AIR QUALITY AND GREENHOUSE GAS ASSESSMENT

ATTACHMENT A

to the
580 Dubuque Avenue Project Initial Study / Mitigated Negative Declaration

580 DUBUQUE AVENUE AIR QUALITY & GREENHOUSE GAS ASSESSMENT

South San Francisco, California

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Introduction

The purpose of this report is to address air quality, community health risk, and greenhouse gas (GHG) impacts associated with the proposed lab/office building construction located at 580 Dubuque Avenue in South San Francisco, California. The air quality impacts and GHG emissions from this project would be associated with construction of the new buildings, trips generated by the operation of the project, and operation of an emergency generator. Air pollutant and GHG emissions associated with construction and operation of the project were predicted using appropriate computer models. In addition, the potential project health risk impacts (including construction and operation) and the impact of existing toxic air contaminant (TAC) sources affecting the nearby and proposed sensitive receptors were evaluated. The analysis was conducted following guidance provided by the Bay Area Air Quality Management District (BAAQMD).[1] BAAQMD recommends using a 1,000-foot screening radius around the project site for purposes of identifying community health risk from existing sources of TACs.

Project Description

The approximately 1.89-acre project site is currently undeveloped. The project proposes to construct a 295,000 square-foot lab/office building along with a 350 space, below grade parking garage and a 0.5-acre public park. Construction is assumed in this assessment to begin in February 2022 and be completed by May 2024.

Setting

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

Air Pollutants of Concern

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

Particulate matter is another problematic air pollutant of the Bay Area. Particulate matter is assessed and measured in terms of respirable particulate matter or particles that have a diameter of 10 micrometers or less (PM_{10}) and fine particulate matter where particles have a diameter of 2.5 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

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

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

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

Diesel exhaust is the predominant TAC in urban air and is estimated to represent about three-quarters of the cancer risk from TACs (based on the Bay Area average). According to the California Air Resources Board (CARB), diesel exhaust is a complex mixture of gases, vapors, and fine particles. This complexity makes the evaluation of health effects of diesel exhaust a complex scientific issue. Some of the chemicals in diesel exhaust, such as benzene and formaldehyde, have been previously identified as TACs by the CARB, and are listed as carcinogens either under the State's Proposition 65 or under the Federal Hazardous Air Pollutants programs. 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, and elementary schools. For cancer risk assessments, children are the most sensitive receptors, since they are more susceptible to cancer causing TACs. Residential locations are assumed to include infants and small children. The closest sensitive receptors to the project site are in the multi-family residences to the northwest opposite U.S. Highway 101. Additional sensitive receptors can be found at further distances to the west and southwest of the project site. This project would not introduce new sensitive receptors (i.e., residents) 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 nitrogen oxides, or NO_X, and particulate matter (PM_{10} and $PM_{2.5}$) and because the EPA has identified diesel particulate matter 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 PM 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

[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.

approved and adopted, including the federal on-road and non-road diesel engine emission standards for new engines, as well as adoption of regulations for low sulfur fuel in California.

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

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

Bay Area Air Quality Management District (BAAQMD)

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

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

BAAQMD's Community Air Risk Evaluation (CARE) program was initiated in 2004 to evaluate and reduce health risks associated with exposures to outdoor TACs in the Bay Area.[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

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

and input. The technical analysis portion of the CARE program is being implemented in three phases that includes an assessment of the sources of TAC emissions, modeling and measurement programs to estimate concentrations of TAC, and an assessment of exposures and health risks. Throughout the program, information derived from the technical analyses will be used to focus emission reduction measures in areas with high TAC exposures and high density of sensitive populations. Risk reduction activities associated with the CARE program are focused on the most at-risk communities in the Bay Area. The BAAQMD defines overburdened communities are areas located (i) within a census tract identified by the California Communities Environmental Health Screening Tool (CalEnviroScreen), Version 4.0 implemented by OEHHA, as having an overall CalEnviroScreen score at or above the 70th percentile, or (ii) within 1,000 feet of any such census tract.[6] The project site and it's environs are not within a CARE area but are within a BAAQMD overburdened area as identified by CalEnviroScreen (version 4.0), where the overall score is at the 75th to 85th percentile within 1,000 feet of the project site.

The BAAQMD California Environmental Quality Act (*CEQA) Air Quality Guidelines*[7] were prepared to assist in the evaluation of air quality impacts of projects and plans proposed within the Bay Area. The guidelines provide recommended procedures for evaluating potential air impacts during the environmental review process consistent with CEQA requirements including thresholds of significance, mitigation measures, and background air quality information. They also include assessment methodologies for air toxics, odors, and greenhouse gas emissions. *Attachment 1* includes detailed community risk modeling methodology.

BAAQMD Rules and Regulations

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

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

[6] See BAAQMD: https://www.baaqmd.gov/~/media/dotgov/files/rules/reg-2-permits/2021-amendments/documents/20210722_01_appendixd_mapsofoverburdenedcommunities-pdf.pdf?la=en , accessed 10/1/2021.
[7] Bay Area Air Quality Management District, 2017. *CEQA Air Quality Guidelines*. May.

Permits

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

Rule 2-1-302 requires that written authorization from the BAAQMD in the form of a Permit to Operate (PTO) be secured before any such equipment is used or operated.
Rule 2-1 lists sources that are exempt from permitting. At the proposed facility, the diesel fuel storage tanks are expected to be exempt from permitting.

New Source Review

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

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

Stationary Diesel Airborne Toxic Control Measure

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

Offsets

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

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

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

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

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

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

BACT for Diesel Generator Engines

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

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

South San Francisco General Plan 1999

The South San Francisco General Plan 1999 includes guiding and implementing policies to reduce exposure of the City's sensitive population to exposure of air pollution, toxic air contaminants, and greenhouse gases. While the city is in the process of updating its general plan, the version passed in 1999 is still the most recent version. The following guiding and implementing policies are applicable to the proposed project:

GUIDING POLICIES: AIR QUALITY AND GREENHOUSE GAS EMISSIONS

7.3-G-1 Continue to work toward improving air quality and meeting all national and State ambient air quality standards and by reducing the generation of air pollutants both from stationary and mobile sources, where feasible.

7.3-G-2 Mitigate the community of South San Francisco's impact on climate change by reducing greenhouse gas emissions consistent with state guidance.

7.3-G-3 Reduce energy use in the built environment.

7.3-G-4 Encourage land use and transportation strategies that promote use of alternatives to the automobile for transportation, including bicycling, bus transit, and carpooling.

7.3-G-5 Promote clean and alternative fuel combustion in mobile equipment and vehicles.

7.3-G-6 Minimize conflicts between sensitive receptors and emissions generators by distancing them from one another.

IMPLEMENTING POLICIES: AIR QUALITY AND GREENHOUSE GAS EMISSIONS

7.3-1-1 Cooperate with the Bay Area Air Quality Management District to achieve emissions reductions for nonattainment pollutants and their precursors, including carbon monoxide, ozone, and PM-10, by implementation of air pollution control measures as required by State and federal statutes.

7.3-1-2 Use the City's development review process and the California Environmental Quality Act (CEQA) regulations to evaluate and mitigate the local and cumulative effects of new development on air quality and GHG emissions.

7.3-1-3 Adopt the standard construction dust abatement measures included in BAAQMD's CEQA Guidelines.

7.3-1-4 Require new residential development and remodeled existing homes to install clean-burning fireplaces and wood stoves.

7.3-1-5 In cooperation with local conservation groups, institute an active urban forest management program that consists of planting new trees and maintaining existing ones.

7.3-1-6 Periodically update the inventory of community-wide GHG emissions and evaluate appropriate GHG emissions reduction targets, consistent with current State objectives, statewide guidance, and regulations.

7.3-1-7 Adopt and implement the City of South San Francisco's CAP, which will identify a GHG emissions reduction target and measures and actions to achieve the reduction target.

7.3-1-8 Evaluate and regularly report to City Council, or its designee, on the implementation status of the CAP and update the CAP as necessary should the City find that adopted strategies are not achieving anticipated reductions, or to otherwise incorporate new opportunities.

7.3-1-9 Promote land uses that facilitate alternative transit use, including high-density housing, mixed uses, and affordable housing served by alternative transit infrastructure.

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 that were used in this analysis are summarized in Table 1. Community risks are considered significant if they exceed these levels.

Table 1. BAAQMD CEQA Significance Thresholds

Criteria Air Pollutant	Construction Thresholds	Operational Thresholds	
	Average Daily Emissions (lbs./day)	Average Daily Emissions (lbs./day)	Annual Average Emissions (tons/year)
ROG	54	54	10
NO_x	54	54	10
PM_{10}	82 (Exhaust)	82	15
$PM_{2.5}$	54 (Exhaust)	54	10
CO	Not Applicable	9.0 ppm (8-hour average) or 20.0 ppm (1-hour average)	
Fugitive Dust	Construction Dust Ordinance or other Best Management Practices	None	
Health Risks and Hazards	**Single Sources Within 1,000-foot Zone of Influence**	**Combined Sources (Cumulative from all sources within 1000-foot zone of influence)**	
Excess Cancer Risk	10 per one million	100 per one million	
Hazard Index	1.0	10.0	
Incremental annual $PM_{2.5}$	0.3 µg/m^3	0.8 µg/m^3	
Greenhouse Gas Emissions			
Land Use Projects – direct and indirect emissions	Compliance with a Qualified GHG Reduction Strategy OR 1,100 metric tons annually or 4.6 metric tons per capita (for 2020) *		

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 2.5µm or less. GHG = greenhouse gases.

*BAAQMD does not have a recommended post-2020 GHG threshold.

AIR QUALITY IMPACTS AND MITIGATION MEASURES

Impact AIR-1: Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?

The Bay Area is considered a non-attainment area for ground-level O_3 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 O_3, $PM_{2.5}$ and PM_{10}, the BAAQMD has established thresholds of significance for these air pollutants and their precursors. These thresholds are for O_3 precursor pollutants (ROG and NOx), PM_{10}, and $PM_{2.5}$ and apply to both construction period and operational period impacts.

Construction Period Emissions

The California Emissions Estimator Model (CalEEMod) Version 2020.4.0 was used to estimate emissions from on-site construction activity, construction vehicle trips, and evaporative emissions. The project land use types and size, and anticipated construction schedule were input to CalEEMod. The CARB EMission FACtors 2021 (EMFAC2021) model was used to predict emissions from construction traffic, which includes worker travel, vendor trucks, and haul trucks.[8] The CalEEMod model output along with construction inputs are included in *Attachment 2* and EMFAC2021 vehicle emissions modeling outputs are included in *Attachment 3*.

CalEEMod Modeling

Land Use Inputs

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

Table 2. Summary of Project Land Use Inputs

Project Land Uses	Size	Units	Square Feet (sf)	Acreage
Research & Development	295	1,000 sqft	295,000	1.89
Enclosed Parking with Elevator	350	Parking Space	156,399	
Other Asphalt Surfaces	0.5	Acre	21,780	
City Park	0.5	Acre	21,780	

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-

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

site activity includes worker, hauling, and vendor traffic. The construction build-out scenario, including equipment list and schedule, were provided by the applicant. The applicant also provided other information such as hauling quantities, asphalt trips, and concrete trips.

The CalEEMod construction information 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 set to the CalEEMod default for each phase. The construction schedule assumed that the earliest possible start date would be February 2022 and would be built out over a period of approximately 28 months, or 582 construction workdays. The earliest year of full operation was assumed to be 2025.

Construction Truck Traffic Emissions

Construction would produce traffic in the form of worker trips and truck traffic. The traffic-related emissions are based on worker and vendor trip estimates produced by CalEEMod and haul trips that were computed based on the estimate of demolition material to be exported, soil material imported and/or exported to the site, and the estimate of cement and asphalt truck trips. Demolition was modeled to remove 112 tons of pavement. The modeling assumed 134,016 cy of soil hauling of material for import and export. There would be import of 200 cy of asphalt. 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 cement deliveries were provided for the project and converted to total one-way trips, assuming two trips per delivery. Asphalt trucks were assumed to carry 10 cy per delivered load, or 40 truckloads.

