT-EMFAC2017

**2022 Hourly Traffic Volumes and DPM Emissions - DPM_87**

| Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.76% | 484 | 8.66E-05 | 9 | 7.32% | 4676 | 4.93E-04 | 17 | 5.19% | 3316 | 5.34E-04 |
| 2 | 0.45% | 287 | 5.13E-05 | 10 | 6.61% | 4220 | 7.55E-04 | 18 | 5.05% | 3227 | 5.20E-04 |
| 3 | 0.41% | 263 | 4.70E-05 | 11 | 5.96% | 3807 | 6.81E-04 | 19 | 4.08% | 2607 | 4.67E-04 |
| 4 | 0.71% | 455 | 8.15E-05 | 12 | 5.72% | 3653 | 6.54E-04 | 20 | 3.40% | 2172 | 3.89E-04 |
| 5 | 2.07% | 1324 | 2.37E-04 | 13 | 5.78% | 3691 | 6.61E-04 | 21 | 2.87% | 1835 | 3.28E-04 |
| 6 | 6.11% | 3902 | 6.98E-04 | 14 | 5.90% | 3768 | 6.74E-04 | 22 | 2.40% | 1531 | 2.74E-04 |
| 7 | 7.50% | 4789 | 8.57E-04 | 15 | 5.76% | 3676 | 6.58E-04 | 23 | 1.72% | 1100 | 1.97E-04 |
| 8 | 7.74% | 4946 | 5.21E-04 | 16 | 5.39% | 3443 | 6.16E-04 | 24 | 1.08% | 688 | 1.23E-04 |
| | | | | | | | | Total | | 63,860 | |

**2022 Hourly Traffic Volumes Per Direction and DPM Emissions - DPM_87**

| Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.07% | 681 | 1.19E-04 | 9 | 3.93% | 2509 | 3.94E-04 | 17 | 9.28% | 5925 | 6.10E-04 |
| 2 | 0.67% | 428 | 7.48E-05 | 10 | 4.13% | 2639 | 4.61E-04 | 18 | 8.47% | 5410 | 5.57E-04 |
| 3 | 0.50% | 321 | 5.62E-05 | 11 | 4.64% | 2965 | 5.18E-04 | 19 | 6.57% | 4194 | 7.33E-04 |
| 4 | 0.37% | 234 | 4.08E-05 | 12 | 5.43% | 3470 | 6.06E-04 | 20 | 5.13% | 3279 | 5.73E-04 |
| 5 | 0.53% | 341 | 5.96E-05 | 13 | 6.29% | 4020 | 7.03E-04 | 21 | 3.86% | 2465 | 4.31E-04 |
| 6 | 1.11% | 709 | 1.24E-04 | 14 | 6.74% | 4302 | 7.52E-04 | 22 | 3.12% | 1990 | 3.48E-04 |
| 7 | 2.27% | 1450 | 2.54E-04 | 15 | 8.69% | 5553 | 9.71E-04 | 23 | 2.53% | 1614 | 2.82E-04 |
| 8 | 3.42% | 2187 | 3.44E-04 | 16 | 9.45% | 6037 | 1.06E-03 | 24 | 1.78% | 1136 | 1.99E-04 |
| | | | | | | | | Total | | 63,860 | |

**Arbor Office, 255 W. Julian Street, San Jose - Offsite Residential Roadway Modeling**
**Cumulative Operation - S.R. 87**
**PM2.5 Modeling - Roadway Links, Traffic Volumes, and PM2.5 Emissions**
**Year = 2022**

| 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_87 | S.R. 87 Northbound | NB | 4 | 723.7 | 0.45 | 20.6 | 68 | 1.3 | Varied | 63,860 |
| PM25_87 | S.R. 87 Southbound | SB | 4 | 706.7 | 0.44 | 20.6 | 68 | 1.3 | Varied | 63,860 |
| | | | | | | | | | Total | 127,720 |

**Emission Factors - PM2.5**

| Speed Category | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Travel Speed (mph) | 65 | 60 | 25 | |
| Emissions per Vehicle (g/VMT) | 0.002546 | 0.00227 | 0.002711 | |

Emisson Factors from CT-EMFAC2017

**2022 Hourly Traffic Volumes and PM2.5 Emissions - PM25_87**

| Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.76% | 484 | 1.54E-04 | 9 | 7.32% | 4676 | 1.58E-03 | 17 | 5.19% | 3316 | 9.39E-04 |
| 2 | 0.45% | 287 | 9.11E-05 | 10 | 6.61% | 4220 | 1.34E-03 | 18 | 5.05% | 3227 | 9.13E-04 |
| 3 | 0.41% | 263 | 8.36E-05 | 11 | 5.96% | 3807 | 1.21E-03 | 19 | 4.08% | 2607 | 8.29E-04 |
| 4 | 0.71% | 455 | 1.45E-04 | 12 | 5.72% | 3653 | 1.16E-03 | 20 | 3.40% | 2172 | 6.91E-04 |
| 5 | 2.07% | 1324 | 4.21E-04 | 13 | 5.78% | 3691 | 1.17E-03 | 21 | 2.87% | 1835 | 5.84E-04 |
| 6 | 6.11% | 3902 | 1.24E-03 | 14 | 5.90% | 3768 | 1.20E-03 | 22 | 2.40% | 1531 | 4.87E-04 |
| 7 | 7.50% | 4789 | 1.52E-03 | 15 | 5.76% | 3676 | 1.17E-03 | 23 | 1.72% | 1100 | 3.50E-04 |
| 8 | 7.74% | 4946 | 1.67E-03 | 16 | 5.39% | 3443 | 1.09E-03 | 24 | 1.08% | 688 | 2.19E-04 |
| | | | | | | | | Total | | 63,860 | |

**2022 Hourly Traffic Volumes Per Direction and PM2.5 Emissions - PM25_87**

| Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.07% | 681 | 2.12E-04 | 9 | 3.93% | 2509 | 6.94E-04 | 17 | 9.28% | 5925 | 1.96E-03 |
| 2 | 0.67% | 428 | 1.33E-04 | 10 | 4.13% | 2639 | 8.20E-04 | 18 | 8.47% | 5410 | 1.79E-03 |
| 3 | 0.50% | 321 | 9.98E-05 | 11 | 4.64% | 2965 | 9.21E-04 | 19 | 6.57% | 4194 | 1.30E-03 |
| 4 | 0.37% | 234 | 7.26E-05 | 12 | 5.43% | 3470 | 1.08E-03 | 20 | 5.13% | 3279 | 1.02E-03 |
| 5 | 0.53% | 341 | 1.06E-04 | 13 | 6.29% | 4020 | 1.25E-03 | 21 | 3.86% | 2465 | 7.66E-04 |
| 6 | 1.11% | 709 | 2.20E-04 | 14 | 6.74% | 4302 | 1.34E-03 | 22 | 3.12% | 1990 | 6.18E-04 |
| 7 | 2.27% | 1450 | 4.50E-04 | 15 | 8.69% | 5553 | 1.72E-03 | 23 | 2.53% | 1614 | 5.01E-04 |
| 8 | 3.42% | 2187 | 6.04E-04 | 16 | 9.45% | 6037 | 1.87E-03 | 24 | 1.78% | 1136 | 3.53E-04 |
| | | | | | | | | Total | | 63,860 | |

**Arbor Office, 255 W. Julian Street, San Jose - Offsite Residential Roadway Modeling**
**Cumulative Operation - S.R. 87**
**TOG Exhaust Modeling - Roadway Links, Traffic Volumes, and TOG Exhaust Emissions**
**Year = 2022**

| 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_87 | S.R. 87 Northbound | NB | 4 | 723.7 | 0.45 | 20.6 | 68 | 1.3 | Varied | 63,860 |
| TEXH_87 | S.R. 87 Southbound | SB | 4 | 706.7 | 0.44 | 20.6 | 68 | 1.3 | Varied | 63,860 |
| | | | | | | | | | Total | 127,720 |

**Emission Factors - TOG Exhaust**

| | | | | |
|---|---|---|---|---|
| **Speed Category** | 1 | 2 | 3 | 4 |
| **Travel Speed (mph)** | 65 | 60 | 25 | |
| **Emissions per Vehicle (g/VMT)** | 0.03267 | 0.02914 | ####### | |

Emisson Factors from CT-EMFAC2017

**2022 Hourly Traffic Volumes and TOG Exhaust Emissions - TEXH_87**

| Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.76% | 484 | 1.97E-03 | 9 | 7.32% | 4676 | 3.06E-02 | 17 | 5.19% | 3316 | 1.21E-02 |
| 2 | 0.45% | 287 | 1.17E-03 | 10 | 6.61% | 4220 | 1.72E-02 | 18 | 5.05% | 3227 | 1.17E-02 |
| 3 | 0.41% | 263 | 1.07E-03 | 11 | 5.96% | 3807 | 1.55E-02 | 19 | 4.08% | 2607 | 1.06E-02 |
| 4 | 0.71% | 455 | 1.86E-03 | 12 | 5.72% | 3653 | 1.49E-02 | 20 | 3.40% | 2172 | 8.86E-03 |
| 5 | 2.07% | 1324 | 5.40E-03 | 13 | 5.78% | 3691 | 1.51E-02 | 21 | 2.87% | 1835 | 7.49E-03 |
| 6 | 6.11% | 3902 | 1.59E-02 | 14 | 5.90% | 3768 | 1.54E-02 | 22 | 2.40% | 1531 | 6.25E-03 |
| 7 | 7.50% | 4789 | 1.95E-02 | 15 | 5.76% | 3676 | 1.50E-02 | 23 | 1.72% | 1100 | 4.49E-03 |
| 8 | 7.74% | 4946 | 3.24E-02 | 16 | 5.39% | 3443 | 1.40E-02 | 24 | 1.08% | 688 | 2.81E-03 |
| | | | | | | | | Total | | 63,860 | |

**2022 Hourly Traffic Volumes Per Direction and TOG Exhaust Emissions - TEXH_87**

| Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.07% | 681 | 2.71E-03 | 9 | 3.93% | 2509 | 8.92E-03 | 17 | 9.28% | 5925 | 3.78E-02 |
| 2 | 0.67% | 428 | 1.71E-03 | 10 | 4.13% | 2639 | 1.05E-02 | 18 | 8.47% | 5410 | 3.46E-02 |
| 3 | 0.50% | 321 | 1.28E-03 | 11 | 4.64% | 2965 | 1.18E-02 | 19 | 6.57% | 4194 | 1.67E-02 |
| 4 | 0.37% | 234 | 9.31E-04 | 12 | 5.43% | 3470 | 1.38E-02 | 20 | 5.13% | 3279 | 1.31E-02 |
| 5 | 0.53% | 341 | 1.36E-03 | 13 | 6.29% | 4020 | 1.60E-02 | 21 | 3.86% | 2465 | 9.82E-03 |
| 6 | 1.11% | 709 | 2.83E-03 | 14 | 6.74% | 4302 | 1.71E-02 | 22 | 3.12% | 1990 | 7.93E-03 |
| 7 | 2.27% | 1450 | 5.78E-03 | 15 | 8.69% | 5553 | 2.21E-02 | 23 | 2.53% | 1614 | 6.43E-03 |
| 8 | 3.42% | 2187 | 7.77E-03 | 16 | 9.45% | 6037 | 2.41E-02 | 24 | 1.78% | 1136 | 4.53E-03 |
| | | | | | | | | Total | | 63,860 | |

**Arbor Office, 255 W. Julian Street, San Jose - Offsite Residential Roadway Modeling**
**Cumulative Operation - S.R. 87**
**TOG Evaporative Emissions Modeling - Roadway Links, Traffic Volumes, and TOG Evaporative Emissions**
**Year = 2022**

| 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_87 | S.R. 87 Northbound | NB | 4 | 723.7 | 0.45 | 20.6 | 68 | 1.3 | Varied | 63,860 |
| TEVAP_87 | S.R. 87 Southbound | SB | 4 | 706.7 | 0.44 | 20.6 | 68 | 1.3 | Varied | 63,860 |
| | | | | | | | | | Total | 127,720 |

**Emission Factors - PM2.5 - Evaporative TOG**

| Speed Category | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Travel Speed (mph) | 65 | 60 | 25 | |
| Emissions per Vehicle per Hour (g/hour) | 1.39513 | 1.39513 | ####### | |
| Emissions per Vehicle per Mile (g/VMT) | 0.02146 | 0.02325 | ####### | |

Emisson Factors from CT-EMFAC2017

**2022 Hourly Traffic Volumes and TOG Evaporative Emissions - TEVAP_87**

| Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.76% | 484 | 1.30E-03 | 9 | 7.32% | 4676 | 3.26E-02 | 17 | 5.19% | 3316 | 9.63E-03 |
| 2 | 0.45% | 287 | 7.68E-04 | 10 | 6.61% | 4220 | 1.13E-02 | 18 | 5.05% | 3227 | 9.37E-03 |
| 3 | 0.41% | 263 | 7.05E-04 | 11 | 5.96% | 3807 | 1.02E-02 | 19 | 4.08% | 2607 | 6.99E-03 |
| 4 | 0.71% | 455 | 1.22E-03 | 12 | 5.72% | 3653 | 9.79E-03 | 20 | 3.40% | 2172 | 5.82E-03 |
| 5 | 2.07% | 1324 | 3.55E-03 | 13 | 5.78% | 3691 | 9.89E-03 | 21 | 2.87% | 1835 | 4.92E-03 |
| 6 | 6.11% | 3902 | 1.05E-02 | 14 | 5.90% | 3768 | 1.01E-02 | 22 | 2.40% | 1531 | 4.11E-03 |
| 7 | 7.50% | 4789 | 1.28E-02 | 15 | 5.76% | 3676 | 9.86E-03 | 23 | 1.72% | 1100 | 2.95E-03 |
| 8 | 7.74% | 4946 | 3.45E-02 | 16 | 5.39% | 3443 | 9.23E-03 | 24 | 1.08% | 688 | 1.85E-03 |
| | | | | | | | | Total | | 63,860 | |

**2022 Hourly Traffic Volumes Per Direction and TOG Evaporative Emissions - TEVAP_87**

| Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.07% | 681 | 1.78E-03 | 9 | 3.93% | 2509 | 7.12E-03 | 17 | 9.28% | 5925 | 4.03E-02 |
| 2 | 0.67% | 428 | 1.12E-03 | 10 | 4.13% | 2639 | 6.91E-03 | 18 | 8.47% | 5410 | 3.68E-02 |
| 3 | 0.50% | 321 | 8.42E-04 | 11 | 4.64% | 2965 | 7.76E-03 | 19 | 6.57% | 4194 | 1.10E-02 |
| 4 | 0.37% | 234 | 6.12E-04 | 12 | 5.43% | 3470 | 9.08E-03 | 20 | 5.13% | 3279 | 8.58E-03 |
| 5 | 0.53% | 341 | 8.93E-04 | 13 | 6.29% | 4020 | 1.05E-02 | 21 | 3.86% | 2465 | 6.45E-03 |
| 6 | 1.11% | 709 | 1.86E-03 | 14 | 6.74% | 4302 | 1.13E-02 | 22 | 3.12% | 1990 | 5.21E-03 |
| 7 | 2.27% | 1450 | 3.80E-03 | 15 | 8.69% | 5553 | 1.45E-02 | 23 | 2.53% | 1614 | 4.23E-03 |
| 8 | 3.42% | 2187 | 6.20E-03 | 16 | 9.45% | 6037 | 1.58E-02 | 24 | 1.78% | 1136 | 2.98E-03 |
| | | | | | | | | Total | | 63,860 | |