The latest version of the CalEEMod model is based on the older version of the CARB EMFAC2017 motor vehicle emission factor model. This model has been superseded by the EMFAC2021 model; however, CalEEMod has not been updated to include EMFAC2021. Therefore, the construction traffic information was combined with EMFAC2021 motor vehicle emissions factors. EMFAC2021 provides aggregate emission rates in grams per mile for each vehicle type. The vehicle mix for this study was based on CalEEMod default assumptions, where worker trips are assumed to be comprised of light-duty autos (EMFAC category LDA) and light duty trucks (EMFAC category LDT1and 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 (soil import/export). Each trip was assumed to include an idle time of 5 minutes. Emissions associated with vehicle starts were also included. On road emissions in San Mateo County for 2022 - 2024 were used in these calculations. Table 3 provides the traffic inputs that were combined with the EMFAC2021 emission database to compute vehicle emissions.

Table 3. Construction Traffic Data Used for EMFAC2021 Model Runs

CalEEMod Run/Land Uses and Construction Phase	Trips by Trip Type			Notes
	Total Worker[1]	Total Vendor[1]	Total Haul[2]	
Vehicle mix[1]	50% LDA 25% LDT1 25% LDT2	50% MHDT 50% HHDT	100% HHDT	
Trip Length (miles)	10.8	7.3	20.0	CalEEMod default distance with 5-min truck idle time.
Demolition	40	-	11	112 ton pavement demolition. CalEEMod default worker trips.
Site Preparation	40	-	-	CalEEMod default worker trips.
Soldier Piles/Micropiles	4,300	1,950	-	CalEEMod default worker and vendor trips.
Dewatering	17,612	-	-	CalEEMod default worker trips.
Trenching/Foundation	700	-	-	CalEEMod default worker trips.
Soil Remediation	240	-	9,502	76,016-cy soil export. CalEEMod default worker trips.
Grading	720	-	7,250	58,000-cy soil export. CalEEMod default worker trips.
Building Construction	24,080	10,920	-	CalEEMod default worker and vendor trips.
Building Interior	4,624	-	-	CalEEMod default worker trips
Paving/Landscaping	585	-	40	200-cy asphalt. CalEEMod default worker trips.

Notes: [1] Based on 2022 - 2024 EMFAC2021 light-duty vehicle fleet mix for San Mateo County.
[2] Includes demolition and grading trips estimated by CalEEMod based on amount of material to be removed. Asphalt trips estimated based on data provided by the applicant.

Summary of Computed Construction Period Emissions

Average daily emissions were annualized for each year of construction by dividing the annual construction emissions by the number of active construction workdays 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	1.06	2.90	0.14	0.12
2023	2.18	1.92	0.10	0.07
2024	0.42	0.32	0.02	0.01
Average Daily Construction Emissions Per Year (pounds/day)				
2022 (233 construction workdays)	9.13	24.91	1.23	1.03
2023 (261 construction workdays)	16.67	14.72	0.73	0.57
2024 (89 construction workdays)	9.41	7.28	0.38	0.21
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. *Mitigation Measure AQ-1 would implement BAAQMD-recommended best management practices.*

Mitigation Measure AQ-1: Include measures to control dust and exhaust during construction.

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

1. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.

2. All haul trucks transporting soil, sand, or other loose material off-site shall be covered.

3. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.

4. All vehicle speeds on unpaved roads shall be limited to 15 miles per hour (mph).

5. All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.

6. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.

7. All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.

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

Effectiveness of Recommended Measure AQ-1

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

Operational Period Emissions

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

CalEEMod Inputs

Land Uses

The project land uses were input to CalEEMod as described above for the construction period modeling.

Model Year

Emissions associated with vehicle travel depend on the year of analysis because emission control technology requirements are phased-in over time. Therefore, the earlier the year analyzed in the model, the higher the emission rates utilized by CalEEMod. The earliest year of full 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. Project-specific traffic

trip generation estimates were provided for this assessment.[9] The project would produce approximately 2,159 net daily trips when considering the *TDM Plan Reduction* adjustments applied in the traffic analysis. The daily trip generation was calculated using the size of the project and the adjusted total automobile trips. The Saturday and Sunday trip rates were adjusted by multiplying the ratio of the CalEEMod default rates for Saturday and Sunday trips to the default weekday rate with the project-specific daily weekday trip rate. The default trip lengths and trip types specified by CalEEMod were used.

EMFAC2021 Adjustment

The vehicle emission factors and fleet mix used in CalEEMod are based on EMFAC2017, which is an older CARB emission inventory for on road and off road mobile sources. Since the release of CalEEMod Version 2020.4.0, new emission factors have been produced by CARB. EMFAC2021 became available for use in January 2021. It includes the latest data on California's car and truck fleets and travel activity. The CalEEMod vehicle emission factors and fleet mix were updated with the emission rates and fleet mix from EMFAC2021, which were adjusted with the CARB EMFAC off-model adjustment factors. On road emission rates from 2022 San Mateo County were used (See *Attachment 3*). More details about the updates in emissions calculation methodologies and data are available in the EMFAC2021 Technical Support Document.[10]

Energy

GHG emissions modeling includes those indirect emissions from electricity consumption. The model has a default rate of 0 pounds of CO_2 per megawatt of electricity produced, which is based on Peninsula Clean Energy's 2019 emissions rate. There would be no natural gas usage as the City prohibits natural gas usage from new developments.

Project Generator

The project would include a diesel-fired emergency generator to provide 2,800-kilowatts (kW). It is assumed the generator would be powered by a 3,750 horsepower (hp) engine. This generator would be tested periodically and power the buildings in the event of a power failure. For modeling purposes, it was assumed that the generator would be operated primarily for testing and maintenance purposes. CARB and BAAQMD requirements limit these engine operations to 50 hours each per year of non-emergency operation. During testing periods, the engine would typically be run for less than one hour. The engine would be required to meet CARB and EPA emission standards and consume commercially available California low-sulfur diesel fuel. Additionally, the generator would have to meet BAAQMD BACT requirements for IC Engine-Compression Ignition: Stationary Emergency, non-Agricultural, non-direct drive fire pump sources. Based on the size of the proposed generator (greater than 1,000-hp), these include emission limits similar to U.S. EPA Tier 4 engines. The generator's emissions, including BACT engine requirements, were modeled using CalEEMod.

[9] Hexagon Transportation Consultants. 2021. *Trip Generation Estimates for an Office/ Research & Development Center at 580 Dubuque Avenue in South San Francisco, California*. July 30.
[10] See CARB 2021: https://ww2.arb.ca.gov/our-work/programs/mobile-source-emissions-inventory/road-documentation/msei-modeling-tools-emfac

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 since the project site would not send wastewater to septic tanks or facultative lagoons.

Existing Uses

The existing site is undeveloped, so an existing use CalEEMod run was not created.

Summary of Computed Operational Period Emissions

Annual emissions were predicted using CalEEMod. The daily emissions were calculated assuming 365 days of operation. Table 5 shows average daily emissions of ROG, NO_X, total PM_{10}, and total $PM_{2.5}$ during operation of the project. The operational period emissions would not exceed the BAAQMD significance thresholds. Table 5 also shows how emissions are affected when current traffic from Petaluma customers at other Home Depot stores are included in the modeling.

Table 5. Operational Period Emissions

Scenario	ROG	NOx	PM_{10}	$PM_{2.5}$
2025 Project Operational Emissions (*tons/year*)	2.34	1.60	1.42	0.40
BAAQMD Thresholds (tons /year)	*10 tons*	*10 tons*	*15 tons*	*10 tons*
Exceed Thresholds?	No	No	No	No
Total (lbs./day)	12.81	8.74	7.80	2.18
BAAQMD Thresholds (lbs./day)	*54 lbs.*	*54 lbs.*	*82 lbs.*	*54 lbs.*
Exceed Threshold?	No	No	No	No

Notes: [1] Assumes 365-day operation.

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

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

Project construction activity would generate dust and equipment exhaust that would affect nearby sensitive receptors. The project would include the installation of an emergency generator powered by a diesel engine. Traffic generated by the project would consist of mostly light-duty gasoline-powered 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 are addressed by predicting increased lifetime 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, 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,[11] 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 values 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 the existing residences to the northwest, west, and southwest of the 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 Health Risk from the Project

Construction equipment and associated heavy-duty truck traffic generates diesel exhaust, which is a known TAC. These exhaust emissions pose health risks for sensitive receptors such as surrounding residents. The primary community risk impact issues 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 $PM_{2.5}$.[12] This assessment included dispersion modeling to predict the offsite concentrations resulting from project construction, so that lifetime cancer risks and non-cancer health effects could be evaluated.

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

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

Construction Emissions

The CalEEMod model and EMFAC2021 emissions 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 as 0.18 tons (363 pounds). The on-road emissions are a result of haul truck travel during grading activities, worker travel, and vendor deliveries during construction. A trip length of one mile was used to represent vehicle travel while at or near the construction site. It was assumed that these emissions from on-road vehicles traveling at or near the site would occur at the construction site. Fugitive $PM_{2.5}$ dust emissions were calculated by CalEEMod as 0.09 tons (189 pounds) for the overall construction period.

Dispersion Modeling

The U.S. EPA AERMOD dispersion model was used to predict concentrations of DPM and $PM_{2.5}$ concentrations at sensitive receptors 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.[13] Emission sources for the construction site were grouped into two categories: exhaust emissions of DPM and fugitive $PM_{2.5}$ dust emissions.

Construction Sources

To represent the construction equipment exhaust emissions, an area source emission release height of 20 feet (6 meters) was used for the area sources.[14] The release height incorporates both the physical release height from the construction equipment (i.e., the height of the exhaust pipe) and plume rise after it leaves the exhaust pipe. Plume rise is due to both the high temperature of the exhaust and the high velocity of the exhaust gas. It should be noted that when modeling an area source, plume rise is not calculated by the AERMOD dispersion model as it would do for a point source (exhaust stack). Therefore, the release height from an area source used to represent emissions from sources with plume rise, such as construction equipment, should be based on the height the exhaust plume is expected to achieve, not just the height of the top of the exhaust pipe.

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.

[13] Bay Area Air Quality Management District (BAAQMD), 2012, *Recommended Methods for Screening and Modeling Local Risks and Hazards, Version 3.0.* May.
[14] California Air Resource Board, 2007. *Proposed Regulation for In-Use Off-Road Diesel Vehicles, Appendix D: Health Risk Methodology.* April. Web: https://ww3.arb.ca.gov/regact/2007/ordiesl07/ordiesl07.htm

AERMOD Inputs and Meteorological Data

The modeling used a five-year data set (2013 - 2017) of hourly meteorological data from the San Francisco International Airport was used with the AERMOD model. Construction emissions were modeled as occurring Monday through Friday between 7:00 a.m. to 3:30 p.m., when the majority of construction activity is expected to occur according to the applicant. Annual DPM and $PM_{2.5}$ concentrations from construction activities during the 2022-2024 period were calculated using the model. DPM and $PM_{2.5}$ concentrations were calculated at nearby sensitive receptors. Receptor heights of 5 feet (1.5 meters), 15 feet (4.5 meters), and 25 feet (7.6 meters) were used to represent the breathing height on the first, second, and third floor of nearby single and multi-family residences.[15]