**Arbor Office, 255 W. Julian Street, San Jose - Offsite Residential Roadway Modeling**
**Cumulative Operation - S.R. 87**
**Fugitive Road PM2.5 Modeling - Roadway Links, Traffic Volumes, and Fugitive Road PM2.5 Emissions**
**Year = 2022**

| 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_87 | S.R. 87 Northbound | NB | 4 | 723.7 | 0.45 | 20.6 | 68 | 1.3 | Varied | 63,860 |
| FUG_87 | S.R. 87 Southbound | SB | 4 | 706.7 | 0.44 | 20.6 | 68 | 1.3 | Varied | 63,860 |
| | | | | | | | | | Total | 127,720 |

**Emission Factors - Fugitive PM2.5**

| Speed Category | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Travel Speed (mph) | 65 | 60 | 25 | |
| Tire Wear - Emissions per Vehicle (g/VMT) | 0.00214 | 0.00214 | ####### | |
| Brake Wear - Emissions per Vehicle (g/VMT) | 0.01687 | 0.01687 | ####### | |
| Road Dust - Emissions per Vehicle (g/VMT) | 0.00780 | 0.00780 | ####### | |
| Total Fugitive PM2.5 - Emissions per Vehicle (g/VMT) | 0.02681 | 0.02681 | ####### | |

Emisson Factors from CT-EMFAC2017

**2022 Hourly Traffic Volumes and Fugitive PM2.5 Emissions - FUG_87**

| Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.76% | 484 | 1.62E-03 | 9 | 7.32% | 4676 | 1.57E-02 | 17 | 5.19% | 3316 | 1.11E-02 |
| 2 | 0.45% | 287 | 9.60E-04 | 10 | 6.61% | 4220 | 1.41E-02 | 18 | 5.05% | 3227 | 1.08E-02 |
| 3 | 0.41% | 263 | 8.80E-04 | 11 | 5.96% | 3807 | 1.28E-02 | 19 | 4.08% | 2607 | 8.73E-03 |
| 4 | 0.71% | 455 | 1.52E-03 | 12 | 5.72% | 3653 | 1.22E-02 | 20 | 3.40% | 2172 | 7.28E-03 |
| 5 | 2.07% | 1324 | 4.43E-03 | 13 | 5.78% | 3691 | 1.24E-02 | 21 | 2.87% | 1835 | 6.15E-03 |
| 6 | 6.11% | 3902 | 1.31E-02 | 14 | 5.90% | 3768 | 1.26E-02 | 22 | 2.40% | 1531 | 5.13E-03 |
| 7 | 7.50% | 4789 | 1.60E-02 | 15 | 5.76% | 3676 | 1.23E-02 | 23 | 1.72% | 1100 | 3.69E-03 |
| 8 | 7.74% | 4946 | 1.66E-02 | 16 | 5.39% | 3443 | 1.15E-02 | 24 | 1.08% | 688 | 2.31E-03 |
| | | | | | | | | Total | | 63,860 | |

**2022 Hourly Traffic Volumes Per Direction and Fugitive PM2.5 Emissions - FUG_87**

| Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.07% | 681 | 2.23E-03 | 9 | 3.93% | 2509 | 8.21E-03 | 17 | 9.28% | 5925 | 1.94E-02 |
| 2 | 0.67% | 428 | 1.40E-03 | 10 | 4.13% | 2639 | 8.63E-03 | 18 | 8.47% | 5410 | 1.77E-02 |
| 3 | 0.50% | 321 | 1.05E-03 | 11 | 4.64% | 2965 | 9.70E-03 | 19 | 6.57% | 4194 | 1.37E-02 |
| 4 | 0.37% | 234 | 7.64E-04 | 12 | 5.43% | 3470 | 1.13E-02 | 20 | 5.13% | 3279 | 1.07E-02 |
| 5 | 0.53% | 341 | 1.12E-03 | 13 | 6.29% | 4020 | 1.31E-02 | 21 | 3.86% | 2465 | 8.06E-03 |
| 6 | 1.11% | 709 | 2.32E-03 | 14 | 6.74% | 4302 | 1.41E-02 | 22 | 3.12% | 1990 | 6.51E-03 |
| 7 | 2.27% | 1450 | 4.74E-03 | 15 | 8.69% | 5553 | 1.82E-02 | 23 | 2.53% | 1614 | 5.28E-03 |
| 8 | 3.42% | 2187 | 7.15E-03 | 16 | 9.45% | 6037 | 1.97E-02 | 24 | 1.78% | 1136 | 3.72E-03 |
| | | | | | | | | Total | | 63,860 | |

**Arbor Office, 255 W. Julian Street, San Jose, CA - SR 87 Traffic - TACs & PM2.5**
**AERMOD Risk Modeling Parameters and Maximum Concentrations**
**at Construction MEI Receptors (PM2.5 1.5m receptor height, Cancer Risk 8.2m height**

| | |
|---|---|
| **Emission Year** | 2022 |
| **Receptor Information** | Construction MEI receptor |
| Number of Receptors | 1 |
| Receptor Height | PM2.5 1.5 meters, Cancer Risk 8.2 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 - 8.2m

| Meteorological Data Years | Concentration (µg/m3)* | | |
|---|---|---|---|
| | DPM | Exhaust TOG | Evaporative TOG |
| 2013-2017 | 0.0139 | 0.3833 | 0.2889 |

## Construction MEI PM2.5 Maximum Concentrations - 1.5m

| Meteorological Data Years | PM2.5 Concentration (µg/m3)* | | |
|---|---|---|---|
| | Total PM2.5 | Fugitive PM2.5 | Vehicle PM2.5 |
| 2013-2017 | 0.3211 | 0.2932 | 0.02784 |

**Arbor Office, 255 W. Julian Street, San Jose, CA - SR 87 Cancer Risk**
**Impacts at Construction MEI - PM2.5 1.5 meter receptor height, Cancer Risk 8.2m 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* | 2022 | 10 | 0.0139 | 0.3833 | 0.2889 | 0.160 | 0.025 | 0.0011 | 0.19 |
| 1 | 1 | 0 - 1 | 2022 | 10 | 0.0139 | 0.3833 | 0.2889 | 1.935 | 0.306 | 0.0136 | 2.25 |
| 2 | 1 | 1 - 2 | 2023 | 10 | 0.0139 | 0.3833 | 0.2889 | 1.935 | 0.306 | 0.0136 | 2.25 |
| 3 | 1 | 2 - 3 | 2024 | 3 | 0.0139 | 0.3833 | 0.2889 | 0.258 | 0.041 | 0.0018 | 0.30 |
| 4 | 1 | 3 - 4 | 2025 | 3 | 0.0139 | 0.3833 | 0.2889 | 0.258 | 0.041 | 0.0018 | 0.30 |
| 5 | 1 | 4 - 5 | 2026 | 3 | 0.0139 | 0.3833 | 0.2889 | 0.258 | 0.041 | 0.0018 | 0.30 |
| 6 | 1 | 5 - 6 | 2027 | 3 | 0.0139 | 0.3833 | 0.2889 | 0.258 | 0.041 | 0.0018 | 0.30 |
| 7 | 1 | 6 - 7 | 2028 | 3 | 0.0139 | 0.3833 | 0.2889 | 0.258 | 0.041 | 0.0018 | 0.30 |
| 8 | 1 | 7 - 8 | 2029 | 3 | 0.0139 | 0.3833 | 0.2889 | 0.258 | 0.041 | 0.0018 | 0.30 |
| 9 | 1 | 8 - 9 | 2030 | 3 | 0.0139 | 0.3833 | 0.2889 | 0.258 | 0.041 | 0.0018 | 0.30 |
| 10 | 1 | 9 - 10 | 2031 | 3 | 0.0139 | 0.3833 | 0.2889 | 0.258 | 0.041 | 0.0018 | 0.30 |
| 11 | 1 | 10 - 11 | 2032 | 3 | 0.0139 | 0.3833 | 0.2889 | 0.258 | 0.041 | 0.0018 | 0.30 |
| 12 | 1 | 11 - 12 | 2033 | 3 | 0.0139 | 0.3833 | 0.2889 | 0.258 | 0.041 | 0.0018 | 0.30 |
| 13 | 1 | 12 - 13 | 2034 | 3 | 0.0139 | 0.3833 | 0.2889 | 0.258 | 0.041 | 0.0018 | 0.30 |
| 14 | 1 | 13 - 14 | 2035 | 3 | 0.0139 | 0.3833 | 0.2889 | 0.258 | 0.041 | 0.0018 | 0.30 |
| 15 | 1 | 14 - 15 | 2036 | 3 | 0.0139 | 0.3833 | 0.2889 | 0.258 | 0.041 | 0.0018 | 0.30 |
| 16 | 1 | 15 - 16 | 2037 | 3 | 0.0139 | 0.3833 | 0.2889 | 0.258 | 0.041 | 0.0018 | 0.30 |
| 17 | 1 | 16-17 | 2038 | 1 | 0.0139 | 0.3833 | 0.2889 | 0.040 | 0.006 | 0.0003 | 0.05 |
| 18 | 1 | 17-18 | 2039 | 1 | 0.0139 | 0.3833 | 0.2889 | 0.040 | 0.006 | 0.0003 | 0.05 |
| 19 | 1 | 18-19 | 2040 | 1 | 0.0139 | 0.3833 | 0.2889 | 0.040 | 0.006 | 0.0003 | 0.05 |
| 20 | 1 | 19-20 | 2041 | 1 | 0.0139 | 0.3833 | 0.2889 | 0.040 | 0.006 | 0.0003 | 0.05 |
| 21 | 1 | 20-21 | 2042 | 1 | 0.0139 | 0.3833 | 0.2889 | 0.040 | 0.006 | 0.0003 | 0.05 |
| 22 | 1 | 21-22 | 2043 | 1 | 0.0139 | 0.3833 | 0.2889 | 0.040 | 0.006 | 0.0003 | 0.05 |
| 23 | 1 | 22-23 | 2044 | 1 | 0.0139 | 0.3833 | 0.2889 | 0.040 | 0.006 | 0.0003 | 0.05 |
| 24 | 1 | 23-24 | 2045 | 1 | 0.0139 | 0.3833 | 0.2889 | 0.040 | 0.006 | 0.0003 | 0.05 |
| 25 | 1 | 24-25 | 2046 | 1 | 0.0139 | 0.3833 | 0.2889 | 0.040 | 0.006 | 0.0003 | 0.05 |
| 26 | 1 | 25-26 | 2047 | 1 | 0.0139 | 0.3833 | 0.2889 | 0.040 | 0.006 | 0.0003 | 0.05 |
| 27 | 1 | 26-27 | 2048 | 1 | 0.0139 | 0.3833 | 0.2889 | 0.040 | 0.006 | 0.0003 | 0.05 |
| 28 | 1 | 27-28 | 2049 | 1 | 0.0139 | 0.3833 | 0.2889 | 0.040 | 0.006 | 0.0003 | 0.05 |
| 29 | 1 | 28-29 | 2050 | 1 | 0.0139 | 0.3833 | 0.2889 | 0.040 | 0.006 | 0.0003 | 0.05 |
| 30 | 1 | 29-30 | 2051 | 1 | 0.0139 | 0.3833 | 0.2889 | 0.040 | 0.006 | 0.0003 | 0.05 |
| **Total Increased Cancer Risk** | | | | | | | | 8.20 | 1.295 | 0.057 | **9.55** |

| Maximum Hazard Index | Maximum Fugitive PM2.5 | Total PM2.5 |
|---|---|---|
| 0.0028 | 0.29 | 0.32 |

* Third trimester of pregnancy

CT-EMFAC2017 Emissions Factors for Northbound S.R. 87 On-Ramp, W. Julian Street/W. St. James Street, and N. Market Street/Coleman Avenue 2022

File Name: Arbor Cumulative Traffic - Santa Clara (SF) - 2022 - Annual.EF
CT-EMFAC2017 Version: 1.0.2.27401
Run Date: 4/8/2021 12:05
Area: Santa Clara (SF)
Analysis Year: 2022
Season: Annual

| Vehicle Category | VMT Fraction Across Category | Diesel VMT Fraction Within Category | Gas VMT Fraction Within Category |
|---|---|---|---|
| Truck 1 | 0.015 | 0.478 | 0.522 |
| Truck 2 | 0.02 | 0.94 | 0.046 |
| Non-Truck | 0.965 | 0.014 | 0.961 |

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

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

| Pollutant Name | <= 5 mph | 10 mph | 15 mph | 20 mph | 25 mph | 30 mph | 35 mph |
|---|---|---|---|---|---|---|---|
| PM2.5 | 0.010417 | 0.006915 | 0.004735 | 0.003408 | 0.002622 | 0.002145 | 0.001861 |
| TOG | 0.220898 | 0.145348 | 0.097291 | 0.068555 | 0.051819 | 0.041294 | 0.034513 |
| Diesel PM | 0.001756 | 0.001459 | 0.001108 | 0.000865 | 0.000743 | 0.000683 | 0.000662 |

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

| Pollutant Name | Emission Factor |
|---|---|
| TOG | 1.418515 |

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 | 0.016811 |

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

| Pollutant Name | Emission Factor |
|---|---|
| PM2.5 | 0.014871 |

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

# Northbound S.R. 87 On-Ramp Emissions and Health Risk Calculations

**Analysis Year =** ***2022***

| Vehicle Type | 2021 Caltrans Vehicles (veh/day) | 2022 Vehicles (veh/day) |
|---|---|---|
| Truck 1 (MDT) | 433 | 437 |
| Truck 2 (HDT) | 116 | 118 |
| Non-Truck | 15,096 | 15,247 |
| **Total** | **15,645** | **15,801** |

| | |
|---|---|
| Increase From 2021 | 1.01 |
| **Vehicles/Direction** | **7,901** |
| Avg Vehicles/Hour/Direction | 329 |

**Traffic Data Year =** ***2021***

| ***Proejct Traffic Backgrond Plus Project ADT*** | AADT Total | Total Truck |
|---|---|---|
| On-Ramp NB SR 87 | 15,645 | 549 |
| | | |
| | Percent of Total Vehicles | 3.51% |