Summary of Construction Community Risk Impacts

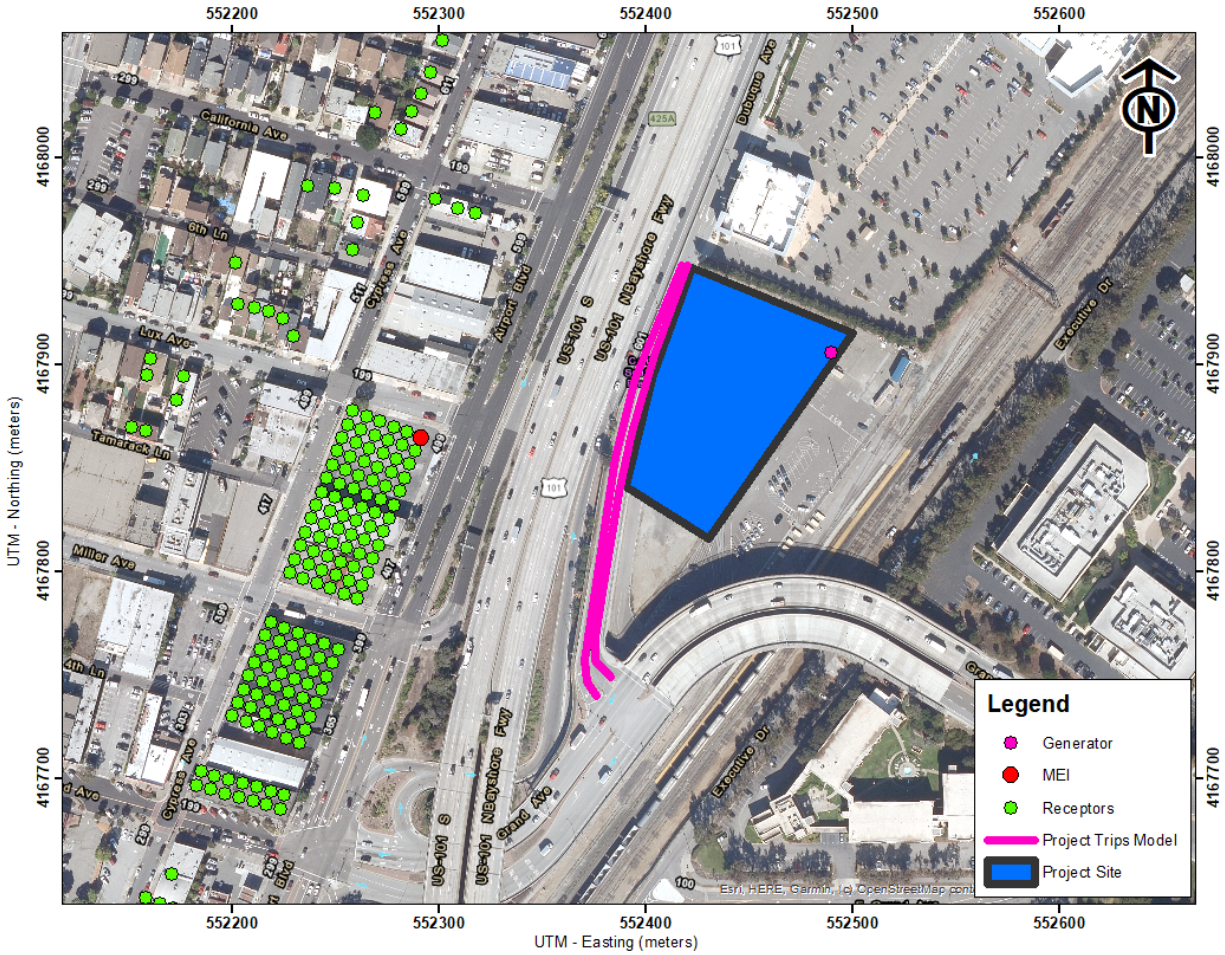
The maximum increased cancer risks were calculated using the modeled TAC concentrations combined with the Office of Environmental Health Hazard Assessment (OEHHA) guidance for age sensitivity factors and exposure parameters as recommended by BAAQMD (see *Attachment 1)*. Non-cancer health hazards and maximum $PM_{2.5}$ concentrations were also calculated and identified. Age-sensitivity factors reflect the greater sensitivity of infants and small children to cancer causing TACs. Third trimester, infant, child, and adult exposures were assumed to occur at all residences during the entire construction period.

The maximum modeled annual $PM_{2.5}$ concentration was calculated based on combined exhaust and fugitive concentrations. The maximum computed HI value 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 (as shown in Figure 1) to find the maximally exposed individuals (MEI). Results of this assessment indicated that the construction MEI was located on the third floor (25 feet above ground) of a multi-family residential complex west of the project site. Table 6 summarizes the maximum cancer risks, $PM_{2.5}$ concentrations, and health hazard indexes for project related construction activities affecting the construction MEI. *Attachment 4* to this report includes the emission calculations used for the construction area source modeling and the cancer risk calculations.

[15] 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, Project Traffic, Project Generator, Off-Site Sensitive Receptors, and Maximum TAC Impact



Community Risks from Project Operation – Traffic and Stationary Sources

Operation of the project would have long-term emissions from mobile sources (i.e., traffic) and stationary sources (i.e., generator). 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 2,159 net daily trips.[16] Most of these trips would be from light-duty, gasoline vehicles (i.e., passenger cars). To address the added community risks, the impact from this traffic was assessed using the CT-EMFAC 2017 emissions model, AERMOD dispersion model and cancer risk calculations following BAAQMD methodology described in *Attachment 1*. Figure 1 shows the modeled roadway segment.

[16] Hexagon Transportation Consultants. 2021. *Trip Generation Estimates for an Office/ Research & Development Center at 580 Dubuque Avenue in South San Francisco, California*. July 30.

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.[17] CT-EMFAC2017 provides emission factors for mobile source criteria pollutants and TACs, including DPM. Emission processes modeled include running exhaust for DPM, $PM_{2.5}$ and total organic compounds (e.g., TOG), running evaporative losses for TOG, and tire and brake wear and fugitive road dust for $PM_{2.5}$. All $PM_{2.5}$ emissions from all vehicles were used, rather than just the $PM_{2.5}$ fraction from diesel powered vehicles, because all vehicle types (i.e., gasoline and diesel powered) produce $PM_{2.5}$. Additionally, $PM_{2.5}$ emissions from vehicle tire and brake wear and from re-entrained roadway dust were included in these emissions. DPM emissions are projected to decrease in the future and are reflected in the CT-EMFAC2017 emissions data. Inputs to the model include region (San Mateo County), type of road (major/collector), truck percentage for non-state highways in San Mateo County (3.13 percent),[18] traffic mix assigned by CT-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 analysis period. The exposure duration from roadway traffic was adjusted for 27 years of exposure (2025-2051). To estimate TAC and $PM_{2.5}$ emissions over the exposure period for calculating increased cancer risks 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, since, as discussed above, overall vehicle emissions, and in particular diesel truck emissions will decrease in the future.

Traffic Dispersion Modeling Inputs

A conservative analysis was conducted based on project driveway locations where all project traffic emissions from on- and near-site travel were assumed to be entirely along Dubuque Avenue. The project's trip generation provided by the traffic consultant of 2,159 net daily trips was used to assess project traffic impacts. [19] The average hourly traffic distributions for San Mateo County roadways were developed using the EMFAC model,[20] which were then applied to the trip volumes to obtain estimated hourly traffic volumes and emissions for the roadways. For all hours of the day, the average speed of 30 mph on Dubuque Avenue was assumed for all vehicles based on posted speed limit signs on the roadway.

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[17] Note that Caltrans has not yet updated their version of EMFAC to incorporate EMFAC2021 emission rates for traffic modeling studies.

[18] 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

[19] Hexagon Transportation Consultants. 2021. *Trip Generation Estimates for an Office/ Research & Development Center at 580 Dubuque Avenue in South San Francisco, California*. July 30.

[20] The Burden output from EMFAC2007, a previous version of CARB's EMFAC model, was used for this since the current web-based version of EMFAC2021 does not include Burden type output with hour by hour traffic volume information.

Dispersion Modeling

Operational traffic roadway travel emissions were modeled with the AERMOD model using a series of adjacent volume sources along a line (line volume sources) to represent traffic emissions on the roadway segment where all of the project traffic would occur. Five years (2013-2017) of hourly meteorological data from the San Francisco International 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 25 feet (7.6 meter) used for the construction health risk modeling at the MEI location.

Figure 1 shows the project roadway segments modeled and maximum receptor location used in the modeling. Table 6 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 Generator

The project proposes to include a diesel-fired emergency generator along the northeast corner of the project site. Site plans show a designated area in that corner of the project site for the generator. Therefore, it was assumed that the generator's emissions would be released 10 feet above the ground. This generator would be 2,800-kW powered by a 3,750-HP diesel engine.

Operation of a diesel generator would be a source of TAC emissions. The generator would be operated for testing and maintenance purposes, with a maximum of 50 hours per year of non-emergency operation under normal conditions. During testing periods, the engine would typically be run for less than one hour under light engine loads. The generator engines would be required to meet EPA emission standards and consume commercially available low sulfur diesel fuel. Additionally, the generators would have to meet BAAQMD BACT requirements for IC Engine-Compression Ignition: Stationary Emergency, non-Agricultural, non-direct drive fire pump sources. Based on the size of the proposed generator, these include emission limits similar to U.S. EPA Tier 4 engines. The emissions from the operation of the generators were calculated using the CalEEMod model.

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

To obtain an estimate of potential cancer risks and $PM_{2.5}$ impacts from operation of the emergency generator, the U.S. EPA AERMOD dispersion model was used to calculate the maximum annual DPM concentration at off-site sensitive receptor locations. The same receptors, breathing heights, and BAAQMD San Francisco International Airport meteorological data used in the construction dispersion modeling were used for the generator model. Stack parameters for modeling the generator were either based on project-specific generator parameters (i.e., engine size) or based on BAAQMD default parameters (exhaust gas flowrate, stack height, exhaust gas temperature, and stack diameter) for stand-by diesel generators if that project-specific information were not available.[21] Annual average DPM and $PM_{2.5}$ concentrations were modeled assuming that generator testing could occur at any time of the day (24 hours per day, 365 days per year).

To calculate the increased cancer risk from the generator at the MEI, the exposure duration was adjusted for 27 years of exposure for the maximum receptor. Table 6 lists the community risks from stand-by diesel generator at the location of the MEI. The emissions and health risk calculations for the proposed generators are included in *Attachment 4*.

Community Risks of all Project TAC Sources at Project MEI

The cumulative risk impacts from a project are the combination of construction and operation sources. These sources include on-site construction activity, project generator, and increased traffic from the project. The project impact is computed by adding the construction cancer risk to the increased cancer risk for the project operational conditions for the roadway, generator, and operational traffic at the MEI.

For this project, the sensitive receptor identified in Figure 1 as the construction MEI is also the project MEI. Sensitive receptors could be present at this site for up to 30 years. At this location, the MEI would be exposed to 3 years of construction cancer risks and 27 years of operational (includes traffic, stand-by generator) cancer risks. The cancer risks from construction and operation of the project were summed together. Unlike, the increased maximum cancer risk, the annual $PM_{2.5}$ concentration and HI risks are not additive but based on an annual maximum risk for the entirety of the project.

Project risk impacts are shown in Table 6. The unmitigated maximum cancer risks, annual $PM_{2.5}$ concentration, and HI from construction and operational activities at the project MEI location would not exceed the BAAQMD single-source significance thresholds.

[21] Bay Area Air Quality Management District, San Francisco Department of Public Health, and San Francisco Planning Department, 2012. *The San Francisco Community Risk Reduction Plan: Technical Support Document,* BAAQMD, December. Web: https://www.gsweventcenter.com/Appeal_Response_References/2012_1201_BAAQMD.pdf

Table 6. Project Health Risk Impacts at the Off-site MEI

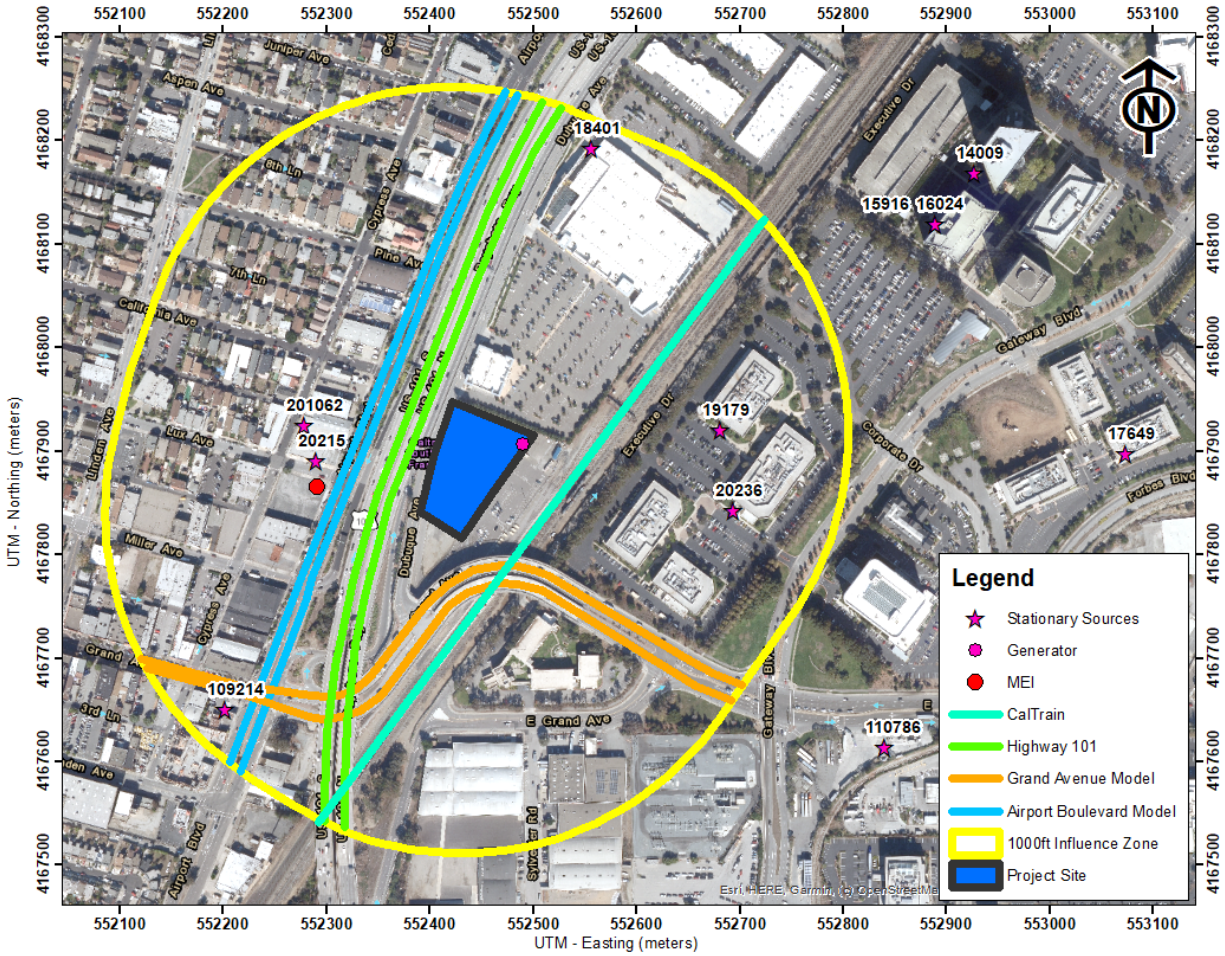
Source	Cancer Risk (per million)	Annual $PM_{2.5}$ ($\mu g/m^3$)	Hazard Index
Project Construction (Years 0 -3) Unmitigated	8.41 (infant)	0.06	<0.01
Project Generator (2,800kW, 3,750hp diesel-fired emergency generator, 50 hours/year operation) (Years 4 – 30)	0.43	<0.01	<0.01
Project Traffic (1/2-mile on-site distance) (Years 4 – 30)	0.04	<0.01	<0.01
Total Project (Construction + Operation Years 0-30) Unmitigated	8.88 (infant)	0.06	<0.01
BAAQMD Single-Source Threshold	***10***	***0.3***	***1.0***
Exceed Threshold? Unmitigated	*No*	*No*	*No*

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, highways, busy surface streets, and stationary sources identified by BAAQMD.

A review of the project area and based on provided traffic information indicated that two roadways, Airport Boulevard and Grand Avenue, within the influence area would have traffic exceeding 10,000 vehicles per day. A review of BAAQMD's stationary source geographic information systems (GIS) map tool identified eleven stationary sources with the potential to affect the project site and MEI. Figure 2 shows the project area included within the influence area and the location of the MEI. 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 & Railways – U.S. Highway 101, CalTrain Zone 1

The project MEI is approximately 150 feet west of U.S. Highway 101 and approximately 600 feet northwest of CalTrain Zone 1. Screening data reported by BAAQMD for highways and railways were incorporated into this analysis. BAAQMD provided raster files with cancer risk and $PM_{2.5}$ values for all highways/freeways, 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. The files incorporate AADT for the highway using EMFAC2014 data for fleet mix and include the OEHHA 2015 factor. These raster files were used to screen Highway 101 and CalTrain Zone 1 risks and hazards upon the MEI. The freeway and railway screening level impacts are listed in Table 7 and included in *Attachment 5*. Note that the cancer risk value is not adjusted for age sensitivity or exposure duration. It is conservatively higher than adjusted cancer risk values. Refined modeling of the highway and railway 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.

Local Roadways – Airport Boulevard & Grand Avenue

A refined analysis of potential health impacts from vehicle traffic on Airport Boulevard and Grand Avenue was conducted. The refined analysis involved predicting emissions for the traffic volume and mix of vehicle types on the roadway near the project site and using an atmospheric dispersion model to predict exposure to TACs. The associated cancer risks are then computed based on the modeled exposures. *Attachment 1* includes a description of how community risk impacts, including cancer risk are computed.

Emission Rates

The development of roadway emissions for traffic on Airport Boulevard and Grand Avenue was done in the same manner as the project roadway emissions above using CT-EMFAC2017. Inputs to the model include region (San Mateo County), type of road (major/collector), truck percentage for non-state highways in San Mateo County (3.13 percent),[22] traffic mix assigned by CT-EMFAC2017 for the county, year of analysis (2022 – construction start year), and season (annual).

To estimate TAC and $PM_{2.5}$ emissions over the 30-year exposure period used for calculating the increased cancer risks for sensitive receptors at the MEI and project site, the CT-EMFAC2017 model was used to develop vehicle emission factors for the year 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.

[22] Bay Area Air Quality Management District, 2012, *Recommended Methods for Screening and Modeling Local Risks and Hazards, Version 3.0.* May. Web: https://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/risk-modeling-approach-may-2012.pdf?la=en

The average daily traffic (ADT) for Airport Boulevard was calculated based on traffic data provided in the City of South San Francisco's Downtown Station Area Specific Plan Environmental Impact Report.[23] The estimated ADT on Airport Boulevard was 27,092 vehicles, and 34,134 vehicles on Grand Avenue. Average hourly traffic distributions for San Mateo County roadways were developed using the EMFAC model,[24] which were then applied to the ADT volumes to obtain estimated hourly traffic volumes and emissions for the roadway. An average travel speed of 35 miles per hour (mph) on both roadways was used for all hours of the day based on posted speed limit signs on the roadway.

Dispersion Modeling

Dispersion modeling of TAC and $PM_{2.5}$ emissions was conducted using the EPA AERMOD air quality dispersion model, which is recommended by the BAAQMD for this type of analysis.[25] TAC and $PM_{2.5}$ emissions from traffic on Airport Boulevard and Grand Avenue within 1,000 feet of the project site were evaluated. Vehicle traffic on the roadways was modeled using a series of adjacent volume sources along a line (line volume sources); with line segments used for each travel direction on both roadways. The same meteorological data and off-site sensitive receptors used in the previous dispersion modeling were used in the roadway modeling. Other inputs to the model included road geometry, hourly traffic emissions, and receptor locations. Annual TAC and $PM_{2.5}$ concentrations for 2022 from traffic on both roadways were calculated using the model. Concentrations were calculated at the project MEIs with receptor heights of 25 feet (7.6 meters) to represent the breathing heights of residents in the single-family homes.

Figure 2 shows the roadway segments modeled and residential receptor locations used in the modeling. Table 7 lists the risks and hazards from the roadway. The emission rates and roadway calculations used in the analysis are shown in *Attachment 5*.

BAAQMD Permitted Stationary Sources

Permitted stationary sources of air pollution near the project site were identified using BAAQMD's *Permitted Stationary Sources 2018* GIS website,[26] 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. Eleven sources were identified using this tool, seven generators, two auto body coating operations, and two gas dispensing facilities.

The screening level risks and hazards provided by BAAQMD for the stationary source was adjusted for distance using BAAQMD's *Distance Adjustment Multiplier Tool for Gasoline Dispending Facilities*. Community risk impacts from the stationary source upon the MEI are reported in Table 7.

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[23]City of South San Francisco, *South San Francisco Downtown Station Area Specific Plan Environmental Impact Report*, December, 2014. https://www.ssf.net/home/showpublisheddocument/6706/636483482120330000.

[24] 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.

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

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

Summary of Cumulative Health Risk Impact at Construction MEI

Table 7 reports both the project and cumulative community risk impacts at the sensitive receptors most affected by construction (i.e., the MEI). The project would not have an exceedance with respect to community risk caused by project construction activities since the maximum unmitigated cancer risk, annual $PM_{2.5}$ concentration, and HI do not exceed the BAAQMD single or cumulative-source threshold.

Table 7. Impacts from Combined Sources at Project MEI

Source		Cancer Risk (per million)	Annual $PM_{2.5}$ ($\mu g/m^3$)	Hazard Index
Project Construction & Operation	Unmitigated	8.88 (infant)	0.06	<0.01
Highway 101 BAAQMD Raster		21.09	0.44	-
CalTrain Zone 1 BAAQMD Raster		11.70	0.02	-
Airport Boulevard, ADT 27,092		1.65	0.08	<0.01
Grand Avenue, ADT 34,134		0.62	0.04	<0.01
Boston Properties (Facility ID #24795, Generators, Boilers), MEI at 1000+ feet		0.81	0.01	<0.01
Boston Properties (Facility ID #24795, Generators, Boilers), MEI at 1000+ feet		0.07	<0.01	<0.01
Genentech, Inc. (Facility ID #16024, Generators), MEI at 1000+ feet		0.11	<0.01	<0.01
Alexandria Real Estate Equities, Inc (Facility ID #17649, Generators), MEI at 1000+ feet		0.37	<0.01	<0.01
Lowe's HIW Inc (Facility ID #18401, Generators), MEI at 1000+ feet		0.38	<0.01	<0.01
MacroGenics West, Inc (Facility ID #19179, Generators), MEI at 1000+ feet		1.58	<0.01	<0.01
NOD Auto Body Shop Inc (Facility ID #20215, Auto Body Coating Operation), MEI at 100 feet		-	-	<0.01
Biotech Gateway – HCP c/o CBRE (Facility ID #20236, Generators), MEI at 1000+ feet		0.07	<0.01	<0.01
Unocal #1020 – Grand Martco Inc (Facility ID #109214, Gas Dispensing Facility), MEI at 730 feet		0.61	<0.01	<0.01
Flyers #411 (Facilty ID #110786, Gas Dispensing Facility), MEI at 1000+ feet		0.15	<0.01	<0.01
A&K Supreme Auto (Facility ID #201062, Gas Dispensing Facility), MEI at 200 feet		-	-	<0.01
Combined Sources	Unmitigated	<48.09	<0.73	<0.14
BAAQMD Cumulative Source Threshold		***100***	***0.8***	***10.0***
Exceed Threshold?	Unmitigated	*No*	*No*	*No*

GREENHOUSE GAS EMISSIONS

Setting

Gases that trap heat in the atmosphere, GHGs, regulate the earth's temperature. This phenomenon, known as the greenhouse effect, is responsible for maintaining a habitable climate. The most common GHGs are carbon dioxide (CO_2) and water vapor but there are also several others, most importantly methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). These are released into the earth's atmosphere through a variety of natural processes and human activities. Sources of GHGs are generally as follows:

- CO_2, CH_4, and N_2O are byproducts of fossil fuel combustion.
- N_2O is associated with agricultural operations such as fertilization of crops.
- CH_4 is commonly created by off-gassing from agricultural practices (e.g., keeping livestock) and landfill operations.
- Chlorofluorocarbons (CFCs) were widely used as refrigerants, propellants, and cleaning solvents but their production has been stopped by international treaty.
- HFCs are now used as a substitute for CFCs in refrigeration and cooling.
- PFCs and sulfur hexafluoride emissions are commonly created by industries such as aluminum production and semi-conductor manufacturing.

Each GHG has its own potency and effect upon the earth's energy balance. This is expressed in terms of a global warming potential (GWP), with CO_2 being assigned a value of 1 and sulfur hexafluoride being several orders of magnitude stronger. In GHG emission inventories, the weight of each gas is multiplied by its GWP and is measured in units of CO_2 equivalents (CO_2e).

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

Recent Regulatory Actions for GHG Emissions

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

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

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

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

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

As directed by AB 32, CARB has also approved a statewide GHG emissions limit. On December 6, 2007, CARB staff resolved an amount of 427 million metric tons (MMT) of CO_2e as the total statewide GHG 1990 emissions level and 2020 emissions limit. The limit is a cumulative statewide limit, not a sector- or facility-specific limit. CARB updated the future 2020 BAU annual emissions forecast, in light of the economic downturn, to 545 MMT of CO_2e. Two GHG emissions reduction measures currently enacted that were not previously included in the 2008 Scoping Plan baseline inventory were included, further reducing the baseline inventory to 507 MMT of CO_2e. Thus, an estimated reduction of 80 MMT of CO_2e is necessary to reduce statewide emissions to meet the AB 32 target by 2020.