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

**Arbor Office, 255 W. Julian Street, San Jose - Offsite Residential Roadway Modeling**
**Cumulative Operation - On-Ramp Northbound S.R. 87**
**DPM Modeling - Roadway Links, Traffic Volumes, and DPM Emissions**
**Year =** **2022** 13.315

| | | | | | | | | | | | Line Area | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | Area (sq m) | Area (sq ft) | Emission (g/s/m2) | Emission (lb/hr/ft2) | Initial Vertical height (m) | (Sigma z) Initial Vertical Dimension |
| DPM_RAM | On-Ramp NB SR 87 | NB | 2 | 196.2 | 0.12 | 13.3 | 43.7 | 3.4 | 25 | 15,801 | 2,612 | 28,120 | 6.341E-09 | 4.676E-09 | 6.8 | 3.16 |

**Emission Factors - DPM**

| | | | | |
|---|---|---|---|---|
| **Speed Category** | 1 | 2 | 3 | 4 |
| **Travel Speed (mph)** | 25 | | | |
| **Emissions per Vehicle (g/VMT)** | 0.00074 | | | |

Emisson Factors from CT-EMFAC2017

**2022 Hourly Traffic Volumes and DPM Emissions - DPM_RAM**

| Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 3.91% | 618 | 1.55E-05 | 9 | 6.44% | 1018 | 2.56E-05 | 17 | 5.52% | 872 | 2.19E-05 |
| 2 | 2.59% | 409 | 1.03E-05 | 10 | 7.25% | 1146 | 2.88E-05 | 18 | 3.34% | 528 | 1.33E-05 |
| 3 | 2.82% | 446 | 1.12E-05 | 11 | 6.33% | 1000 | 2.52E-05 | 19 | 2.42% | 382 | 9.62E-06 |
| 4 | 3.39% | 536 | 1.35E-05 | 12 | 6.90% | 1090 | 2.74E-05 | 20 | 0.92% | 145 | 3.66E-06 |
| 5 | 2.19% | 346 | 8.71E-06 | 13 | 6.27% | 991 | 2.49E-05 | 21 | 2.99% | 472 | 1.19E-05 |
| 6 | 3.39% | 536 | 1.35E-05 | 14 | 6.15% | 972 | 2.45E-05 | 22 | 4.14% | 654 | 1.65E-05 |
| 7 | 6.10% | 964 | 2.43E-05 | 15 | 5.12% | 809 | 2.04E-05 | 23 | 2.47% | 390 | 9.82E-06 |
| 8 | 4.66% | 736 | 1.85E-05 | 16 | 3.85% | 608 | 1.53E-05 | 24 | 0.86% | 136 | 3.42E-06 |
| | | | | | | | | Total | | 15,805 | |

**Arbor Office, 255 W. Julian Street, San Jose - Offsite Residential Roadway Modeling**
**Cumulative Operation - On-Ramp Northbound S.R. 87**
**PM2.5 Modeling - Roadway Links, Traffic Volumes, and PM2.5 Emissions**
**Year = 2022**

| | | | | | | | | | | | Line Area | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | Area (sq m) | Area (sq ft) | Emission (g/s/m2) | Emission (lb/hr/ft2) | Initial Vertical height (m) | (Sigma z) Initial Vertical Dimension |
| PM25_RAM | On-Ramp NB SR 87 | NB | 2 | 196.2 | 0.12 | 13.3 | 44 | 1.3 | 25 | 15,801 | 2,612 | 28,120 | 2.238E-08 | 1.650E-08 | 2.6 | 1.21 |

## Emission Factors - PM2.5

| Speed Category | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Travel Speed (mph) | 25 | | | |
| Emissions per Vehicle (g/VMT) | 0.002622 | | | |

Emisson Factors from CT-EMFAC2017

## 2022 Hourly Traffic Volumes and PM2.5 Emissions - PM25_RAM

| Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.15% | 182 | 1.61E-05 | 9 | 7.11% | 1123 | 9.98E-05 | 17 | 7.39% | 1168 | 1.04E-04 |
| 2 | 0.42% | 66 | 5.89E-06 | 10 | 4.39% | 694 | 6.16E-05 | 18 | 8.17% | 1291 | 1.15E-04 |
| 3 | 0.41% | 65 | 5.75E-06 | 11 | 4.67% | 738 | 6.55E-05 | 19 | 5.70% | 901 | 8.00E-05 |
| 4 | 0.27% | 43 | 3.79E-06 | 12 | 5.89% | 931 | 8.26E-05 | 20 | 4.27% | 675 | 5.99E-05 |
| 5 | 0.50% | 79 | 7.02E-06 | 13 | 6.15% | 972 | 8.63E-05 | 21 | 3.26% | 515 | 4.57E-05 |
| 6 | 0.91% | 144 | 1.28E-05 | 14 | 6.03% | 953 | 8.46E-05 | 22 | 3.30% | 521 | 4.63E-05 |
| 7 | 3.79% | 599 | 5.32E-05 | 15 | 7.01% | 1108 | 9.84E-05 | 23 | 2.46% | 389 | 3.45E-05 |
| 8 | 7.76% | 1226 | 1.09E-04 | 16 | 7.13% | 1127 | 1.00E-04 | 24 | 1.86% | 294 | 2.61E-05 |
| | | | | | | | | Total | | 15,801 | |

**Arbor Office, 255 W. Julian Street, San Jose - Offsite Residential Roadway Modeling**
**Cumulative Operation - On-Ramp Northbound S.R. 87**
**TOG Exhaust Modeling - Roadway Links, Traffic Volumes, and TOG Exhaust Emissions**
**Year = 2022**

| | | | | | | | | | | | Line Area | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | Area (sq m) | Area (sq ft) | Emission (g/s/m2) | Emission (lb/hr/ft2) | Initial Vertical height | (Sigma z) Initial Vertical Dimension |
| TEXH_RAM | On-Ramp NB SR 87 | NB | 2 | 196.2 | 0.12 | 13.3 | 44 | 1.3 | 25 | 15,801 | 2,612 | 28,120 | 4.423E-07 | 3.261E-07 | 2.6 | 1.21 |

## Emission Factors - TOG Exhaust

| Speed Category | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Travel Speed (mph) | 25 | | | |
| Emissions per Vehicle (g/VMT) | 0.05182 | | | |

Emisson Factors from CT-EMFAC2017

## 2022 Hourly Traffic Volumes and TOG Exhaust Emissions - TEXH_RAM

| Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.15% | 182 | 3.19E-04 | 9 | 7.11% | 1123 | 1.97E-03 | 17 | 7.39% | 1168 | 2.05E-03 |
| 2 | 0.42% | 66 | 1.16E-04 | 10 | 4.39% | 694 | 1.22E-03 | 18 | 8.17% | 1291 | 2.27E-03 |
| 3 | 0.41% | 65 | 1.14E-04 | 11 | 4.67% | 738 | 1.29E-03 | 19 | 5.70% | 901 | 1.58E-03 |
| 4 | 0.27% | 43 | 7.49E-05 | 12 | 5.89% | 931 | 1.63E-03 | 20 | 4.27% | 675 | 1.18E-03 |
| 5 | 0.50% | 79 | 1.39E-04 | 13 | 6.15% | 972 | 1.71E-03 | 21 | 3.26% | 515 | 9.04E-04 |
| 6 | 0.91% | 144 | 2.52E-04 | 14 | 6.03% | 953 | 1.67E-03 | 22 | 3.30% | 521 | 9.15E-04 |
| 7 | 3.79% | 599 | 1.05E-03 | 15 | 7.01% | 1108 | 1.94E-03 | 23 | 2.46% | 389 | 6.82E-04 |
| 8 | 7.76% | 1226 | 2.15E-03 | 16 | 7.13% | 1127 | 1.98E-03 | 24 | 1.86% | 294 | 5.16E-04 |
| | | | | | | | | Total | | 15,801 | |

**Arbor Office, 255 W. Julian Street, San Jose - Offsite Residential Roadway Modeling**
**Cumulative Operation - On-Ramp Northbound S.R. 87**
**TOG Evaporative Emissions Modeling - Roadway Links, Traffic Volumes, and TOG Evaporative Emissions**
**Year = 2022**

| | | | | | | | | | | | Line Area | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | Area (sq m) | Area (sq ft) | Emission (g/s/m2) | Emission (lb/hr/ft2) | Initial Vertical height | (Sigma z) Initial Vertical Dimension |
| TEVAP_RAM | On-Ramp NB SR 87 | NB | 2 | 196.2 | 0.12 | 13.3 | 44 | 1.3 | 25 | 15,801 | 2,612 | 28,120 | 4.843E-07 | 3.571E-07 | 2.6 | 1.21 |

**Emission Factors - PM2.5 - Evaporative TOG**

| Speed Category | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Travel Speed (mph) | 25 | | | |
| Emissions per Vehicle per Hour (g/hour) | 1.41852 | | | |
| Emissions per Vehicle per Mile (g/VMT) | 0.05674 | | | |

Emisson Factors from CT-EMFAC2017

**2022 Hourly Traffic Volumes and TOG Evaporative Emissions - TEVAP_RAM**

| Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.15% | 182 | 3.49E-04 | 9 | 7.11% | 1123 | 2.16E-03 | 17 | 7.39% | 1168 | 2.24E-03 |
| 2 | 0.42% | 66 | 1.28E-04 | 10 | 4.39% | 694 | 1.33E-03 | 18 | 8.17% | 1291 | 2.48E-03 |
| 3 | 0.41% | 65 | 1.24E-04 | 11 | 4.67% | 738 | 1.42E-03 | 19 | 5.70% | 901 | 1.73E-03 |
| 4 | 0.27% | 43 | 8.20E-05 | 12 | 5.89% | 931 | 1.79E-03 | 20 | 4.27% | 675 | 1.30E-03 |
| 5 | 0.50% | 79 | 1.52E-04 | 13 | 6.15% | 972 | 1.87E-03 | 21 | 3.26% | 515 | 9.90E-04 |
| 6 | 0.91% | 144 | 2.76E-04 | 14 | 6.03% | 953 | 1.83E-03 | 22 | 3.30% | 521 | 1.00E-03 |
| 7 | 3.79% | 599 | 1.15E-03 | 15 | 7.01% | 1108 | 2.13E-03 | 23 | 2.46% | 389 | 7.47E-04 |
| 8 | 7.76% | 1226 | 2.36E-03 | 16 | 7.13% | 1127 | 2.16E-03 | 24 | 1.86% | 294 | 5.65E-04 |
| | | | | | | | | Total | | 15,801 | |

**Arbor Office, 255 W. Julian Street, San Jose - Offsite Residential Roadway Modeling**
**Cumulative Operation - On-Ramp Northbound S.R. 87**
**Fugitive Road PM2.5 Modeling - Roadway Links, Traffic Volumes, and Fugitive Road PM2.5 Emissions**
**Year = 2022**

| | | | | | | | | | | | Line Area | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | Area (sq m) | Area (sq ft) | Emission (g/s/m2) | Emission (lb/hr/ft2) | Initial Vertical height (m) | (Sigma z) Initial Vertical Dimension |
| FUG_RAM | On-Ramp NB SR 87 | NB | 2 | 196.2 | 0.12 | 13.3 | 44 | 1.3 | 25 | 15,801 | 2,612 | 28,120 | 2.884E-07 | 2.126E-07 | 2.6 | 1.21 |

## Emission Factors - Fugitive PM2.5

| Speed Category | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Travel Speed (mph) | 25 | | | |
| 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) | 0.01487 | | | |
| Total Fugitive PM2.5 - Emissions per Vehicle (g/VMT) | 0.03379 | | | |

Emisson Factors from CT-EMFAC2017

## 2022 Hourly Traffic Volumes and Fugitive PM2.5 Emissions - FUG_RAM

| Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.15% | 182 | 2.08E-04 | 9 | 7.11% | 1123 | 1.29E-03 | 17 | 7.39% | 1168 | 1.34E-03 |
| 2 | 0.42% | 66 | 7.59E-05 | 10 | 4.39% | 694 | 7.94E-04 | 18 | 8.17% | 1291 | 1.48E-03 |
| 3 | 0.41% | 65 | 7.41E-05 | 11 | 4.67% | 738 | 8.44E-04 | 19 | 5.70% | 901 | 1.03E-03 |
| 4 | 0.27% | 43 | 4.88E-05 | 12 | 5.89% | 931 | 1.06E-03 | 20 | 4.27% | 675 | 7.72E-04 |
| 5 | 0.50% | 79 | 9.04E-05 | 13 | 6.15% | 972 | 1.11E-03 | 21 | 3.26% | 515 | 5.89E-04 |
| 6 | 0.91% | 144 | 1.65E-04 | 14 | 6.03% | 953 | 1.09E-03 | 22 | 3.30% | 521 | 5.97E-04 |
| 7 | 3.79% | 599 | 6.85E-04 | 15 | 7.01% | 1108 | 1.27E-03 | 23 | 2.46% | 389 | 4.45E-04 |
| 8 | 7.76% | 1226 | 1.40E-03 | 16 | 7.13% | 1127 | 1.29E-03 | 24 | 1.86% | 294 | 3.36E-04 |
| | | | | | | | | Total | | 15,801 | |

**Arbor Office, 255 W. Julian Street, San Jose, CA - On-Ramp NB SR 87 Traffic - TACs & PM2**
**AERMOD Risk Modeling Parameters and Maximum Concentrations**
**at Construction MEI Receptors (PM2.5 1.5m receptor height, Cancer Risk 8.2m height)**

| | |
|---|---|
| **Emission Year** | 2022 |
| **Receptor Information** | Construction MEI receptor |
| Number of Receptors | 1 |
| Receptor Height | PM2.5 1.5 meters, Cancer Risk 8.2 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 - 8.2m**

| Meteorological Data Years | Concentration (µg/m3)* | | |
|---|---|---|---|
| | DPM | Exhaust TOG | Evaporative TOG |
| 2013-2017 | 0.0006 | 0.0437 | 0.0478 |

**Construction MEI PM2.5 Maximum Concentrations - 1.5m**

| Meteorological Data Years | PM2.5 Concentration (µg/m3)* | | |
|---|---|---|---|
| | Total PM2.5 | Fugitive PM2.5 | Vehicle PM2.5 |
| 2013-2017 | 0.0500 | 0.0464 | 0.00359 |

**Arbor Office, 255 W. Julian Street, San Jose, CA - On-Ramp NB SR 87 Cancer Risk**
**Impacts at Construction MEI - PM2.5 1.5 meter receptor height, Cancer Risk 8.2m 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* | 2022 | 10 | 0.0006 | 0.0437 | 0.0478 | 0.006 | 0.003 | 0.0002 | 0.01 |
| 1 | 1 | 0 - 1 | 2022 | 10 | 0.0006 | 0.0437 | 0.0478 | 0.077 | 0.035 | 0.0022 | 0.11 |
| 2 | 1 | 1 - 2 | 2023 | 10 | 0.0006 | 0.0437 | 0.0478 | 0.077 | 0.035 | 0.0022 | 0.11 |
| 3 | 1 | 2 - 3 | 2024 | 3 | 0.0006 | 0.0437 | 0.0478 | 0.010 | 0.005 | 0.0003 | 0.02 |
| 4 | 1 | 3 - 4 | 2025 | 3 | 0.0006 | 0.0437 | 0.0478 | 0.010 | 0.005 | 0.0003 | 0.02 |
| 5 | 1 | 4 - 5 | 2026 | 3 | 0.0006 | 0.0437 | 0.0478 | 0.010 | 0.005 | 0.0003 | 0.02 |
| 6 | 1 | 5 - 6 | 2027 | 3 | 0.0006 | 0.0437 | 0.0478 | 0.010 | 0.005 | 0.0003 | 0.02 |
| 7 | 1 | 6 - 7 | 2028 | 3 | 0.0006 | 0.0437 | 0.0478 | 0.010 | 0.005 | 0.0003 | 0.02 |
| 8 | 1 | 7 - 8 | 2029 | 3 | 0.0006 | 0.0437 | 0.0478 | 0.010 | 0.005 | 0.0003 | 0.02 |
| 9 | 1 | 8 - 9 | 2030 | 3 | 0.0006 | 0.0437 | 0.0478 | 0.010 | 0.005 | 0.0003 | 0.02 |
| 10 | 1 | 9 - 10 | 2031 | 3 | 0.0006 | 0.0437 | 0.0478 | 0.010 | 0.005 | 0.0003 | 0.02 |
| 11 | 1 | 10 - 11 | 2032 | 3 | 0.0006 | 0.0437 | 0.0478 | 0.010 | 0.005 | 0.0003 | 0.02 |
| 12 | 1 | 11 - 12 | 2033 | 3 | 0.0006 | 0.0437 | 0.0478 | 0.010 | 0.005 | 0.0003 | 0.02 |
| 13 | 1 | 12 - 13 | 2034 | 3 | 0.0006 | 0.0437 | 0.0478 | 0.010 | 0.005 | 0.0003 | 0.02 |
| 14 | 1 | 13 - 14 | 2035 | 3 | 0.0006 | 0.0437 | 0.0478 | 0.010 | 0.005 | 0.0003 | 0.02 |
| 15 | 1 | 14 - 15 | 2036 | 3 | 0.0006 | 0.0437 | 0.0478 | 0.010 | 0.005 | 0.0003 | 0.02 |
| 16 | 1 | 15 - 16 | 2037 | 3 | 0.0006 | 0.0437 | 0.0478 | 0.010 | 0.005 | 0.0003 | 0.02 |
| 17 | 1 | 16-17 | 2038 | 1 | 0.0006 | 0.0437 | 0.0478 | 0.002 | 0.001 | 0.0000 | 0.00 |
| 18 | 1 | 17-18 | 2039 | 1 | 0.0006 | 0.0437 | 0.0478 | 0.002 | 0.001 | 0.0000 | 0.00 |
| 19 | 1 | 18-19 | 2040 | 1 | 0.0006 | 0.0437 | 0.0478 | 0.002 | 0.001 | 0.0000 | 0.00 |
| 20 | 1 | 19-20 | 2041 | 1 | 0.0006 | 0.0437 | 0.0478 | 0.002 | 0.001 | 0.0000 | 0.00 |
| 21 | 1 | 20-21 | 2042 | 1 | 0.0006 | 0.0437 | 0.0478 | 0.002 | 0.001 | 0.0000 | 0.00 |
| 22 | 1 | 21-22 | 2043 | 1 | 0.0006 | 0.0437 | 0.0478 | 0.002 | 0.001 | 0.0000 | 0.00 |
| 23 | 1 | 22-23 | 2044 | 1 | 0.0006 | 0.0437 | 0.0478 | 0.002 | 0.001 | 0.0000 | 0.00 |
| 24 | 1 | 23-24 | 2045 | 1 | 0.0006 | 0.0437 | 0.0478 | 0.002 | 0.001 | 0.0000 | 0.00 |
| 25 | 1 | 24-25 | 2046 | 1 | 0.0006 | 0.0437 | 0.0478 | 0.002 | 0.001 | 0.0000 | 0.00 |
| 26 | 1 | 25-26 | 2047 | 1 | 0.0006 | 0.0437 | 0.0478 | 0.002 | 0.001 | 0.0000 | 0.00 |
| 27 | 1 | 26-27 | 2048 | 1 | 0.0006 | 0.0437 | 0.0478 | 0.002 | 0.001 | 0.0000 | 0.00 |
| 28 | 1 | 27-28 | 2049 | 1 | 0.0006 | 0.0437 | 0.0478 | 0.002 | 0.001 | 0.0000 | 0.00 |
| 29 | 1 | 28-29 | 2050 | 1 | 0.0006 | 0.0437 | 0.0478 | 0.002 | 0.001 | 0.0000 | 0.00 |
| 30 | 1 | 29-30 | 2051 | 1 | 0.0006 | 0.0437 | 0.0478 | 0.002 | 0.001 | 0.0000 | 0.00 |
| **Total Increased Cancer Risk** | | | | | | | | 0.33 | 0.147 | 0.010 | **0.48** |

| Maximum Hazard Index | Maximum Fugitive PM2.5 | Total PM2.5 |
|---|---|---|
| 0.00011 | 0.05 | 0.05 |

* Third trimester of pregnancy

W. Julian Street/W. St. James Street Emissions and Health Risk Calculations

**Analysis Year =** ***2022***

| **Vehicle Type** | **2021 Caltrans Vehicles (veh/day)** | **2022 Vehicles (veh/day)** |
|---|---|---|
| Truck 1 (MDT) | 455 | 459 |
| Truck 2 (HDT) | 122 | 123 |
| Non-Truck | 15,863 | 16,022 |
| **Total** | **16,440** | **16,604** |

| | |
|---|---|
| Increase From 2021 | 1.01 |
| **Vehicles/Direction** | **8,302** |
| Avg Vehicles/Hour/Direction | 346 |

**Traffic Data Year =** ***2021***

| ***Proejct Traffic Backgrond Plus Project ADT*** | AADT Total | Total Truck |
|---|---|---|
| W. St James ST / W. Julian ST | 16,440 | 577 |
| | | |
| Percent of Total Vehicles | | 3.51% |

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

**Arbor Office, 255 W. Julian Street, San Jose - Offsite Residential Roadway Modeling**
**Cumulative Operation - W. St. James Street / W. Julaian Street**
**DPM Modeling - Roadway Links, Traffic Volumes, and DPM Emissions**
**Year =** **2022** 13.315

| | | | | | | | | | | | Line Area | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | Area (sq m) | Area (sq ft) | Emission (g/s/m2) | Emission (lb/hr/ft2) | Initial Vertical height (m) | (Sigma z) Initial Vertical Dimension |
| DPM_JAM | W. St. James Street / W. Julaian Street Eastbound | EB | 2 | 662.3 | 0.41 | 13.3 | 43.7 | 3.4 | 25 | 8,302 | 8,819 | 94,923 | 3.332E-09 | 2.457E-09 | 6.8 | 3.16 |
| DPM_JAM | W. St. James Street / W. Julaian Street Westbound | WB | 2 | 546.8 | 0.34 | 13.3 | 43.7 | 3.4 | 25 | 8,302 | 7,281 | 78,369 | 3.332E-09 | 2.457E-09 | 6.8 | 3.16 |
| | | | | | | | | | Total | 16,604 | | | | | | |

## Emission Factors - DPM

| Speed Category | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Travel Speed (mph) | 25 | | | |
| Emissions per Vehicle (g/VMT) | 0.00074 | | | |

Emisson Factors from CT-EMFAC2017

## 2022 Hourly Traffic Volumes and DPM Emissions - DPM_JAM

| Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 3.91% | 325 | 2.76E-05 | 9 | 6.44% | 535 | 4.54E-05 | 17 | 5.52% | 458 | 3.89E-05 |
| 2 | 2.59% | 215 | 1.83E-05 | 10 | 7.25% | 602 | 5.11E-05 | 18 | 3.34% | 277 | 2.36E-05 |
| 3 | 2.82% | 234 | 1.99E-05 | 11 | 6.33% | 526 | 4.46E-05 | 19 | 2.42% | 201 | 1.71E-05 |
| 4 | 3.39% | 281 | 2.39E-05 | 12 | 6.90% | 573 | 4.87E-05 | 20 | 0.92% | 76 | 6.49E-06 |
| 5 | 2.19% | 182 | 1.54E-05 | 13 | 6.27% | 521 | 4.42E-05 | 21 | 2.99% | 248 | 2.11E-05 |
| 6 | 3.39% | 281 | 2.39E-05 | 14 | 6.15% | 511 | 4.34E-05 | 22 | 4.14% | 344 | 2.92E-05 |
| 7 | 6.10% | 506 | 4.30E-05 | 15 | 5.12% | 425 | 3.61E-05 | 23 | 2.47% | 205 | 1.74E-05 |
| 8 | 4.66% | 387 | 3.29E-05 | 16 | 3.85% | 320 | 2.71E-05 | 24 | 0.86% | 71 | 6.06E-06 |
| | | | | | | | | Total | | 8,304 | |

## 2022 Hourly Traffic Volumes Per Direction and DPM Emissions - DPM_JAM

| Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 3.91% | 325 | 2.28E-05 | 9 | 6.44% | 535 | 3.75E-05 | 17 | 5.52% | 458 | 3.21E-05 |
| 2 | 2.59% | 215 | 1.51E-05 | 10 | 7.25% | 602 | 4.22E-05 | 18 | 3.34% | 277 | 1.94E-05 |
| 3 | 2.82% | 234 | 1.64E-05 | 11 | 6.33% | 526 | 3.69E-05 | 19 | 2.42% | 201 | 1.41E-05 |
| 4 | 3.39% | 281 | 1.97E-05 | 12 | 6.90% | 573 | 4.02E-05 | 20 | 0.92% | 76 | 5.36E-06 |
| 5 | 2.19% | 182 | 1.27E-05 | 13 | 6.27% | 521 | 3.65E-05 | 21 | 2.99% | 248 | 1.74E-05 |
| 6 | 3.39% | 281 | 1.97E-05 | 14 | 6.15% | 511 | 3.58E-05 | 22 | 4.14% | 344 | 2.41E-05 |
| 7 | 6.10% | 506 | 3.55E-05 | 15 | 5.12% | 425 | 2.98E-05 | 23 | 2.47% | 205 | 1.44E-05 |
| 8 | 4.66% | 387 | 2.71E-05 | 16 | 3.85% | 320 | 2.24E-05 | 24 | 0.86% | 71 | 5.01E-06 |
| | | | | | | | | Total | | 8,304 | |

**Arbor Office, 255 W. Julian Street, San Jose - Offsite Residential Roadway Modeling**
**Cumulative Operation - W. St. James Street / W. Julaian Street**
**PM2.5 Modeling - Roadway Links, Traffic Volumes, and PM2.5 Emissions**
**Year = 2022**

| | | | | | | | | | | | Line Area | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | Area (sq m) | Area (sq ft) | Emission (g/s/m2) | Emission (lb/hr/ft2) | Initial Vertical height (m) | (Sigma z) Initial Vertical Dimension |
| PM25_JAM | W. St. James Street / W. Julaian Street Eastbound | EB | 2 | 662.3 | 0.41 | 13.3 | 44 | 1.3 | 25 | 8,302 | 8,819 | 94,923 | 1.176E-08 | 8.669E-09 | 2.6 | 1.21 |
| PM25_JAM | W. St. James Street / W. Julaian Street Westbound | WB | 2 | 546.8 | 0.34 | 13.3 | 44 | 1.3 | 25 | 8,302 | 7,281 | 78,369 | 1.176E-08 | 8.669E-09 | 2.6 | 1.21 |
| | | | | | | | | | Total | 16,604 | | | | | | |

## Emission Factors - PM2.5

| Speed Category | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Travel Speed (mph) | 25 | | | |
| Emissions per Vehicle (g/VMT) | 0.002622 | | | |

Emisson Factors from CT-EMFAC2017

### 2022 Hourly Traffic Volumes and PM2.5 Emissions - PM25_JAM

| Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.15% | 95 | 2.86E-05 | 9 | 7.11% | 590 | 1.77E-04 | 17 | 7.39% | 614 | 1.84E-04 |
| 2 | 0.42% | 35 | 1.05E-05 | 10 | 4.39% | 364 | 1.09E-04 | 18 | 8.17% | 678 | 2.03E-04 |
| 3 | 0.41% | 34 | 1.02E-05 | 11 | 4.67% | 388 | 1.16E-04 | 19 | 5.70% | 473 | 1.42E-04 |
| 4 | 0.27% | 22 | 6.72E-06 | 12 | 5.89% | 489 | 1.47E-04 | 20 | 4.27% | 355 | 1.06E-04 |
| 5 | 0.50% | 42 | 1.24E-05 | 13 | 6.15% | 511 | 1.53E-04 | 21 | 3.26% | 271 | 8.11E-05 |
| 6 | 0.91% | 76 | 2.26E-05 | 14 | 6.03% | 501 | 1.50E-04 | 22 | 3.30% | 274 | 8.21E-05 |
| 7 | 3.79% | 315 | 9.43E-05 | 15 | 7.01% | 582 | 1.74E-04 | 23 | 2.46% | 204 | 6.12E-05 |
| 8 | 7.76% | 644 | 1.93E-04 | 16 | 7.13% | 592 | 1.77E-04 | 24 | 1.86% | 154 | 4.63E-05 |
| | | | | | | | | Total | | 8,302 | |

### 2022 Hourly Traffic Volumes Per Direction and PM2.5 Emissions - PM25_JAM

| Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.15% | 95 | 2.36E-05 | 9 | 7.11% | 590 | 1.46E-04 | 17 | 7.39% | 614 | 1.52E-04 |
| 2 | 0.42% | 35 | 8.63E-06 | 10 | 4.39% | 364 | 9.02E-05 | 18 | 8.17% | 678 | 1.68E-04 |
| 3 | 0.41% | 34 | 8.42E-06 | 11 | 4.67% | 388 | 9.59E-05 | 19 | 5.70% | 473 | 1.17E-04 |
| 4 | 0.27% | 22 | 5.55E-06 | 12 | 5.89% | 489 | 1.21E-04 | 20 | 4.27% | 355 | 8.77E-05 |
| 5 | 0.50% | 42 | 1.03E-05 | 13 | 6.15% | 511 | 1.26E-04 | 21 | 3.26% | 271 | 6.70E-05 |
| 6 | 0.91% | 76 | 1.87E-05 | 14 | 6.03% | 501 | 1.24E-04 | 22 | 3.30% | 274 | 6.78E-05 |
| 7 | 3.79% | 315 | 7.79E-05 | 15 | 7.01% | 582 | 1.44E-04 | 23 | 2.46% | 204 | 5.05E-05 |
| 8 | 7.76% | 644 | 1.59E-04 | 16 | 7.13% | 592 | 1.46E-04 | 24 | 1.86% | 154 | 3.82E-05 |
| | | | | | | | | Total | | 8,302 | |