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

In April 2015, Governor Brown signed EO B-30-15, which extended the goals of AB 32, setting a greenhouse gas emissions target at 40 percent of 1990 levels by 2030. On September 8, 2016, Governor Brown signed Senate Bill (SB) 32, which legislatively established the GHG reduction target of 40 percent of 1990 levels by 2030. In November 2017, CARB issued *California's 2017 Climate Change Scoping Plan*.[27] While the State is on track to exceed the AB 32 scoping plan 2020 targets, this plan is an update to reflect the enacted SB 32 reduction target.

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

[27] California Air Resource Board, 2017. *California's 2017 Climate Change Scoping Plan: The Strategy for Achieving California's 2030 Greenhouse Gas Targets.* November. Web: https://ww2.arb.ca.gov/sites/default/files/classic//cc/scopingplan/scoping_plan_2017.pdf

deeper GHG emissions target of 80 percent below 1990 levels by 2050, as directed in Executive Order S-3-05. The Scoping Plan outlines the suite of policy measures, regulations, planning efforts, and investments in clean technologies and infrastructure, providing a blueprint to continue driving down GHG emissions and obtain the statewide goals.

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

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

In the updated Scoping Plan, CARB recommends statewide targets of no more than 6 metric tons (MT) CO_2e per capita (statewide) by 2030 and no more than 2 metric tons CO_2e per capita by 2050. The statewide per capita targets account for all emissions sectors in the State, statewide population forecasts, and the statewide reductions necessary to achieve the 2030 statewide target under SB 32 and the longer-term State emissions reduction goal of 80 percent below 1990 levels by 2050.

Executive Order B-55-18 – Carbon Neutrality

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

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

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

traffic congestion, would be encouraged. SB 375 enhances CARB's ability to reach the AB 32 goals by directing the agency in developing regional GHG emission reduction targets to be achieved from the transportation sector for 2020 and 2035. CARB works with the metropolitan planning organizations (e.g. Association of Bay Area Governments [ABAG] and Metropolitan Transportation Commission [MTC]) to align their regional transportation, housing, and land use plans to reduce vehicle miles traveled and demonstrate the region's ability to attain its GHG reduction targets. A similar process is used to reduce transportation emissions of ozone precursor pollutants in the Bay Area.

Senate Bill 350 - Renewable Portfolio Standards

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

Senate Bill 100 – Current Renewable Portfolio Standards

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

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

The California Green Building Standards Code (CALGreen Code) is part of the California Building Standards Code under Title 24, Part 11.[28] The CALGreen Code encourages sustainable construction standards that involve planning/design, energy efficiency, water efficiency resource efficiency, and environmental quality. These green building standard codes are mandatory statewide and are applicable to residential and non-residential developments. The most recent CALGreen Code (2019 California Building Standard Code) was effective as of January 1, 2020.

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

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

systems. For nonresidential developments, it is predicted that these buildings will use 30 percent less energy due to lightening upgrades.[29]

Federal and Statewide GHG Emissions

The U.S. EPA reported that in 2018, total gross nationwide GHG emissions were 6,676.6 million metric tons (MMT) carbon dioxide equivalent (CO_2e).[30] These emissions were lower than peak levels of 7,416 MMT that were emitted in 2007. CARB updates the statewide GHG emission inventory on an annual basis where the latest inventory includes 2000 through 2017 emissions.[31] In 2017, GHG emissions from statewide emitting activities were 424 MMT. The 2017 emissions have decreased by 14 percent since peak levels in 2004 and are 7 MMT below the 1990 emissions level and the State's 2020 GHG limit. Per capita GHG emissions in California have dropped from a 2001 peak of 14.1 MT per person to 10.7 MT per person in 2017. The most recent Bay Area emission inventory was computed for the year 2011.[32] The Bay Area GHG emission were 87 MMT. As a point of comparison, statewide emissions were about 444 MMT in 2011

South San Francisco Climate Action Plan

The purpose of the City of South San Francisco's Climate Action Plan (CAP) is to demonstrate the City of South San Francisco's commitment to reduce GHG emissions while protecting the unique resources of the community. The CAP is intended to build upon existing environmental preservation, public health, and energy-saving efforts. The CAP provides goals, policies, and programs to reduce GHG emissions, adapt to climate change, and support the goals of AB 32 and SB 375. On February 13, 2014, the City adopted the CAP which follows both the State and BAAQMD CEQA guidelines of reaching a target reduction of 15% below baseline 2005 GHG emissions levels by 2020. However, the CAP does not have a specific metric ton GHG threshold for project-level construction or operation. For each project, City staff monitor the implementation of the CAP using a Development Review Checklist (Appendix E of the CAP). The checklist is provided as *Attachment 6*.

BAAQMD GHG Significance Thresholds

The BAAQMD's CEQA Air Quality Guidelines do not use quantified thresholds for projects that are in a jurisdiction with a qualified GHG reductions plan (i.e., a Climate Action Plan). The plan has to address emissions associated with the period that the project would operate (e.g., beyond year 2020). For quantified emissions, the guidelines recommended a GHG threshold of 1,100 metric tons or 4.6 metric tons (MT) per capita. These thresholds were developed based on meeting

[29] See: https://www.energy.ca.gov/sites/default/files/2020-03/Title_24_2019_Building_Standards_FAQ_ada.pdf
[30] United States Environmental Protection Agency, 2020. *Inventory of U.S. Greenhouse Gas Emissions and Sinks 1990-2018*. April. Web: https://www.epa.gov/sites/production/files/2020-04/documents/us-ghg-inventory-2020-main-text.pdf
[31] CARB. 2019. *2019 Edition, California Greenhouse Gas Emission Inventory: 2000 – 2017*. Web: https://ww3.arb.ca.gov/cc/inventory/pubs/reports/2000_2017/ghg_inventory_trends_00-17.pdf
[32] BAAQMD. 2015. *Bay Area Emissions Inventory Summary Report: Greenhouse Gases Base Year 2011*. January. Web: http://www.baaqmd.gov/~/media/files/planning-and-research/emission-inventory/by2011_ghgsummary.pdf accessed Nov. 26, 2019.

the 2020 GHG targets set in the scoping plan that addressed AB 32. Development of the project would occur beyond 2020, so a threshold that addresses a future target is appropriate.

Although BAAQMD has not published a quantified threshold for 2030 yet, this assessment uses a bright-line threshold of 660 MT CO_{2e}/year based on the GHG reduction goals of EO B-30-15. The 2030 bright-line threshold is a 40 percent reduction of the 2020 1,100 MT CO_{2e}/year threshold. Evidence published by the State indicates the AB 32 goal of reducing statewide GHG emissions to 1990 levels was met prior to 2020. Current State plans are to further reduce emissions to 40% below 1990 levels by 2030. Assuming statewide emissions are at 1990 levels or lower in 2020, it would be logical to reduce the BAAQMD-recommended threshold for meeting the AB 32 threshold by 40% to develop a threshold for 2030.

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

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

CalEEMod Modeling

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

Service Population Emissions

The project service population is based on the number of employees and is estimated based on 350 square feet per employee. For this project, 350 square feet per employee results in a service population of 842 employees.

Trip Generation Rates

CalEEMod allows the user to enter specific vehicle trip generation rates. Therefore, the project-specific daily trip generation rate for the project was provided by the applicant.[33] Saturday and Sunday trip rates were assumed to be the weekday rate adjusted by multiplying the ratio of the CalEEMod default rates for Saturday and Sunday trips to the default weekday rate. The default trip lengths and trip types specified by CalEEMod were used.

[33] Hexagon Transportation Consultants, Inc., Attachment: *580 Dubuque Avenue Trip generation Memo 073021.pdf*

Construction GHG Emissions

GHG emissions associated with construction were computed at 1,662 MT of CO_2e for the total construction period. These are the emissions from on-site operation of construction equipment, vendor and hauling truck trips, and worker trips. Neither the City nor BAAQMD have an adopted threshold of significance for construction-related GHG emissions, though BAAQMD recommends quantifying emissions and disclosing that GHG emissions would occur during construction. BAAQMD also encourages the incorporation of best management practices to reduce GHG emissions during construction where feasible and applicable.

Operational GHG Emissions

The CalEEMod model, along with the project vehicle trip generation rates, was used to estimate daily emissions associated with operation of the fully-developed site under the proposed project. The applicant provided annual electricity usage, water usage, and solid waste information. This information was included in the operational CalEEMod model run. As shown in Table 9, net annual GHG emissions resulting from operation of the proposed project are predicted to be 1,976 metric tons (MT) of CO_2e in 2025 and 1,880 MT of CO_2e in 2030. The service population emission for the year 2024 and 2030 are predicted to be 2.35 and 2.23 MT/CO_{2e}/year/service population, respectively.

The project is subject to the City of South San Francisco's CAP to meet AB 32 requirements. The implementation of *Mitigation Measure GHG-1*, which requires the project to use the CAP checklist, would demonstrate the project's consistency with the City's CAP.

Table 9. Annual Project GHG Emissions (CO_2e) in Metric Tons

Source Category	Proposed Project in 2025	Proposed Project in 2030
Area	0.01	0.01
Energy Consumption	389.09	389.09
Mobile	1,377,99	1,281.99
Solid Waste Generation	11.30	11.30
Water Usage[3]	197.44	197.44
Total	1,975.82	1,879.82
Significance Threshold	***660 MT CO_2e/year***	***660 MT CO_2e/year***
Exceeds bright-line threshold?	*Yes*	*Yes*
Service Population Emissions (MT CO_{2e}/year/service population	2.35	2.23
Exceeds service population threshold?	*No*	*No*

Mitigation Measure GHG-1*:* South San Francisco's CAP Appendix E New Development Checklist or other qualified GHG program in effect, shall be submitted along with any application for the project, demonstrating compliance with all mandatory requirements of the South San Francisco's CAP Appendix E New Development Checklist, except where an item is not applicable or where a suitable substitution is provided.

Impact GHG-2: Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

The proposed project would not conflict or otherwise interfere with the statewide GHG reduction measures identified in CARB's Scoping Plan nor would the project conflict with SB 100 goals.

Supporting Documentation

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

Attachment 2 includes the CalEEMod output for project construction and operational criteria air pollutant and GHG emissions. The operational outputs for 2030 uses are also included in this attachment. Also included are any modeling assumptions.

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

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

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

Attachment 6 includes the checklist from the City of South San Francisco Climate Action Plan.

Attachment 1: 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.[34] 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.[35] 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.[36] Exposure parameters from the OEHHA guidelines and the recent BAAQMD HRA Guidelines were used in this evaluation.

Cancer Risk

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

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

[34] 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.
[35] CARB, 2015. *Risk Management Guidance for Stationary Sources of Air Toxics*. July 23.
[36] BAAQMD, 2016. *BAAQMD Air Toxics NSR Program Health Risk Assessment (HRA) Guidelines*. December 2016.

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

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 $(mg/kg\text{-}day)^{-1}$		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*
* An 8-hour breathing rate (8HrBR) is used for worker and school child exposures.					