**Arbor Office, 255 W. Julian Street, San Jose - Offsite Residential Roadway Modeling**
**Cumulative Operation - W. St. James Street / W. Julaian Street**
**TOG Exhaust Modeling - Roadway Links, Traffic Volumes, and TOG Exhaust Emissions**
**Year = 2022**

| | | | | | | | | | | | Line Area | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | Area (sq m) | Area (sq ft) | Emission (g/s/m2) | Emission (lb/hr/ft2) | Initial Vertical height | (Sigma z) Initial Vertical Dimension |
| TEXH_RAM | W. St. James Street / W. Julaian Street Eastbound | EB | 2 | 662.3 | 0.41 | 13.3 | 44 | 1.3 | 25 | 8,302 | 8,819 | 94,923 | 2.324E-07 | 1.713E-07 | 2.6 | 1.21 |
| TEXH_Main | W. St. James Street / W. Julaian Street Westbound | WB | 2 | 546.8 | 0.34 | 13.3 | 44 | 1.3 | 25 | 8,302 | 7,281 | 78,369 | 2.324E-07 | 1.713E-07 | 2.6 | 1.21 |
| | | | | | | | | | Total | 16,604 | | | | | | |

## Emission Factors - TOG Exhaust

| Speed Category | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Travel Speed (mph) | 25 | | | |
| Emissions per Vehicle (g/VMT) | 0.05182 | | | |

Emisson Factors from CT-EMFAC2017

## 2022 Hourly Traffic Volumes and TOG Exhaust Emissions - TEXH_RAM

| Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.15% | 95 | 5.66E-04 | 9 | 7.11% | 590 | 3.50E-03 | 17 | 7.39% | 614 | 3.63E-03 |
| 2 | 0.42% | 35 | 2.07E-04 | 10 | 4.39% | 364 | 2.16E-03 | 18 | 8.17% | 678 | 4.02E-03 |
| 3 | 0.41% | 34 | 2.02E-04 | 11 | 4.67% | 388 | 2.30E-03 | 19 | 5.70% | 473 | 2.80E-03 |
| 4 | 0.27% | 22 | 1.33E-04 | 12 | 5.89% | 489 | 2.90E-03 | 20 | 4.27% | 355 | 2.10E-03 |
| 5 | 0.50% | 42 | 2.46E-04 | 13 | 6.15% | 511 | 3.02E-03 | 21 | 3.26% | 271 | 1.60E-03 |
| 6 | 0.91% | 76 | 4.48E-04 | 14 | 6.03% | 501 | 2.97E-03 | 22 | 3.30% | 274 | 1.62E-03 |
| 7 | 3.79% | 315 | 1.86E-03 | 15 | 7.01% | 582 | 3.45E-03 | 23 | 2.46% | 204 | 1.21E-03 |
| 8 | 7.76% | 644 | 3.82E-03 | 16 | 7.13% | 592 | 3.51E-03 | 24 | 1.86% | 154 | 9.15E-04 |
| | | | | | | | | Total | | 8,302 | |

## 2022 Hourly Traffic Volumes Per Direction and TOG Exhaust Emissions - TEXH_Main

| Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.15% | 95 | 4.67E-04 | 9 | 7.11% | 590 | 2.89E-03 | 17 | 7.39% | 614 | 3.00E-03 |
| 2 | 0.42% | 35 | 1.71E-04 | 10 | 4.39% | 364 | 1.78E-03 | 18 | 8.17% | 678 | 3.32E-03 |
| 3 | 0.41% | 34 | 1.66E-04 | 11 | 4.67% | 388 | 1.90E-03 | 19 | 5.70% | 473 | 2.31E-03 |
| 4 | 0.27% | 22 | 1.10E-04 | 12 | 5.89% | 489 | 2.39E-03 | 20 | 4.27% | 355 | 1.73E-03 |
| 5 | 0.50% | 42 | 2.03E-04 | 13 | 6.15% | 511 | 2.50E-03 | 21 | 3.26% | 271 | 1.32E-03 |
| 6 | 0.91% | 76 | 3.69E-04 | 14 | 6.03% | 501 | 2.45E-03 | 22 | 3.30% | 274 | 1.34E-03 |
| 7 | 3.79% | 315 | 1.54E-03 | 15 | 7.01% | 582 | 2.85E-03 | 23 | 2.46% | 204 | 9.99E-04 |
| 8 | 7.76% | 644 | 3.15E-03 | 16 | 7.13% | 592 | 2.90E-03 | 24 | 1.86% | 154 | 7.55E-04 |
| | | | | | | | | Total | | 8,302 | |

**Arbor Office, 255 W. Julian Street, San Jose - Offsite Residential Roadway Modeling**
**Cumulative Operation - W. St. James Street / W. Julaian Street**
**TOG Evaporative Emissions Modeling - Roadway Links, Traffic Volumes, and TOG Evaporative Emissions**
**Year = 2022**

| | | | | | | | | | | | Line Area | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | Area (sq m) | Area (sq ft) | Emission (g/s/m2) | Emission (lb/hr/ft2) | Initial Vertical height | (Sigma z) Initial Vertical Dimension |
| TEVAP_RAM | W. St. James Street / W. Julaian Street Eastbound | EB | 2 | 662.3 | 0.41 | 13.3 | 44 | 1.3 | 25 | 8,302 | 8,819 | 94,923 | 2.544E-07 | 1.876E-07 | 2.6 | 1.21 |
| TEVAP_Main | W. St. James Street / W. Julaian Street Westbound | WB | 2 | 546.8 | 0.34 | 13.3 | 44 | 1.3 | 25 | 8,302 | 7,281 | 78,369 | 2.544E-07 | 1.876E-07 | 2.6 | 1.21 |
| | | | | | | | | | Total | 16,604 | | | | | | |

## Emission Factors - PM2.5 - Evaporative TOG

| Speed Category | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Travel Speed (mph) | 25 | | | |
| Emissions per Vehicle per Hour (g/hour) | 1.41852 | | | |
| Emissions per Vehicle per Mile (g/VMT) | 0.05674 | | | |

Emisson Factors from CT-EMFAC2017

## 2022 Hourly Traffic Volumes and TOG Evaporative Emissions - TEVAP_RAM

| Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.15% | 95 | 6.19E-04 | 9 | 7.11% | 590 | 3.83E-03 | 17 | 7.39% | 614 | 3.98E-03 |
| 2 | 0.42% | 35 | 2.26E-04 | 10 | 4.39% | 364 | 2.36E-03 | 18 | 8.17% | 678 | 4.40E-03 |
| 3 | 0.41% | 34 | 2.21E-04 | 11 | 4.67% | 388 | 2.51E-03 | 19 | 5.70% | 473 | 3.07E-03 |
| 4 | 0.27% | 22 | 1.45E-04 | 12 | 5.89% | 489 | 3.17E-03 | 20 | 4.27% | 355 | 2.30E-03 |
| 5 | 0.50% | 42 | 2.69E-04 | 13 | 6.15% | 511 | 3.31E-03 | 21 | 3.26% | 271 | 1.76E-03 |
| 6 | 0.91% | 76 | 4.90E-04 | 14 | 6.03% | 501 | 3.25E-03 | 22 | 3.30% | 274 | 1.78E-03 |
| 7 | 3.79% | 315 | 2.04E-03 | 15 | 7.01% | 582 | 3.77E-03 | 23 | 2.46% | 204 | 1.32E-03 |
| 8 | 7.76% | 644 | 4.18E-03 | 16 | 7.13% | 592 | 3.84E-03 | 24 | 1.86% | 154 | 1.00E-03 |
| | | | | | | | | Total | | 8,302 | |

## 2022 Hourly Traffic Volumes Per Direction and TOG Evaporative Emissions - TEVAP_Main

| Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.15% | 95 | 5.11E-04 | 9 | 7.11% | 590 | 3.16E-03 | 17 | 7.39% | 614 | 3.29E-03 |
| 2 | 0.42% | 35 | 1.87E-04 | 10 | 4.39% | 364 | 1.95E-03 | 18 | 8.17% | 678 | 3.63E-03 |
| 3 | 0.41% | 34 | 1.82E-04 | 11 | 4.67% | 388 | 2.08E-03 | 19 | 5.70% | 473 | 2.53E-03 |
| 4 | 0.27% | 22 | 1.20E-04 | 12 | 5.89% | 489 | 2.62E-03 | 20 | 4.27% | 355 | 1.90E-03 |
| 5 | 0.50% | 42 | 2.22E-04 | 13 | 6.15% | 511 | 2.73E-03 | 21 | 3.26% | 271 | 1.45E-03 |
| 6 | 0.91% | 76 | 4.05E-04 | 14 | 6.03% | 501 | 2.68E-03 | 22 | 3.30% | 274 | 1.47E-03 |
| 7 | 3.79% | 315 | 1.69E-03 | 15 | 7.01% | 582 | 3.12E-03 | 23 | 2.46% | 204 | 1.09E-03 |
| 8 | 7.76% | 644 | 3.45E-03 | 16 | 7.13% | 592 | 3.17E-03 | 24 | 1.86% | 154 | 8.27E-04 |
| | | | | | | | | Total | | 8,302 | |

**Arbor Office, 255 W. Julian Street, San Jose - Offsite Residential Roadway Modeling**
**Cumulative Operation - W. St. James Street / W. Julaian Street**
**Fugitive Road PM2.5 Modeling - Roadway Links, Traffic Volumes, and Fugitive Road PM2.5 Emissions**
**Year = 2022**

| | | | | | | | | | | | Line Area | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | Area (sq m) | Area (sq ft) | Emission (g/s/m2) | Emission (lb/hr/ft2) | Initial Vertical height (m) | (Sigma z) Initial Vertical Dimension |
| FUG_RAM | W. St. James Street / W. Julaian Street Eastbound | EB | 2 | 662.3 | 0.41 | 13.3 | 44 | 1.3 | 25 | 8,302 | 8,819 | 94,923 | 1.515E-07 | 1.117E-07 | 2.6 | 1.21 |
| FUG_Main | W. St. James Street / W. Julaian Street Westbound | WB | 2 | 546.8 | 0.34 | 13.3 | 44 | 1.3 | 25 | 8,302 | 7,281 | 78,369 | 1.515E-07 | 1.117E-07 | 2.6 | 1.21 |
| | | | | | | | | | Total | 16,604 | | | | | | |

## Emission Factors - Fugitive PM2.5

| Speed Category | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Travel Speed (mph) | 25 | | | |
| 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) | 0.01487 | | | |
| Total Fugitive PM2.5 - Emissions per Vehicle (g/VMT) | 0.03379 | | | |

Emisson Factors from CT-EMFAC2017

## 2022 Hourly Traffic Volumes and Fugitive PM2.5 Emissions - FUG_RAM

| Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.15% | 95 | 3.69E-04 | 9 | 7.11% | 590 | 2.28E-03 | 17 | 7.39% | 614 | 2.37E-03 |
| 2 | 0.42% | 35 | 1.35E-04 | 10 | 4.39% | 364 | 1.41E-03 | 18 | 8.17% | 678 | 2.62E-03 |
| 3 | 0.41% | 34 | 1.31E-04 | 11 | 4.67% | 388 | 1.50E-03 | 19 | 5.70% | 473 | 1.83E-03 |
| 4 | 0.27% | 22 | 8.66E-05 | 12 | 5.89% | 489 | 1.89E-03 | 20 | 4.27% | 355 | 1.37E-03 |
| 5 | 0.50% | 42 | 1.60E-04 | 13 | 6.15% | 511 | 1.97E-03 | 21 | 3.26% | 271 | 1.05E-03 |
| 6 | 0.91% | 76 | 2.92E-04 | 14 | 6.03% | 501 | 1.93E-03 | 22 | 3.30% | 274 | 1.06E-03 |
| 7 | 3.79% | 315 | 1.22E-03 | 15 | 7.01% | 582 | 2.25E-03 | 23 | 2.46% | 204 | 7.89E-04 |
| 8 | 7.76% | 644 | 2.49E-03 | 16 | 7.13% | 592 | 2.29E-03 | 24 | 1.86% | 154 | 5.96E-04 |
| | | | | | | | | Total | | 8,302 | |

## 2022 Hourly Traffic Volumes Per Direction and Fugitive PM2.5 Emissions - FUG_Main

| Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.15% | 95 | 3.04E-04 | 9 | 7.11% | 590 | 1.88E-03 | 17 | 7.39% | 614 | 1.96E-03 |
| 2 | 0.42% | 35 | 1.11E-04 | 10 | 4.39% | 364 | 1.16E-03 | 18 | 8.17% | 678 | 2.16E-03 |
| 3 | 0.41% | 34 | 1.09E-04 | 11 | 4.67% | 388 | 1.24E-03 | 19 | 5.70% | 473 | 1.51E-03 |
| 4 | 0.27% | 22 | 7.15E-05 | 12 | 5.89% | 489 | 1.56E-03 | 20 | 4.27% | 355 | 1.13E-03 |
| 5 | 0.50% | 42 | 1.32E-04 | 13 | 6.15% | 511 | 1.63E-03 | 21 | 3.26% | 271 | 8.63E-04 |
| 6 | 0.91% | 76 | 2.41E-04 | 14 | 6.03% | 501 | 1.60E-03 | 22 | 3.30% | 274 | 8.74E-04 |
| 7 | 3.79% | 315 | 1.00E-03 | 15 | 7.01% | 582 | 1.86E-03 | 23 | 2.46% | 204 | 6.51E-04 |
| 8 | 7.76% | 644 | 2.05E-03 | 16 | 7.13% | 592 | 1.89E-03 | 24 | 1.86% | 154 | 4.92E-04 |
| | | | | | | | | Total | | 8,302 | |

**Arbor Office, 255 W. Julian Street, San Jose, CA - W. St James ST / W Julian ST Traffic - TACs & PM2**
**AERMOD Risk Modeling Parameters and Maximum Concentrations**
**at Construction MEI Receptors (PM2.5 1.5m receptor height, Cancer Risk 8.2m height)**

| | |
|---|---|
| **Emission Year** | 2022 |
| **Receptor Information** | Construction MEI receptor |
| Number of Receptors | 1 |
| Receptor Height | PM2.5 1.5 meters, Cancer Risk 8.2 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 - 8.2m**

| Meteorological | Concentration (µg/m3)* | | |
|---|---|---|---|
| Data Years | DPM | Exhaust TOG | Evaporative TOG |
| 2013-2017 | 0.0013 | 0.0666 | 0.0729 |

**Construction MEI PM2.5 Maximum Concentrations - 1.5m**

| Meteorological | PM2.5 Concentration (µg/m3)* | | |
|---|---|---|---|
| Data Years | Total PM2.5 | Fugitive PM2.5 | Vehicle PM2.5 |
| 2013-2017 | 0.0974 | 0.0904 | 0.00702 |

**Arbor Office, 255 W. Julian Street, San Jose, CA - W. St James ST / W Julian ST Cancer Risk**
**Impacts at Construction MEI - PM2.5 1.5 meter receptor height, Cancer Risk 8.2m 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* | 2022 | 10 | 0.0013 | 0.0666 | 0.0729 | 0.015 | 0.004 | 0.0003 | 0.02 |
| 1 | 1 | 0 - 1 | 2022 | 10 | 0.0013 | 0.0666 | 0.0729 | 0.186 | 0.053 | 0.0034 | 0.24 |
| 2 | 1 | 1 - 2 | 2023 | 10 | 0.0013 | 0.0666 | 0.0729 | 0.186 | 0.053 | 0.0034 | 0.24 |
| 3 | 1 | 2 - 3 | 2024 | 3 | 0.0013 | 0.0666 | 0.0729 | 0.025 | 0.007 | 0.0005 | 0.03 |
| 4 | 1 | 3 - 4 | 2025 | 3 | 0.0013 | 0.0666 | 0.0729 | 0.025 | 0.007 | 0.0005 | 0.03 |
| 5 | 1 | 4 - 5 | 2026 | 3 | 0.0013 | 0.0666 | 0.0729 | 0.025 | 0.007 | 0.0005 | 0.03 |
| 6 | 1 | 5 - 6 | 2027 | 3 | 0.0013 | 0.0666 | 0.0729 | 0.025 | 0.007 | 0.0005 | 0.03 |
| 7 | 1 | 6 - 7 | 2028 | 3 | 0.0013 | 0.0666 | 0.0729 | 0.025 | 0.007 | 0.0005 | 0.03 |
| 8 | 1 | 7 - 8 | 2029 | 3 | 0.0013 | 0.0666 | 0.0729 | 0.025 | 0.007 | 0.0005 | 0.03 |
| 9 | 1 | 8 - 9 | 2030 | 3 | 0.0013 | 0.0666 | 0.0729 | 0.025 | 0.007 | 0.0005 | 0.03 |
| 10 | 1 | 9 - 10 | 2031 | 3 | 0.0013 | 0.0666 | 0.0729 | 0.025 | 0.007 | 0.0005 | 0.03 |
| 11 | 1 | 10 - 11 | 2032 | 3 | 0.0013 | 0.0666 | 0.0729 | 0.025 | 0.007 | 0.0005 | 0.03 |
| 12 | 1 | 11 - 12 | 2033 | 3 | 0.0013 | 0.0666 | 0.0729 | 0.025 | 0.007 | 0.0005 | 0.03 |
| 13 | 1 | 12 - 13 | 2034 | 3 | 0.0013 | 0.0666 | 0.0729 | 0.025 | 0.007 | 0.0005 | 0.03 |
| 14 | 1 | 13 - 14 | 2035 | 3 | 0.0013 | 0.0666 | 0.0729 | 0.025 | 0.007 | 0.0005 | 0.03 |
| 15 | 1 | 14 - 15 | 2036 | 3 | 0.0013 | 0.0666 | 0.0729 | 0.025 | 0.007 | 0.0005 | 0.03 |
| 16 | 1 | 15 - 16 | 2037 | 3 | 0.0013 | 0.0666 | 0.0729 | 0.025 | 0.007 | 0.0005 | 0.03 |
| 17 | 1 | 16-17 | 2038 | 1 | 0.0013 | 0.0666 | 0.0729 | 0.004 | 0.001 | 0.0001 | 0.00 |
| 18 | 1 | 17-18 | 2039 | 1 | 0.0013 | 0.0666 | 0.0729 | 0.004 | 0.001 | 0.0001 | 0.00 |
| 19 | 1 | 18-19 | 2040 | 1 | 0.0013 | 0.0666 | 0.0729 | 0.004 | 0.001 | 0.0001 | 0.00 |
| 20 | 1 | 19-20 | 2041 | 1 | 0.0013 | 0.0666 | 0.0729 | 0.004 | 0.001 | 0.0001 | 0.00 |
| 21 | 1 | 20-21 | 2042 | 1 | 0.0013 | 0.0666 | 0.0729 | 0.004 | 0.001 | 0.0001 | 0.00 |
| 22 | 1 | 21-22 | 2043 | 1 | 0.0013 | 0.0666 | 0.0729 | 0.004 | 0.001 | 0.0001 | 0.00 |
| 23 | 1 | 22-23 | 2044 | 1 | 0.0013 | 0.0666 | 0.0729 | 0.004 | 0.001 | 0.0001 | 0.00 |
| 24 | 1 | 23-24 | 2045 | 1 | 0.0013 | 0.0666 | 0.0729 | 0.004 | 0.001 | 0.0001 | 0.00 |
| 25 | 1 | 24-25 | 2046 | 1 | 0.0013 | 0.0666 | 0.0729 | 0.004 | 0.001 | 0.0001 | 0.00 |
| 26 | 1 | 25-26 | 2047 | 1 | 0.0013 | 0.0666 | 0.0729 | 0.004 | 0.001 | 0.0001 | 0.00 |
| 27 | 1 | 26-27 | 2048 | 1 | 0.0013 | 0.0666 | 0.0729 | 0.004 | 0.001 | 0.0001 | 0.00 |
| 28 | 1 | 27-28 | 2049 | 1 | 0.0013 | 0.0666 | 0.0729 | 0.004 | 0.001 | 0.0001 | 0.00 |
| 29 | 1 | 28-29 | 2050 | 1 | 0.0013 | 0.0666 | 0.0729 | 0.004 | 0.001 | 0.0001 | 0.00 |
| 30 | 1 | 29-30 | 2051 | 1 | 0.0013 | 0.0666 | 0.0729 | 0.004 | 0.001 | 0.0001 | 0.00 |
| **Total Increased Cancer Risk** | | | | | | | | 0.79 | 0.225 | 0.015 | **1.03** |

| Maximum Hazard Index | Maximum Fugitive PM2.5 | Total PM2.5 |
|---|---|---|
| 0.0003 | 0.09 | 0.10 |

* Third trimester of pregnancy

N. Market Street/Coleman Avenue Emissions and Health Risk Calculations

**Analysis Year =** ***2022***

| **Vehicle Type** | **2021 Caltrans Vehicles (veh/day)** | **2022 Vehicles (veh/day)** |
|---|---|---|
| Truck 1 (MDT) | 602 | 608 |
| Truck 2 (HDT) | 162 | 163 |
| Non-Truck | 20,982 | 21,192 |
| **Total** | **21,745** | **21,962** |

| | |
|---|---|
| Increase From 2021 | 1.01 |
| **Vehicles/Direction** | **10,981** |
| Avg Vehicles/Hour/Direction | 458 |

**Traffic Data Year =** ***2021***

| ***Proejct Traffic Backgrond Plus Project ADT*** | AADT Total | Total Truck |
|---|---|---|
| Market Street / Coleman Ave | 21,745 | 763 |
| | | |
| | Percent of Total Vehicles | 3.51% |

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

**Arbor Office, 255 W. Julian Street, San Jose - Offsite Residential Roadway Modeling**
**Cumulative Operation - Market Street / Coleman Ave**
**DPM Modeling - Roadway Links, Traffic Volumes, and DPM Emissions**
**Year =** **2022** 13.315

| | | | | | | | | | | | Line Area | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | Area (sq m) | Area (sq ft) | Emission (g/s/m2) | Emission (lb/hr/ft2) | Initial Vertical height (m) | (Sigma z) Initial Vertical Dimension |
| DPM_MAR | Market Street / Coleman Avenue Northbound | NB | 2 | 677.2 | 0.42 | 13.3 | 43.7 | 3.4 | 25 | 10,981 | 9,017 | 97,059 | 4.407E-09 | 3.249E-09 | 6.8 | 3.16 |
| DPM_MAR | Market Street / Coleman Avenue Southbound | SB | 2 | 694.2 | 0.43 | 13.3 | 43.7 | 3.4 | 25 | 10,981 | 9,243 | 99,495 | 4.407E-09 | 3.249E-09 | 6.8 | 3.16 |
| | | | | | | | | | Total | 21,962 | | | | | | |

## Emission Factors - DPM

| Speed Category | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Travel Speed (mph) | 25 | | | |
| Emissions per Vehicle (g/VMT) | 0.00074 | | | |

Emisson Factors from CT-EMFAC2017

## 2022 Hourly Traffic Volumes and DPM Emissions - DPM_MAR

| Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 3.91% | 429 | 3.73E-05 | 9 | 6.44% | 707 | 6.14E-05 | 17 | 5.52% | 606 | 5.26E-05 |
| 2 | 2.59% | 284 | 2.47E-05 | 10 | 7.25% | 796 | 6.91E-05 | 18 | 3.34% | 367 | 3.19E-05 |
| 3 | 2.82% | 310 | 2.69E-05 | 11 | 6.33% | 695 | 6.04E-05 | 19 | 2.42% | 266 | 2.31E-05 |
| 4 | 3.39% | 372 | 3.23E-05 | 12 | 6.90% | 758 | 6.58E-05 | 20 | 0.92% | 101 | 8.77E-06 |
| 5 | 2.19% | 240 | 2.09E-05 | 13 | 6.27% | 689 | 5.98E-05 | 21 | 2.99% | 328 | 2.85E-05 |
| 6 | 3.39% | 372 | 3.23E-05 | 14 | 6.15% | 675 | 5.87E-05 | 22 | 4.14% | 455 | 3.95E-05 |
| 7 | 6.10% | 670 | 5.82E-05 | 15 | 5.12% | 562 | 4.88E-05 | 23 | 2.47% | 271 | 2.36E-05 |
| 8 | 4.66% | 512 | 4.44E-05 | 16 | 3.85% | 423 | 3.67E-05 | 24 | 0.86% | 94 | 8.20E-06 |
| | | | | | | | | Total | | 10,983 | |

## 2022 Hourly Traffic Volumes Per Direction and DPM Emissions - DPM_MAR

| Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 3.91% | 429 | 3.82E-05 | 9 | 6.44% | 707 | 6.30E-05 | 17 | 5.52% | 606 | 5.40E-05 |
| 2 | 2.59% | 284 | 2.53E-05 | 10 | 7.25% | 796 | 7.09E-05 | 18 | 3.34% | 367 | 3.27E-05 |
| 3 | 2.82% | 310 | 2.76E-05 | 11 | 6.33% | 695 | 6.19E-05 | 19 | 2.42% | 266 | 2.37E-05 |
| 4 | 3.39% | 372 | 3.31E-05 | 12 | 6.90% | 758 | 6.75E-05 | 20 | 0.92% | 101 | 8.99E-06 |
| 5 | 2.19% | 240 | 2.14E-05 | 13 | 6.27% | 689 | 6.13E-05 | 21 | 2.99% | 328 | 2.92E-05 |
| 6 | 3.39% | 372 | 3.31E-05 | 14 | 6.15% | 675 | 6.01E-05 | 22 | 4.14% | 455 | 4.05E-05 |
| 7 | 6.10% | 670 | 5.96E-05 | 15 | 5.12% | 562 | 5.01E-05 | 23 | 2.47% | 271 | 2.41E-05 |
| 8 | 4.66% | 512 | 4.56E-05 | 16 | 3.85% | 423 | 3.76E-05 | 24 | 0.86% | 94 | 8.41E-06 |
| | | | | | | | | Total | | 10,983 | |

**Arbor Office, 255 W. Julian Street, San Jose - Offsite Residential Roadway Modeling**
**Cumulative Operation - Market Street / Coleman Ave**
**PM2.5 Modeling - Roadway Links, Traffic Volumes, and PM2.5 Emissions**
**Year = 2022**

| | | | | | | | | | | | Line Area | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | Area (sq m) | Area (sq ft) | Emission (g/s/m2) | Emission (lb/hr/ft2) | Initial Vertical height (m) | (Sigma z) Initial Vertical Dimension |
| PM25_MAR | Market Street / Coleman Avenue Northbound | NB | 2 | 677.2 | 0.42 | 13.3 | 44 | 1.3 | 25 | 10,981 | 9,017 | 97,059 | 1.555E-08 | 1.147E-08 | 2.6 | 1.21 |
| PM25_MAR | Market Street / Coleman Avenue Southbound | SB | 2 | 694.2 | 0.43 | 13.3 | 44 | 1.3 | 25 | 10,981 | 9,243 | 99,495 | 1.555E-08 | 1.147E-08 | 2.6 | 1.21 |
| | | | | | | | | | Total | 21,962 | | | | | | |

## Emission Factors - PM2.5

| Speed Category | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Travel Speed (mph) | 25 | | | |
| Emissions per Vehicle (g/VMT) | 0.002622 | | | |

Emisson Factors from CT-EMFAC2017

### 2022 Hourly Traffic Volumes and PM2.5 Emissions - PM25_MAR

| Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.15% | 126 | 3.87E-05 | 9 | 7.11% | 781 | 2.39E-04 | 17 | 7.39% | 812 | 2.49E-04 |
| 2 | 0.42% | 46 | 1.41E-05 | 10 | 4.39% | 482 | 1.48E-04 | 18 | 8.17% | 897 | 2.75E-04 |
| 3 | 0.41% | 45 | 1.38E-05 | 11 | 4.67% | 513 | 1.57E-04 | 19 | 5.70% | 626 | 1.92E-04 |
| 4 | 0.27% | 30 | 9.09E-06 | 12 | 5.89% | 647 | 1.98E-04 | 20 | 4.27% | 469 | 1.44E-04 |
| 5 | 0.50% | 55 | 1.68E-05 | 13 | 6.15% | 675 | 2.07E-04 | 21 | 3.26% | 358 | 1.10E-04 |
| 6 | 0.91% | 100 | 3.06E-05 | 14 | 6.03% | 662 | 2.03E-04 | 22 | 3.30% | 362 | 1.11E-04 |
| 7 | 3.79% | 416 | 1.28E-04 | 15 | 7.01% | 770 | 2.36E-04 | 23 | 2.46% | 270 | 8.28E-05 |
| 8 | 7.76% | 852 | 2.61E-04 | 16 | 7.13% | 783 | 2.40E-04 | 24 | 1.86% | 204 | 6.26E-05 |
| | | | | | | | | Total | | 10,981 | |