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 Modeling Inputs and Outputs

Air Quality/Noise Construction Information Data Request

Project Name: **580 Dubuque R&D**

Complete ALL Portions in Yellow

See Equipment Type TAB for type, horsepower and load factor

Project Size

0 Dwelling Units — 1.89 total project acres disturbed

0 s.f. residential

0 s.f. retail

273,971 s.f. office/commercial - R&D

0 s.f. other, specify:

156,399 s.f. parking garage — 350 spaces

0 s.f. parking structure — 0 spaces

Construction Hours 7 am to 3:30 pm

Pile Driving - YES FOR SHORING ACTIVITIES & MICROPILES AT BOTTOM OF PARKIN

Project include on-site GENERATOR during project - YES GENERATOR DURING AS BACKUP POWER

IF YES (if BOTH separate values) -->

Kilowatts/Horsepower: 2800kW

Fuel Type: DIESEL

Location in project (Plans Desired if Available):
LOCATION AT GRADE ELEVATION

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

Quantity	Description	HP	Load Factor	Hours/day	Total Work Days	Avg. Hours per day	HP Annual Hours	Comments
	Demolition	**Start Date:**	**2/10/2022**	**Total phase:**	**5**			**Overall Import/Export Volumes**
		End Date:	**2/16/2022**					
1	Concrete/Industrial Saws	81	0.73	8	5	8	2365	**Demolition Volume**
1	Excavators	158	0.38	8	5	8	2402	Square footage of buildings to be demolished
0	Rubber-Tired Dozers	247	0.4	8	5	8	0	(*or* total tons to be hauled)
1	Tractors/Loaders/Backhoes	97	0.37	8	5	8	1436	**2** square feet or
	Other Equipment?							**?** Hauling volume (tons)
								Any pavement demolished and hauled - 112TONS
	Site Preparation	**Start Date:**	**4/22/2022**	**Total phase:**	**4**			
		End Date:	**4/27/2022**					
1	Graders	187	0.41	8	4	8	2453	
1	Rubber Tired Dozers	247	0.4	8	4	8	3162	
2	Tractors/Loaders/Backhoes	97	0.37	8	4	8	2297	
	Other Equipment?							
	Grading / Excavation	**Start Date:**	**5/27/2022**	**Total phase:**	**48**			
		End Date:	**8/2/2022**					**Soil Hauling Volume**
2	Excavators	158	0.38	8	48	8	46111	Export volume = **58,000** cubic yard
1	Graders	187	0.41	8	48	8	29441	Import volume = **0** cubic yards
1	Rubber Tired Dozers	247	0.4	8	48	8	37939	
0	Concrete/Industrial Saws	81	0.73	8	48	8	0	
2	Tractors/Loaders/Backhoes	97	0.37	8	48	8	27564	
	Other Equipment?							
	Trenching/Foundation	**Start Date:**	**4/28/2022**	**Total phase:**	**140**			
		End Date:	**11/9/2022**					
1	Tractor/Loader/Backhoe	97	0.37	6	140	6	30148	
1	Excavators	158	0.38	6	140	6	50434	
	Other Equipment?							
	Building - Exterior	**Start Date:**	**7/14/2023**	**Total phase:**	**140**			**Cement Trucks -NONE FOR EXTERIOR**
		End Date:	**1/25/2024**					
1	Cranes	231	0.29	10	140	10	93786	ELECTRIC
1	Forklifts	89	0.2	8	140	8	19936	DIESEL
0	Generator Sets	84	0.74	8	140	8	0	TEMPORARY POWER LINES
0	Tractors/Loaders/Backhoes	97	0.37	7	140	7	0	
1	Welders	46	0.45	8	140	8	23184	
	Other Equipment?							
	Building - Interior/Architectural Coating	**Start Date:**	**8/10/2023**	**Total phase:**	**136**			
		End Date:	**2/15/2024**					
1	Air Compressors	78	0.48	8	136	8	40735	
2	Aerial Lift	62	0.31	8	136	8	41823	
	Other Equipment?							
	Paving	**Start Date:**	**3/4/2024**	**Total phase:**	**45**			
		Start Date:	**5/3/2024**					
1	Cement and Mortar Mixers	9	0.56	8	2	0.4	81	
1	Pavers	130	0.42	8	2	0.4	874	**Asphalt - 200 CUYD**
1	Paving Equipment	132	0.36	8	2	0.4	760	
1	Rollers	80	0.38	8	40	7.1	9728	
1	Tractors/Loaders/Backhoes	97	0.37	8	40	7.1	11485	
	Other Equipment?							
	Additional Phases - Soil Remediation	**Start Date:**	**5/27/2022**	**Total phase:**	**48**			
		Start Date:	**8/2/2022**					
1	*Soil Remdiation - Excavators*	158	0.38	8	48	8	23055	EXPORT - 76,016 cu. yards clean and Class I Class II. IMPORT - 0 cu. yards
1	Soil Remdiation - Tractor/Loader/Backhoe	97	0.37	8	48	8	13782	
						0	0	
						0	0	
						0	0	
	Additional Phases - Soldier Piles/Micropiles	**Start Date:**	**4/22/2022**	**Total phase:**	**25**			
		Start Date:	**5/26/2022**					
1	*Shoring Soldier Piles/Micropiles - Crane*	231	0.29	10	25	10	16748	
1	*Shoring Soldier Piles/Micropiles - Drill Rig*	221	0.50	10	25	10	27625	
1	*Shoring Soldier Piles/Micropiles - Forklift*	89	0.20	10	25	10	4450	
1	*Shoring Soldier Piles/Micropiles - Temporary Generator for Dewatering*	84	0.74	24	540	518.4	805594	Temp Generator for 18Months 24hrs/day
						0	0	
						0	0	
						0	0	

Equipment types listed in "Equipment Types" worksheet tab.

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

Complete one sheet for each project component

It is assumed that water trucks would be used during grading

Add or subtract phases and equipment, as appropriate

Modify horsepower or load factor, as appropriate

Construction Criteria Air Pollutants						
Unmitigated	ROG	NOX	PM10 Exhaust	PM2.5 Exhaust	**CO2e**	
Year	Tons				MT	
Construction Equipment						
2022	1.02	2.22	0.11	0.11	388.97	
2023	2.13	1.25	0.06	0.06	259.55	
2024	0.41	0.11	0.00	0.00	21.93	
EMFAC						
2022	0.04	0.68	0.03	0.01	401.07	
2023	0.04	0.67	0.04	0.01	442.94	
2024	0.01	0.22	0.01	0.00	147.67	
Total Construction Emissions by Year						
2022	1.06	2.90	0.14	0.12	790.04	
2023	2.18	1.92	0.10	0.07	702.49	
2024	0.42	0.32	0.02	0.01	169.60	
	Total Construction Emissions					
Tons	3.66	5.15	0.26	0.21	1662.13	
Pounds/Workdays	*Average Daily Emissions*				Workdays	
2022	9.13	24.91	1.23	1.03		**233**
2023	16.67	14.72	0.73	0.57		**261**
2024	9.41	7.28	0.38	0.21		**89**
Threshold - lbs/day	**54.0**	**54.0**	**82.0**	**54.0**		
	Total Construction Emissions					
Pounds	35.21	46.92	2.34	1.82	0.00	
Average	12.55	17.66	0.88	0.70	0.00	583.00
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	2.34	1.60	1.42	0.40		
	Existing Use Emissions					
Total	0.00	0.00	0.00	0.00		
	Net Annual Operational Emissions					
Tons/year	2.34	1.60	1.42	0.40		
Threshold - Tons/year	**10.0**	**10.0**	**15.0**	**10.0**		
	Average Daily Emissions					
Pounds Per Day	12.81	8.74	7.80	2.18		
Threshold - lbs/day	**54.0**	**54.0**	**82.0**	**54.0**		

Category	**CO2e**			
	Project	Existing	Project 2030	Existing
Area	0.01	0.00	0.01	0.00
Energy	389.09	0.00	389.09	0.00
Mobile	1377.99	0.00	1281.99	0.00
Waste	11.30	0.00	11.30	0.00
Water	197.44	0.00	197.44	0.00
TOTAL	1975.82	0.00	1879.82	0.00
Net GHG Emissions		1975.82		1879.82
Service Population	842.00			
Per Capita Emissions		2.35		2.23

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Research & Development	295.00	1000sqft	2.00	295,000.00	983
Enclosed Parking with Elevator	350.00	Space	0.00	156,399.00	0
Other Asphalt Surfaces	0.50	Acre	0.00	21,780.00	0
City Park	0.50	Acre	0.00	21,780.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	70
Climate Zone	5			**Operational Year**	2025
Utility Company	Peninsula Clean Energy				
CO2 Intensity (lb/MWhr)	0	**CH4 Intensity (lb/MWhr)**	0	**N2O Intensity (lb/MWhr)**	0

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Assume PCE

Land Use - Estimated roadway and landscaped surfaces - 1 employee/1ksf

Construction Phase - From construction worksheet

Off-road Equipment - Crane is Electric

Off-road Equipment - Based on construction worksheet

Off-road Equipment - Based on construction worksheet

Off-road Equipment - Based on construction worksheet

Off-road Equipment - Based on construction worksheet

Off-road Equipment - Based on construction worksheet

Date: 11/18/2021 9:22 AM

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Off-road Equipment - Based on construction worksheet

Off-road Equipment - Based on construction worksheet

Off-road Equipment - Based on construction worksheet - generator seperate overlapping phase

Off-road Equipment - Based on construction worksheet

Trips and VMT - All trips entered into EMFAC2021

Demolition - Based on construction worksheet

Grading - Based on construction worksheet

Vehicle Trips - Trip gen with TDM = 2159/295ksf = 7.32/1.23/0.72

Vehicle Emission Factors - Emfac2021

Construction Off-road Equipment Mitigation - All equipment t4i, BMP

Fleet Mix - Emfac2021

Stationary Sources - Emergency Generators and Fire Pumps - 2800 kw Generator = 3,753hp engine

Stationary Sources - Emergency Generators and Fire Pumps EF - Assume BAAQMD BACT= 0.5NOx 0.02PM

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	FuelType	Diesel	Electrical
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00

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tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	8.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstructionPhase	NumDays	10.00	518.00
tblConstructionPhase	NumDays	10.00	136.00
tblConstructionPhase	NumDays	200.00	25.00
tblConstructionPhase	NumDays	200.00	140.00
tblConstructionPhase	NumDays	20.00	5.00
tblConstructionPhase	NumDays	4.00	48.00
tblConstructionPhase	NumDays	10.00	45.00
tblConstructionPhase	NumDays	2.00	4.00
tblConstructionPhase	NumDays	2.00	48.00

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tblConstructionPhase	NumDaysWeek	5.00	7.00
tblFleetMix	HHD	2.0600e-003	2.5580e-003
tblFleetMix	HHD	2.0600e-003	2.5580e-003
tblFleetMix	HHD	2.0600e-003	2.5580e-003
tblFleetMix	HHD	2.0600e-003	2.5580e-003
tblFleetMix	LDA	0.47	0.45
tblFleetMix	LDA	0.47	0.45
tblFleetMix	LDA	0.47	0.45
tblFleetMix	LDA	0.47	0.45
tblFleetMix	LDT1	0.07	0.04
tblFleetMix	LDT1	0.07	0.04
tblFleetMix	LDT1	0.07	0.04
tblFleetMix	LDT1	0.07	0.04
tblFleetMix	LDT2	0.24	0.28
tblFleetMix	LDT2	0.24	0.28
tblFleetMix	LDT2	0.24	0.28
tblFleetMix	LDT2	0.24	0.28
tblFleetMix	LHD1	0.03	0.03
tblFleetMix	LHD1	0.03	0.03
tblFleetMix	LHD1	0.03	0.03
tblFleetMix	LHD1	0.03	0.03
tblFleetMix	LHD2	6.4120e-003	6.3300e-003
tblFleetMix	LHD2	6.4120e-003	6.3300e-003
tblFleetMix	LHD2	6.4120e-003	6.3300e-003
tblFleetMix	LHD2	6.4120e-003	6.3300e-003
tblFleetMix	MCY	0.03	0.02
tblFleetMix	MCY	0.03	0.02
tblFleetMix	MCY	0.03	0.02
tblFleetMix	MCY	0.03	0.02

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tblFleetMix	MDV	0.15	0.16
tblFleetMix	MDV	0.15	0.16
tblFleetMix	MDV	0.15	0.16
tblFleetMix	MDV	0.15	0.16
tblFleetMix	MH	2.6570e-003	2.0400e-003
tblFleetMix	MH	2.6570e-003	2.0400e-003
tblFleetMix	MH	2.6570e-003	2.0400e-003
tblFleetMix	MH	2.6570e-003	2.0400e-003
tblFleetMix	MHD	0.01	8.7430e-003
tblFleetMix	MHD	0.01	8.7430e-003
tblFleetMix	MHD	0.01	8.7430e-003
tblFleetMix	MHD	0.01	8.7430e-003
tblFleetMix	OBUS	1.4460e-003	2.3100e-003
tblFleetMix	OBUS	1.4460e-003	2.3100e-003
tblFleetMix	OBUS	1.4460e-003	2.3100e-003
tblFleetMix	OBUS	1.4460e-003	2.3100e-003
tblFleetMix	SBUS	4.3200e-004	4.1800e-004
tblFleetMix	SBUS	4.3200e-004	4.1800e-004
tblFleetMix	SBUS	4.3200e-004	4.1800e-004
tblFleetMix	SBUS	4.3200e-004	4.1800e-004
tblFleetMix	UBUS	5.7200e-004	7.4300e-004
tblFleetMix	UBUS	5.7200e-004	7.4300e-004
tblFleetMix	UBUS	5.7200e-004	7.4300e-004
tblFleetMix	UBUS	5.7200e-004	7.4300e-004
tblGrading	MaterialExported	0.00	58,000.00
tblGrading	MaterialExported	0.00	76,016.00
tblLandUse	LandUseSquareFeet	140,000.00	156,399.00
tblLandUse	LotAcreage	6.77	2.00
tblLandUse	LotAcreage	3.15	0.00