### 2022 Hourly Traffic Volumes Per Direction and PM2.5 Emissions - PM25_MAR

| Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.15% | 126 | 3.97E-05 | 9 | 7.11% | 781 | 2.45E-04 | 17 | 7.39% | 812 | 2.55E-04 |
| 2 | 0.42% | 46 | 1.45E-05 | 10 | 4.39% | 482 | 1.51E-04 | 18 | 8.17% | 897 | 2.82E-04 |
| 3 | 0.41% | 45 | 1.41E-05 | 11 | 4.67% | 513 | 1.61E-04 | 19 | 5.70% | 626 | 1.97E-04 |
| 4 | 0.27% | 30 | 9.31E-06 | 12 | 5.89% | 647 | 2.03E-04 | 20 | 4.27% | 469 | 1.47E-04 |
| 5 | 0.50% | 55 | 1.72E-05 | 13 | 6.15% | 675 | 2.12E-04 | 21 | 3.26% | 358 | 1.12E-04 |
| 6 | 0.91% | 100 | 3.14E-05 | 14 | 6.03% | 662 | 2.08E-04 | 22 | 3.30% | 362 | 1.14E-04 |
| 7 | 3.79% | 416 | 1.31E-04 | 15 | 7.01% | 770 | 2.42E-04 | 23 | 2.46% | 270 | 8.49E-05 |
| 8 | 7.76% | 852 | 2.68E-04 | 16 | 7.13% | 783 | 2.46E-04 | 24 | 1.86% | 204 | 6.42E-05 |
| | | | | | | | | Total | | 10,981 | |

**Arbor Office, 255 W. Julian Street, San Jose - Offsite Residential Roadway Modeling**
**Cumulative Operation - Market Street / Coleman Ave**
**TOG Exhaust Modeling - Roadway Links, Traffic Volumes, and TOG Exhaust Emissions**
**Year = 2022**

| | | | | | | | | | | | Line Area | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | Area (sq m) | Area (sq ft) | Emission (g/s/m2) | Emission (lb/hr/ft2) | Initial Vertical height | (Sigma z) Initial Vertical Dimension |
| TEXH_MAR | Market Street / Coleman Avenue Northbound | NB | 2 | 677.2 | 0.42 | 13.3 | 44 | 1.3 | 25 | 10,981 | 9,017 | 97,059 | 3.073E-07 | 2.266E-07 | 2.6 | 1.21 |
| TEXH_MAR | Market Street / Coleman Avenue Southbound | SB | 2 | 694.2 | 0.43 | 13.3 | 44 | 1.3 | 25 | 10,981 | 9,243 | 99,495 | 3.073E-07 | 2.266E-07 | 2.6 | 1.21 |
| | | | | | | | | | Total | 21,962 | | | | | | |

**Emission Factors - TOG Exhaust**

| Speed Category | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Travel Speed (mph) | 25 | | | |
| Emissions per Vehicle (g/VMT) | 0.05182 | | | |

Emisson Factors from CT-EMFAC2017

**2022 Hourly Traffic Volumes and TOG Exhaust Emissions - TEXH_MAR**

| Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.15% | 126 | 7.65E-04 | 9 | 7.11% | 781 | 4.73E-03 | 17 | 7.39% | 812 | 4.92E-03 |
| 2 | 0.42% | 46 | 2.79E-04 | 10 | 4.39% | 482 | 2.92E-03 | 18 | 8.17% | 897 | 5.43E-03 |
| 3 | 0.41% | 45 | 2.73E-04 | 11 | 4.67% | 513 | 3.11E-03 | 19 | 5.70% | 626 | 3.79E-03 |
| 4 | 0.27% | 30 | 1.80E-04 | 12 | 5.89% | 647 | 3.92E-03 | 20 | 4.27% | 469 | 2.84E-03 |
| 5 | 0.50% | 55 | 3.33E-04 | 13 | 6.15% | 675 | 4.09E-03 | 21 | 3.26% | 358 | 2.17E-03 |
| 6 | 0.91% | 100 | 6.05E-04 | 14 | 6.03% | 662 | 4.01E-03 | 22 | 3.30% | 362 | 2.19E-03 |
| 7 | 3.79% | 416 | 2.52E-03 | 15 | 7.01% | 770 | 4.66E-03 | 23 | 2.46% | 270 | 1.64E-03 |
| 8 | 7.76% | 852 | 5.16E-03 | 16 | 7.13% | 783 | 4.74E-03 | 24 | 1.86% | 204 | 1.24E-03 |
| | | | | | | | | Total | | 10,981 | |

**2022 Hourly Traffic Volumes Per Direction and TOG Exhaust Emissions - TEXH_MAR**

| Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.15% | 126 | 7.84E-04 | 9 | 7.11% | 781 | 4.85E-03 | 17 | 7.39% | 812 | 5.04E-03 |
| 2 | 0.42% | 46 | 2.86E-04 | 10 | 4.39% | 482 | 2.99E-03 | 18 | 8.17% | 897 | 5.57E-03 |
| 3 | 0.41% | 45 | 2.80E-04 | 11 | 4.67% | 513 | 3.18E-03 | 19 | 5.70% | 626 | 3.89E-03 |
| 4 | 0.27% | 30 | 1.84E-04 | 12 | 5.89% | 647 | 4.02E-03 | 20 | 4.27% | 469 | 2.91E-03 |
| 5 | 0.50% | 55 | 3.41E-04 | 13 | 6.15% | 675 | 4.19E-03 | 21 | 3.26% | 358 | 2.22E-03 |
| 6 | 0.91% | 100 | 6.20E-04 | 14 | 6.03% | 662 | 4.11E-03 | 22 | 3.30% | 362 | 2.25E-03 |
| 7 | 3.79% | 416 | 2.58E-03 | 15 | 7.01% | 770 | 4.78E-03 | 23 | 2.46% | 270 | 1.68E-03 |
| 8 | 7.76% | 852 | 5.29E-03 | 16 | 7.13% | 783 | 4.86E-03 | 24 | 1.86% | 204 | 1.27E-03 |
| | | | | | | | | Total | | 10,981 | |

**Arbor Office, 255 W. Julian Street, San Jose - Offsite Residential Roadway Modeling**
**Cumulative Operation - Market Street / Coleman Ave**
**TOG Evaporative Emissions Modeling - Roadway Links, Traffic Volumes, and TOG Evaporative Emissions**
**Year = 2022**

| | | | | | | | | | | | Line Area | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | Area (sq m) | Area (sq ft) | Emission (g/s/m2) | Emission (lb/hr/ft2) | Initial Vertical height | (Sigma z) Initial Vertical Dimension |
| TEVAP_MAR | Market Street / Coleman Avenue Northbound | NB | 2 | 677.2 | 0.42 | 13.3 | 44 | 1.3 | 25 | 10,981 | 9,017 | 97,059 | 3.365E-07 | 2.481E-07 | 2.6 | 1.21 |
| TEVAP_MAR | Market Street / Coleman Avenue Southbound | SB | 2 | 694.2 | 0.43 | 13.3 | 44 | 1.3 | 25 | 10,981 | 9,243 | 99,495 | 3.365E-07 | 2.481E-07 | 2.6 | 1.21 |
| | | | | | | | | | Total | 21,962 | | | | | | |

## Emission Factors - PM2.5 - Evaporative TOG

| Speed Category | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Travel Speed (mph) | 25 | | | |
| Emissions per Vehicle per Hour (g/hour) | 1.41852 | | | |
| Emissions per Vehicle per Mile (g/VMT) | 0.05674 | | | |

Emisson Factors from CT-EMFAC2017

## 2022 Hourly Traffic Volumes and TOG Evaporative Emissions - TEVAP_MAR

| Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.15% | 126 | 8.38E-04 | 9 | 7.11% | 781 | 5.18E-03 | 17 | 7.39% | 812 | 5.38E-03 |
| 2 | 0.42% | 46 | 3.06E-04 | 10 | 4.39% | 482 | 3.20E-03 | 18 | 8.17% | 897 | 5.95E-03 |
| 3 | 0.41% | 45 | 2.99E-04 | 11 | 4.67% | 513 | 3.40E-03 | 19 | 5.70% | 626 | 4.15E-03 |
| 4 | 0.27% | 30 | 1.97E-04 | 12 | 5.89% | 647 | 4.29E-03 | 20 | 4.27% | 469 | 3.11E-03 |
| 5 | 0.50% | 55 | 3.64E-04 | 13 | 6.15% | 675 | 4.48E-03 | 21 | 3.26% | 358 | 2.37E-03 |
| 6 | 0.91% | 100 | 6.63E-04 | 14 | 6.03% | 662 | 4.39E-03 | 22 | 3.30% | 362 | 2.40E-03 |
| 7 | 3.79% | 416 | 2.76E-03 | 15 | 7.01% | 770 | 5.11E-03 | 23 | 2.46% | 270 | 1.79E-03 |
| 8 | 7.76% | 852 | 5.65E-03 | 16 | 7.13% | 783 | 5.19E-03 | 24 | 1.86% | 204 | 1.35E-03 |
| | | | | | | | | Total | | 10,981 | |

## 2022 Hourly Traffic Volumes Per Direction and TOG Evaporative Emissions - TEVAP_MAR

| Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.15% | 126 | 8.59E-04 | 9 | 7.11% | 781 | 5.31E-03 | 17 | 7.39% | 812 | 5.52E-03 |
| 2 | 0.42% | 46 | 3.14E-04 | 10 | 4.39% | 482 | 3.28E-03 | 18 | 8.17% | 897 | 6.10E-03 |
| 3 | 0.41% | 45 | 3.06E-04 | 11 | 4.67% | 513 | 3.49E-03 | 19 | 5.70% | 626 | 4.26E-03 |
| 4 | 0.27% | 30 | 2.02E-04 | 12 | 5.89% | 647 | 4.40E-03 | 20 | 4.27% | 469 | 3.19E-03 |
| 5 | 0.50% | 55 | 3.73E-04 | 13 | 6.15% | 675 | 4.59E-03 | 21 | 3.26% | 358 | 2.43E-03 |
| 6 | 0.91% | 100 | 6.79E-04 | 14 | 6.03% | 662 | 4.50E-03 | 22 | 3.30% | 362 | 2.46E-03 |
| 7 | 3.79% | 416 | 2.83E-03 | 15 | 7.01% | 770 | 5.23E-03 | 23 | 2.46% | 270 | 1.84E-03 |
| 8 | 7.76% | 852 | 5.79E-03 | 16 | 7.13% | 783 | 5.32E-03 | 24 | 1.86% | 204 | 1.39E-03 |
| | | | | | | | | Total | | 10,981 | |

**Arbor Office, 255 W. Julian Street, San Jose - Offsite Residential Roadway Modeling**
**Cumulative Operation - Market Street / Coleman Ave**
**Fugitive Road PM2.5 Modeling - Roadway Links, Traffic Volumes, and Fugitive Road PM2.5 Emissions**
**Year = 2022**

| | | | | | | | | | | | Line Area | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | Area (sq m) | Area (sq ft) | Emission (g/s/m2) | Emission (lb/hr/ft2) | Initial Vertical height (m) | (Sigma z) Initial Vertical Dimension |
| FUG_MAR | Market Street / Coleman Avenue Northbound | NB | 2 | 677.2 | 0.42 | 13.3 | 44 | 1.3 | 25 | 10,981 | 9,017 | 97,059 | 2.004E-07 | 1.478E-07 | 2.6 | 1.21 |
| FUG_MAR | Market Street / Coleman Avenue Southbound | SB | 2 | 694.2 | 0.43 | 13.3 | 44 | 1.3 | 25 | 10,981 | 9,243 | 99,495 | 2.004E-07 | 1.478E-07 | 2.6 | 1.21 |
| | | | | | | | | | Total | 21,962 | | | | | | |

## Emission Factors - Fugitive PM2.5

| Speed Category | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Travel Speed (mph) | 25 | | | |
| 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) | 0.01487 | | | |
| Total Fugitive PM2.5 - Emissions per Vehicle (g/VMT) | 0.03379 | | | |

Emisson Factors from CT-EMFAC2017

## 2022 Hourly Traffic Volumes and Fugitive PM2.5 Emissions - FUG_MAR

| Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.15% | 126 | 4.99E-04 | 9 | 7.11% | 781 | 3.08E-03 | 17 | 7.39% | 812 | 3.21E-03 |
| 2 | 0.42% | 46 | 1.82E-04 | 10 | 4.39% | 482 | 1.90E-03 | 18 | 8.17% | 897 | 3.54E-03 |
| 3 | 0.41% | 45 | 1.78E-04 | 11 | 4.67% | 513 | 2.03E-03 | 19 | 5.70% | 626 | 2.47E-03 |
| 4 | 0.27% | 30 | 1.17E-04 | 12 | 5.89% | 647 | 2.55E-03 | 20 | 4.27% | 469 | 1.85E-03 |
| 5 | 0.50% | 55 | 2.17E-04 | 13 | 6.15% | 675 | 2.67E-03 | 21 | 3.26% | 358 | 1.41E-03 |
| 6 | 0.91% | 100 | 3.95E-04 | 14 | 6.03% | 662 | 2.62E-03 | 22 | 3.30% | 362 | 1.43E-03 |
| 7 | 3.79% | 416 | 1.64E-03 | 15 | 7.01% | 770 | 3.04E-03 | 23 | 2.46% | 270 | 1.07E-03 |
| 8 | 7.76% | 852 | 3.37E-03 | 16 | 7.13% | 783 | 3.09E-03 | 24 | 1.86% | 204 | 8.07E-04 |
| | | | | | | | | Total | | 10,981 | |

## 2022 Hourly Traffic Volumes Per Direction and Fugitive PM2.5 Emissions - FUG_MAR

| Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.15% | 126 | 5.11E-04 | 9 | 7.11% | 781 | 3.16E-03 | 17 | 7.39% | 812 | 3.29E-03 |
| 2 | 0.42% | 46 | 1.87E-04 | 10 | 4.39% | 482 | 1.95E-03 | 18 | 8.17% | 897 | 3.63E-03 |
| 3 | 0.41% | 45 | 1.82E-04 | 11 | 4.67% | 513 | 2.08E-03 | 19 | 5.70% | 626 | 2.53E-03 |
| 4 | 0.27% | 30 | 1.20E-04 | 12 | 5.89% | 647 | 2.62E-03 | 20 | 4.27% | 469 | 1.90E-03 |
| 5 | 0.50% | 55 | 2.22E-04 | 13 | 6.15% | 675 | 2.73E-03 | 21 | 3.26% | 358 | 1.45E-03 |
| 6 | 0.91% | 100 | 4.05E-04 | 14 | 6.03% | 662 | 2.68E-03 | 22 | 3.30% | 362 | 1.47E-03 |
| 7 | 3.79% | 416 | 1.69E-03 | 15 | 7.01% | 770 | 3.12E-03 | 23 | 2.46% | 270 | 1.09E-03 |
| 8 | 7.76% | 852 | 3.45E-03 | 16 | 7.13% | 783 | 3.17E-03 | 24 | 1.86% | 204 | 8.27E-04 |
| | | | | | | | | Total | | 10,981 | |