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tblLandUse	LotAcreage	0.50	0.00
tblLandUse	LotAcreage	0.50	0.00
tblLandUse	Population	0.00	983.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
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	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	6.00	0.40
tblOffRoadEquipment	UsageHours	6.00	10.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	6.00	10.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.40
tblOffRoadEquipment	UsageHours	8.00	0.40
tblOffRoadEquipment	UsageHours	7.00	7.10
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	8.00	7.10

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tblStationaryGeneratorsPumpsUse	HorsePowerValue	0.00	3,753.00
tblStationaryGeneratorsPumpsUse	HoursPerDay	0.00	1.00
tblStationaryGeneratorsPumpsUse	HoursPerYear	0.00	50.00
tblStationaryGeneratorsPumpsUse	NumberOfEquipment	0.00	1.00
tblTripsAndVMT	HaulingTripNumber	11.00	0.00
tblTripsAndVMT	HaulingTripNumber	9,502.00	0.00
tblTripsAndVMT	HaulingTripNumber	7,250.00	0.00
tblTripsAndVMT	VendorTripNumber	81.00	0.00
tblTripsAndVMT	VendorTripNumber	81.00	0.00
tblTripsAndVMT	WorkerTripNumber	8.00	0.00
tblTripsAndVMT	WorkerTripNumber	13.00	0.00
tblTripsAndVMT	WorkerTripNumber	10.00	0.00
tblTripsAndVMT	WorkerTripNumber	178.00	0.00
tblTripsAndVMT	WorkerTripNumber	36.00	0.00
tblTripsAndVMT	WorkerTripNumber	5.00	0.00
tblTripsAndVMT	WorkerTripNumber	5.00	0.00
tblTripsAndVMT	WorkerTripNumber	15.00	0.00
tblTripsAndVMT	WorkerTripNumber	178.00	0.00
tblTripsAndVMT	WorkerTripNumber	36.00	0.00
tblVehicleEF	HHD	0.03	0.27
tblVehicleEF	HHD	0.18	0.25
tblVehicleEF	HHD	3.0000e-006	1.0000e-006
tblVehicleEF	HHD	5.29	4.67
tblVehicleEF	HHD	0.95	1.65
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	931.63	768.77
tblVehicleEF	HHD	1,585.25	1,745.93
tblVehicleEF	HHD	0.28	0.28
tblVehicleEF	HHD	0.15	0.13

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tblVehicleEF	HHD	0.26	0.28
tblVehicleEF	HHD	3.0000e-006	1.0000e-006
tblVehicleEF	HHD	5.24	3.95
tblVehicleEF	HHD	3.05	2.50
tblVehicleEF	HHD	2.40	2.74
tblVehicleEF	HHD	3.7460e-003	3.0270e-003
tblVehicleEF	HHD	0.06	0.09
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	0.02	0.02
tblVehicleEF	HHD	2.0000e-006	4.0000e-006
tblVehicleEF	HHD	3.5840e-003	2.8900e-003
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.7190e-003	8.6260e-003
tblVehicleEF	HHD	0.02	0.02
tblVehicleEF	HHD	2.0000e-006	4.0000e-006
tblVehicleEF	HHD	4.0000e-006	5.8500e-004
tblVehicleEF	HHD	2.0300e-004	1.7500e-004
tblVehicleEF	HHD	0.36	0.29
tblVehicleEF	HHD	3.0000e-006	0.00
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	9.4000e-005	1.3050e-003
tblVehicleEF	HHD	1.4000e-005	3.0000e-006
tblVehicleEF	HHD	8.3030e-003	6.3920e-003
tblVehicleEF	HHD	0.01	0.02
tblVehicleEF	HHD	4.0000e-006	5.8500e-004
tblVehicleEF	HHD	2.0300e-004	1.7500e-004
tblVehicleEF	HHD	0.42	0.58
tblVehicleEF	HHD	3.0000e-006	0.00
tblVehicleEF	HHD	0.21	0.29

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tblVehicleEF	HHD	9.4000e-005	1.3050e-003
tblVehicleEF	HHD	1.6000e-005	3.0000e-006
tblVehicleEF	LDA	1.3630e-003	1.6200e-003
tblVehicleEF	LDA	0.04	0.06
tblVehicleEF	LDA	0.46	0.53
tblVehicleEF	LDA	2.01	2.73
tblVehicleEF	LDA	223.03	239.85
tblVehicleEF	LDA	47.59	62.52
tblVehicleEF	LDA	3.5080e-003	3.5780e-003
tblVehicleEF	LDA	0.02	0.03
tblVehicleEF	LDA	0.02	0.03
tblVehicleEF	LDA	0.15	0.21
tblVehicleEF	LDA	0.04	6.3990e-003
tblVehicleEF	LDA	1.2000e-003	1.1140e-003
tblVehicleEF	LDA	1.6180e-003	1.9130e-003
tblVehicleEF	LDA	0.02	2.2400e-003
tblVehicleEF	LDA	1.1050e-003	1.0250e-003
tblVehicleEF	LDA	1.4870e-003	1.7590e-003
tblVehicleEF	LDA	0.03	0.24
tblVehicleEF	LDA	0.08	0.07
tblVehicleEF	LDA	0.03	0.00
tblVehicleEF	LDA	5.0920e-003	6.1730e-003
tblVehicleEF	LDA	0.03	0.19
tblVehicleEF	LDA	0.17	0.27
tblVehicleEF	LDA	2.2060e-003	2.3710e-003
tblVehicleEF	LDA	4.7100e-004	6.1800e-004
tblVehicleEF	LDA	0.03	0.24
tblVehicleEF	LDA	0.08	0.07
tblVehicleEF	LDA	0.03	0.00

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tblVehicleEF	LDA	7.4000e-003	8.9940e-003
tblVehicleEF	LDA	0.03	0.19
tblVehicleEF	LDA	0.19	0.30
tblVehicleEF	LDT1	2.1260e-003	4.1000e-003
tblVehicleEF	LDT1	0.04	0.08
tblVehicleEF	LDT1	0.59	0.99
tblVehicleEF	LDT1	2.12	4.22
tblVehicleEF	LDT1	263.34	311.98
tblVehicleEF	LDT1	56.19	81.09
tblVehicleEF	LDT1	4.1590e-003	6.8480e-003
tblVehicleEF	LDT1	0.02	0.03
tblVehicleEF	LDT1	0.04	0.09
tblVehicleEF	LDT1	0.17	0.31
tblVehicleEF	LDT1	0.04	8.0170e-003
tblVehicleEF	LDT1	1.4220e-003	1.5650e-003
tblVehicleEF	LDT1	1.8860e-003	2.4740e-003
tblVehicleEF	LDT1	0.02	2.8060e-003
tblVehicleEF	LDT1	1.3090e-003	1.4400e-003
tblVehicleEF	LDT1	1.7340e-003	2.2750e-003
tblVehicleEF	LDT1	0.04	0.42
tblVehicleEF	LDT1	0.09	0.12
tblVehicleEF	LDT1	0.04	0.00
tblVehicleEF	LDT1	8.5960e-003	0.02
tblVehicleEF	LDT1	0.06	0.34
tblVehicleEF	LDT1	0.20	0.42
tblVehicleEF	LDT1	2.6060e-003	3.0840e-003
tblVehicleEF	LDT1	5.5600e-004	8.0200e-004
tblVehicleEF	LDT1	0.04	0.42
tblVehicleEF	LDT1	0.09	0.12

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tblVehicleEF	LDT1	0.04	0.00
tblVehicleEF	LDT1	0.01	0.03
tblVehicleEF	LDT1	0.06	0.34
tblVehicleEF	LDT1	0.22	0.46
tblVehicleEF	LDT2	1.9400e-003	1.9300e-003
tblVehicleEF	LDT2	0.05	0.07
tblVehicleEF	LDT2	0.56	0.60
tblVehicleEF	LDT2	2.52	3.01
tblVehicleEF	LDT2	275.26	320.59
tblVehicleEF	LDT2	59.15	81.06
tblVehicleEF	LDT2	4.2420e-003	4.4170e-003
tblVehicleEF	LDT2	0.02	0.03
tblVehicleEF	LDT2	0.04	0.04
tblVehicleEF	LDT2	0.19	0.25
tblVehicleEF	LDT2	0.04	7.6970e-003
tblVehicleEF	LDT2	1.3050e-003	1.1980e-003
tblVehicleEF	LDT2	1.6860e-003	1.9510e-003
tblVehicleEF	LDT2	0.02	2.6940e-003
tblVehicleEF	LDT2	1.2010e-003	1.1020e-003
tblVehicleEF	LDT2	1.5500e-003	1.7940e-003
tblVehicleEF	LDT2	0.03	0.19
tblVehicleEF	LDT2	0.07	0.06
tblVehicleEF	LDT2	0.04	0.00
tblVehicleEF	LDT2	7.4300e-003	7.2480e-003
tblVehicleEF	LDT2	0.05	0.14
tblVehicleEF	LDT2	0.22	0.29
tblVehicleEF	LDT2	2.7230e-003	3.1690e-003
tblVehicleEF	LDT2	5.8500e-004	8.0100e-004
tblVehicleEF	LDT2	0.03	0.19

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tblVehicleEF	LDT2	0.07	0.06
tblVehicleEF	LDT2	0.04	0.00
tblVehicleEF	LDT2	0.01	0.01
tblVehicleEF	LDT2	0.05	0.14
tblVehicleEF	LDT2	0.24	0.32
tblVehicleEF	LHD1	4.6830e-003	5.0900e-003
tblVehicleEF	LHD1	5.8360e-003	5.0980e-003
tblVehicleEF	LHD1	0.01	0.02
tblVehicleEF	LHD1	0.18	0.20
tblVehicleEF	LHD1	0.51	0.68
tblVehicleEF	LHD1	0.97	2.39
tblVehicleEF	LHD1	8.57	8.29
tblVehicleEF	LHD1	751.95	745.68
tblVehicleEF	LHD1	11.12	18.86
tblVehicleEF	LHD1	7.2100e-004	5.7300e-004
tblVehicleEF	LHD1	0.04	0.04
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	0.05	0.04
tblVehicleEF	LHD1	0.34	0.35
tblVehicleEF	LHD1	0.26	0.39
tblVehicleEF	LHD1	8.5300e-004	6.1900e-004
tblVehicleEF	LHD1	0.08	0.08
tblVehicleEF	LHD1	9.7990e-003	9.3030e-003
tblVehicleEF	LHD1	7.0500e-003	8.5920e-003
tblVehicleEF	LHD1	2.2400e-004	1.6500e-004
tblVehicleEF	LHD1	8.1600e-004	5.9200e-004
tblVehicleEF	LHD1	0.03	0.03
tblVehicleEF	LHD1	2.4500e-003	2.3260e-003
tblVehicleEF	LHD1	6.6990e-003	8.1840e-003

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tblVehicleEF	LHD1	2.0600e-004	1.5100e-004
tblVehicleEF	LHD1	1.0710e-003	0.08
tblVehicleEF	LHD1	0.05	0.02
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	6.9000e-004	0.00
tblVehicleEF	LHD1	0.07	0.06
tblVehicleEF	LHD1	0.14	0.12
tblVehicleEF	LHD1	0.05	0.09
tblVehicleEF	LHD1	8.3000e-005	8.1000e-005
tblVehicleEF	LHD1	7.3400e-003	7.2890e-003
tblVehicleEF	LHD1	1.1000e-004	1.8600e-004
tblVehicleEF	LHD1	1.0710e-003	0.08
tblVehicleEF	LHD1	0.05	0.02
tblVehicleEF	LHD1	0.03	0.03
tblVehicleEF	LHD1	6.9000e-004	0.00
tblVehicleEF	LHD1	0.09	0.07
tblVehicleEF	LHD1	0.14	0.12
tblVehicleEF	LHD1	0.06	0.10
tblVehicleEF	LHD2	2.8930e-003	2.9140e-003
tblVehicleEF	LHD2	5.4660e-003	4.9480e-003
tblVehicleEF	LHD2	5.9890e-003	0.01
tblVehicleEF	LHD2	0.14	0.14
tblVehicleEF	LHD2	0.46	0.43
tblVehicleEF	LHD2	0.57	1.33
tblVehicleEF	LHD2	13.29	13.09
tblVehicleEF	LHD2	728.51	785.97
tblVehicleEF	LHD2	7.48	10.02
tblVehicleEF	LHD2	1.6500e-003	1.5680e-003
tblVehicleEF	LHD2	0.06	0.08