**Arbor Office, 255 W. Julian Street, San Jose, CA - Market ST / Coleman Ave Traffic - TACs & PM2**
**AERMOD Risk Modeling Parameters and Maximum Concentrations**
**at Construction MEI Receptors (PM2.5 1.5m receptor height, Cancer Risk 8.2m height)**

| | |
|---|---|
| **Emission Year** | 2022 |
| **Receptor Information** | Construction MEI receptor |
| Number of Receptors | 1 |
| Receptor Height | PM2.5 1.5 meters, Cancer Risk 8.2 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 - 8.2m**

| Meteorological Data Years | Concentration (µg/m3)* | | |
|---|---|---|---|
| | DPM | Exhaust TOG | Evaporative TOG |
| 2013-2017 | 0.0004 | 0.0182 | 0.0199 |

**Construction MEI PM2.5 Maximum Concentrations - 1.5m**

| Meteorological Data Years | PM2.5 Concentration (µg/m3)* | | |
|---|---|---|---|
| | Total PM2.5 | Fugitive PM2.5 | Vehicle PM2.5 |
| 2013-2017 | 0.0155 | 0.0144 | 0.00111 |

**Arbor Office, 255 W. Julian Street, San Jose, CA - Market ST / Coleman Ave Cancer Risk**
**Impacts at Construction MEI - PM2.5 1.5 meter receptor height, Cancer Risk 8.2m 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

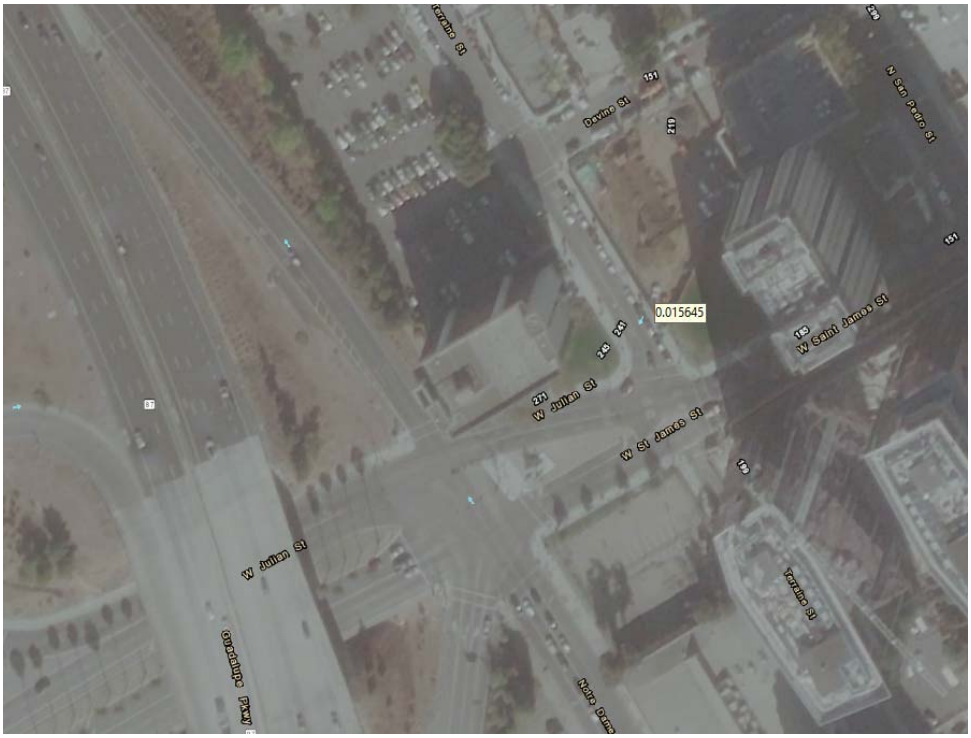
### Construction Cancer Risk by Year - Maximum Impact Receptor Location

| 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* | 2022 | 10 | 0.0004 | 0.0182 | 0.0199 | 0.004 | 0.001 | 0.0001 | 0.01 |
| 1 | 1 | 0 - 1 | 2022 | 10 | 0.0004 | 0.0182 | 0.0199 | 0.052 | 0.015 | 0.0009 | 0.07 |
| 2 | 1 | 1 - 2 | 2023 | 10 | 0.0004 | 0.0182 | 0.0199 | 0.052 | 0.015 | 0.0009 | 0.07 |
| 3 | 1 | 2 - 3 | 2024 | 3 | 0.0004 | 0.0182 | 0.0199 | 0.007 | 0.002 | 0.0001 | 0.01 |
| 4 | 1 | 3 - 4 | 2025 | 3 | 0.0004 | 0.0182 | 0.0199 | 0.007 | 0.002 | 0.0001 | 0.01 |
| 5 | 1 | 4 - 5 | 2026 | 3 | 0.0004 | 0.0182 | 0.0199 | 0.007 | 0.002 | 0.0001 | 0.01 |
| 6 | 1 | 5 - 6 | 2027 | 3 | 0.0004 | 0.0182 | 0.0199 | 0.007 | 0.002 | 0.0001 | 0.01 |
| 7 | 1 | 6 - 7 | 2028 | 3 | 0.0004 | 0.0182 | 0.0199 | 0.007 | 0.002 | 0.0001 | 0.01 |
| 8 | 1 | 7 - 8 | 2029 | 3 | 0.0004 | 0.0182 | 0.0199 | 0.007 | 0.002 | 0.0001 | 0.01 |
| 9 | 1 | 8 - 9 | 2030 | 3 | 0.0004 | 0.0182 | 0.0199 | 0.007 | 0.002 | 0.0001 | 0.01 |
| 10 | 1 | 9 - 10 | 2031 | 3 | 0.0004 | 0.0182 | 0.0199 | 0.007 | 0.002 | 0.0001 | 0.01 |
| 11 | 1 | 10 - 11 | 2032 | 3 | 0.0004 | 0.0182 | 0.0199 | 0.007 | 0.002 | 0.0001 | 0.01 |
| 12 | 1 | 11 - 12 | 2033 | 3 | 0.0004 | 0.0182 | 0.0199 | 0.007 | 0.002 | 0.0001 | 0.01 |
| 13 | 1 | 12 - 13 | 2034 | 3 | 0.0004 | 0.0182 | 0.0199 | 0.007 | 0.002 | 0.0001 | 0.01 |
| 14 | 1 | 13 - 14 | 2035 | 3 | 0.0004 | 0.0182 | 0.0199 | 0.007 | 0.002 | 0.0001 | 0.01 |
| 15 | 1 | 14 - 15 | 2036 | 3 | 0.0004 | 0.0182 | 0.0199 | 0.007 | 0.002 | 0.0001 | 0.01 |
| 16 | 1 | 15 - 16 | 2037 | 3 | 0.0004 | 0.0182 | 0.0199 | 0.007 | 0.002 | 0.0001 | 0.01 |
| 17 | 1 | 16-17 | 2038 | 1 | 0.0004 | 0.0182 | 0.0199 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 18 | 1 | 17-18 | 2039 | 1 | 0.0004 | 0.0182 | 0.0199 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 19 | 1 | 18-19 | 2040 | 1 | 0.0004 | 0.0182 | 0.0199 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 20 | 1 | 19-20 | 2041 | 1 | 0.0004 | 0.0182 | 0.0199 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 21 | 1 | 20-21 | 2042 | 1 | 0.0004 | 0.0182 | 0.0199 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 22 | 1 | 21-22 | 2043 | 1 | 0.0004 | 0.0182 | 0.0199 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 23 | 1 | 22-23 | 2044 | 1 | 0.0004 | 0.0182 | 0.0199 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 24 | 1 | 23-24 | 2045 | 1 | 0.0004 | 0.0182 | 0.0199 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 25 | 1 | 24-25 | 2046 | 1 | 0.0004 | 0.0182 | 0.0199 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 26 | 1 | 25-26 | 2047 | 1 | 0.0004 | 0.0182 | 0.0199 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 27 | 1 | 26-27 | 2048 | 1 | 0.0004 | 0.0182 | 0.0199 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 28 | 1 | 27-28 | 2049 | 1 | 0.0004 | 0.0182 | 0.0199 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 29 | 1 | 28-29 | 2050 | 1 | 0.0004 | 0.0182 | 0.0199 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 30 | 1 | 29-30 | 2051 | 1 | 0.0004 | 0.0182 | 0.0199 | 0.001 | 0.000 | 0.0000 | 0.00 |
| **Total Increased Cancer Risk** | | | | | | | | 0.22 | 0.061 | 0.004 | **0.28** |

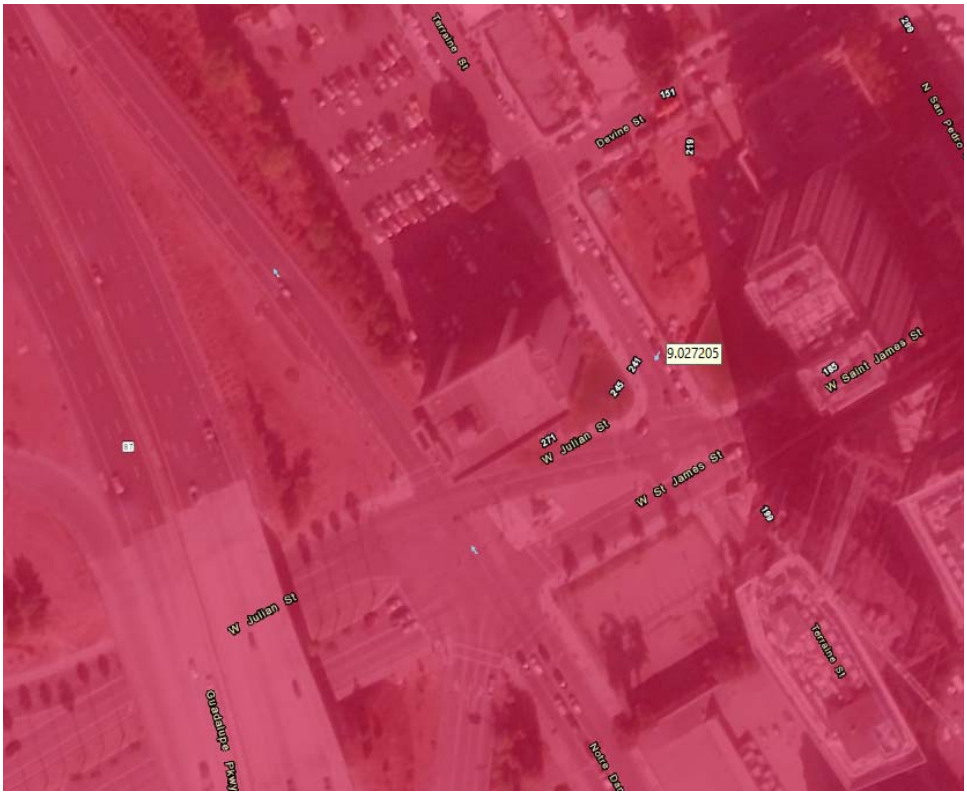
| Maximum Hazard Index | Maximum Fugitive PM2.5 | Total PM2.5 |
|---|---|---|
| 0.0001 | 0.01 | 0.02 |

* Third trimester of pregnancy

BAAQMD Raster Rail PM 2.5 @ MEI




BAAQMD Raster Rail Cancer Risk @ MEI



# 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** | **3/30/2021** |
| **Contact Name** | Casey Divine |
| **Affiliation** | Illingworth & Rodkin, Inc. |
| **Phone** | 707-794-0400 x103 |
| **Email** | cdivine@illingworthrodkin.com |
| **Project Name** | Arbor Offices |
| **Address** | 255 W Juliana Street |
| **City** | San Jose |
| **County** | Santa Clara |
| **Type (residential, commercial, mixed use, industrial, etc.)** | MU |
| **Project Size (# of units or building square feet)** | 530ksf office, 19ksf retail |
| **Comments:** | |

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

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

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

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

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

5. List the stationary source information in Table B. Incomplete forms will only.

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

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

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

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

## Table B: Google Earth data

| Distance from Receptor (feet) or MEI[1] | Plant No. | Facility Name | Address | Cancer Risk[2] | Hazard Risk[2] | $PM_{2.5}$[2] | Source No.[3] | Type of Source[4] | Fuel Code[5] | Status/Comments | Construction MEI: Distance Adjustment Multiplier | Construction MEI: Adjusted Cancer Risk Estimate | Construction MEI: Adjusted Hazard Risk | Construction MEI: Adjusted PM2.5 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 105 | 17788 | City Heights At Pellier Park | 175 W Saint James St | 5.25 | -- | 0.01 | | Generators | | 2018 Dataset | 0.73 | 3.83 | #VALUE! | 0.01 |
| 880 | 20411 | County of Santa Clara | 333rd & 373 West Julian S | 2.59 | -- | -- | | Generators | | 2018 Dataset | 0.05 | 0.13 | #VALUE! | #VALUE! |
| 365 | 21746 | San Jose Fire Dept / Accts Payable | 225 N Market Street | 0.16 | -- | -- | | Generators | | 2018 Dataset | 0.18 | 0.03 | #VALUE! | #VALUE! |
| 675 | 22757 | Centerra Apartments | 77 N Almaden Avenue | 0.16 | -- | -- | | Generators | | 2018 Dataset | 0.08 | 0.01 | #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 or less.
    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 reflect
    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 : 4,520,006.11 ft²

Mar 30 2021 10:21:53 Pacific Daylight Time

## Summary

| Name | Count | Area(ft²) | Length(ft) |
|---|---|---|---|
| Permitted Facilities 2018 | 4 | N/A | N/A |

## Permitted Facilities 2018

| # | FACID | Name | Address | City | St |
|---|---|---|---|---|---|
| 1 | 17788 | City Heights At Pellier Park | 175 W Saint James St | San Jose | CA |
| 2 | 20411 | County of Santa Clara | 333rd & 373 West Julian St | San Jose | CA |
| 3 | 21746 | San Jose Fire Dept / Accts Payable | 225 N Market Street | San Jose | CA |
| 4 | 22757 | Centerra Apartments | 77 N Almaden Avenue | San Jose | CA |

| # | Zip | County | Cancer | Hazard | PM_25 | Type | Count |
|---|---|---|---|---|---|---|---|
| 1 | 95112 | Santa Clara | 5.250 | 0.000 | 0.010 | Generators | 1 |
| 2 | 95110 | Santa Clara | 2.590 | 0.000 | 0.000 | Generators | 1 |
| 3 | 95110 | Santa Clara | 0.160 | 0.000 | 0.000 | Generators | 1 |
| 4 | 95112 | Santa Clara | 0.160 | 0.000 | 0.000 | Generators | 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.