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tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	0.08	0.07
tblVehicleEF	LHD2	0.37	0.47
tblVehicleEF	LHD2	0.15	0.22
tblVehicleEF	LHD2	1.4140e-003	1.3360e-003
tblVehicleEF	LHD2	0.09	0.09
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	1.2000e-004	8.0000e-005
tblVehicleEF	LHD2	1.3530e-003	1.2780e-003
tblVehicleEF	LHD2	0.04	0.03
tblVehicleEF	LHD2	2.6890e-003	2.6520e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	1.1000e-004	7.4000e-005
tblVehicleEF	LHD2	5.6800e-004	0.05
tblVehicleEF	LHD2	0.03	0.01
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	3.7300e-004	0.00
tblVehicleEF	LHD2	0.09	0.08
tblVehicleEF	LHD2	0.07	0.07
tblVehicleEF	LHD2	0.03	0.05
tblVehicleEF	LHD2	1.2700e-004	1.2600e-004
tblVehicleEF	LHD2	7.0360e-003	7.5740e-003
tblVehicleEF	LHD2	7.4000e-005	9.9000e-005
tblVehicleEF	LHD2	5.6800e-004	0.05
tblVehicleEF	LHD2	0.03	0.01
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	3.7300e-004	0.00
tblVehicleEF	LHD2	0.11	0.10

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tblVehicleEF	LHD2	0.07	0.07
tblVehicleEF	LHD2	0.03	0.06
tblVehicleEF	MCY	0.33	0.14
tblVehicleEF	MCY	0.26	0.17
tblVehicleEF	MCY	18.30	10.67
tblVehicleEF	MCY	9.27	7.69
tblVehicleEF	MCY	212.79	186.43
tblVehicleEF	MCY	59.80	44.64
tblVehicleEF	MCY	0.07	0.04
tblVehicleEF	MCY	0.02	7.1110e-003
tblVehicleEF	MCY	1.15	0.51
tblVehicleEF	MCY	0.27	0.12
tblVehicleEF	MCY	0.01	0.01
tblVehicleEF	MCY	2.1570e-003	2.0310e-003
tblVehicleEF	MCY	3.1010e-003	3.7190e-003
tblVehicleEF	MCY	5.0400e-003	4.2000e-003
tblVehicleEF	MCY	2.0130e-003	1.8970e-003
tblVehicleEF	MCY	2.9050e-003	3.4890e-003
tblVehicleEF	MCY	0.60	3.15
tblVehicleEF	MCY	0.51	3.55
tblVehicleEF	MCY	0.35	0.00
tblVehicleEF	MCY	2.17	0.89
tblVehicleEF	MCY	0.41	3.70
tblVehicleEF	MCY	1.93	1.22
tblVehicleEF	MCY	2.1060e-003	1.8430e-003
tblVehicleEF	MCY	5.9200e-004	4.4100e-004
tblVehicleEF	MCY	0.60	0.07
tblVehicleEF	MCY	0.51	3.55
tblVehicleEF	MCY	0.35	0.00

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tblVehicleEF	MCY	2.71	1.08
tblVehicleEF	MCY	0.41	3.70
tblVehicleEF	MCY	2.10	1.33
tblVehicleEF	MDV	1.9550e-003	2.1320e-003
tblVehicleEF	MDV	0.05	0.07
tblVehicleEF	MDV	0.55	0.62
tblVehicleEF	MDV	2.62	3.10
tblVehicleEF	MDV	330.48	383.68
tblVehicleEF	MDV	69.96	96.40
tblVehicleEF	MDV	5.5310e-003	5.3350e-003
tblVehicleEF	MDV	0.03	0.03
tblVehicleEF	MDV	0.04	0.05
tblVehicleEF	MDV	0.21	0.29
tblVehicleEF	MDV	0.04	7.7240e-003
tblVehicleEF	MDV	1.3170e-003	1.2030e-003
tblVehicleEF	MDV	1.6910e-003	1.9650e-003
tblVehicleEF	MDV	0.02	2.7040e-003
tblVehicleEF	MDV	1.2140e-003	1.1080e-003
tblVehicleEF	MDV	1.5550e-003	1.8070e-003
tblVehicleEF	MDV	0.04	0.21
tblVehicleEF	MDV	0.08	0.06
tblVehicleEF	MDV	0.04	0.00
tblVehicleEF	MDV	7.6550e-003	8.4160e-003
tblVehicleEF	MDV	0.05	0.16
tblVehicleEF	MDV	0.25	0.34
tblVehicleEF	MDV	3.2660e-003	3.7910e-003
tblVehicleEF	MDV	6.9200e-004	9.5300e-004
tblVehicleEF	MDV	0.04	0.21
tblVehicleEF	MDV	0.08	0.06

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tblVehicleEF	MDV	0.04	0.00
tblVehicleEF	MDV	0.01	0.01
tblVehicleEF	MDV	0.05	0.16
tblVehicleEF	MDV	0.27	0.38
tblVehicleEF	MH	5.5960e-003	8.1070e-003
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	0.42	0.70
tblVehicleEF	MH	1.78	2.27
tblVehicleEF	MH	1,419.69	1,667.34
tblVehicleEF	MH	16.60	21.42
tblVehicleEF	MH	0.05	0.07
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	0.92	1.15
tblVehicleEF	MH	0.23	0.27
tblVehicleEF	MH	0.13	0.04
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	2.4300e-004	2.9600e-004
tblVehicleEF	MH	0.06	0.02
tblVehicleEF	MH	3.2800e-003	3.3240e-003
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	2.2300e-004	2.7200e-004
tblVehicleEF	MH	0.25	21.03
tblVehicleEF	MH	0.02	5.78
tblVehicleEF	MH	0.11	0.00
tblVehicleEF	MH	0.04	0.06
tblVehicleEF	MH	5.8350e-003	0.14
tblVehicleEF	MH	0.08	0.10
tblVehicleEF	MH	0.01	0.02

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tblVehicleEF	MH	1.6400e-004	2.1200e-004
tblVehicleEF	MH	0.25	21.03
tblVehicleEF	MH	0.02	5.78
tblVehicleEF	MH	0.11	0.00
tblVehicleEF	MH	0.05	0.07
tblVehicleEF	MH	5.8350e-003	0.14
tblVehicleEF	MH	0.09	0.11
tblVehicleEF	MHD	3.9340e-003	0.01
tblVehicleEF	MHD	1.4090e-003	0.01
tblVehicleEF	MHD	9.5150e-003	0.01
tblVehicleEF	MHD	0.38	0.67
tblVehicleEF	MHD	0.19	0.33
tblVehicleEF	MHD	1.06	1.26
tblVehicleEF	MHD	61.97	147.67
tblVehicleEF	MHD	1,043.81	1,250.18
tblVehicleEF	MHD	9.62	10.56
tblVehicleEF	MHD	8.7820e-003	0.02
tblVehicleEF	MHD	0.13	0.14
tblVehicleEF	MHD	8.1610e-003	8.0710e-003
tblVehicleEF	MHD	0.34	0.82
tblVehicleEF	MHD	1.30	0.99
tblVehicleEF	MHD	1.66	1.31
tblVehicleEF	MHD	2.4000e-004	1.8050e-003
tblVehicleEF	MHD	0.13	0.05
tblVehicleEF	MHD	6.2030e-003	0.01
tblVehicleEF	MHD	1.1800e-004	1.3100e-004
tblVehicleEF	MHD	2.3000e-004	1.7260e-003
tblVehicleEF	MHD	0.06	0.02
tblVehicleEF	MHD	5.9280e-003	0.01

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tblVehicleEF	MHD	1.0900e-004	1.2000e-004
tblVehicleEF	MHD	2.6600e-004	0.02
tblVehicleEF	MHD	0.02	6.3670e-003
tblVehicleEF	MHD	0.02	0.03
tblVehicleEF	MHD	1.7600e-004	0.00
tblVehicleEF	MHD	0.01	0.04
tblVehicleEF	MHD	0.02	0.05
tblVehicleEF	MHD	0.05	0.06
tblVehicleEF	MHD	5.8900e-004	1.3680e-003
tblVehicleEF	MHD	9.9640e-003	0.01
tblVehicleEF	MHD	9.5000e-005	1.0400e-004
tblVehicleEF	MHD	2.6600e-004	0.02
tblVehicleEF	MHD	0.02	6.3670e-003
tblVehicleEF	MHD	0.03	0.05
tblVehicleEF	MHD	1.7600e-004	0.00
tblVehicleEF	MHD	0.02	0.05
tblVehicleEF	MHD	0.02	0.05
tblVehicleEF	MHD	0.05	0.06
tblVehicleEF	OBUS	6.7000e-003	6.5670e-003
tblVehicleEF	OBUS	2.5540e-003	7.1970e-003
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.63	0.49
tblVehicleEF	OBUS	0.31	0.22
tblVehicleEF	OBUS	1.48	1.05
tblVehicleEF	OBUS	103.58	90.16
tblVehicleEF	OBUS	1,286.62	1,296.63
tblVehicleEF	OBUS	12.91	9.34
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.13	0.17

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tblVehicleEF	OBUS	0.01	9.8750e-003
tblVehicleEF	OBUS	0.44	0.39
tblVehicleEF	OBUS	1.48	0.72
tblVehicleEF	OBUS	1.21	1.13
tblVehicleEF	OBUS	1.4300e-004	2.3300e-004
tblVehicleEF	OBUS	0.13	0.05
tblVehicleEF	OBUS	7.6570e-003	8.2930e-003
tblVehicleEF	OBUS	1.4400e-004	9.9000e-005
tblVehicleEF	OBUS	1.3700e-004	2.2300e-004
tblVehicleEF	OBUS	0.06	0.02
tblVehicleEF	OBUS	7.3130e-003	7.9280e-003
tblVehicleEF	OBUS	1.3300e-004	9.1000e-005
tblVehicleEF	OBUS	7.6700e-004	0.03
tblVehicleEF	OBUS	0.01	8.1250e-003
tblVehicleEF	OBUS	0.05	0.03
tblVehicleEF	OBUS	4.0100e-004	0.00
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.03	0.04
tblVehicleEF	OBUS	0.07	0.05
tblVehicleEF	OBUS	9.8300e-004	8.5000e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	1.2800e-004	9.2000e-005
tblVehicleEF	OBUS	7.6700e-004	0.03
tblVehicleEF	OBUS	0.01	8.1250e-003
tblVehicleEF	OBUS	0.06	0.04
tblVehicleEF	OBUS	4.0100e-004	0.00
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.03	0.04
tblVehicleEF	OBUS	0.08	0.06

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tblVehicleEF	SBUS	0.11	0.10
tblVehicleEF	SBUS	8.8090e-003	0.08
tblVehicleEF	SBUS	0.01	8.5690e-003
tblVehicleEF	SBUS	4.01	2.38
tblVehicleEF	SBUS	0.80	1.39
tblVehicleEF	SBUS	1.56	1.23
tblVehicleEF	SBUS	367.56	204.35
tblVehicleEF	SBUS	971.83	958.41
tblVehicleEF	SBUS	8.11	6.00
tblVehicleEF	SBUS	0.05	0.02
tblVehicleEF	SBUS	0.10	0.11
tblVehicleEF	SBUS	8.1850e-003	5.6650e-003
tblVehicleEF	SBUS	3.13	1.37
tblVehicleEF	SBUS	4.12	2.53
tblVehicleEF	SBUS	0.74	0.47
tblVehicleEF	SBUS	3.4540e-003	1.3780e-003
tblVehicleEF	SBUS	0.74	0.04
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.02	0.01
tblVehicleEF	SBUS	1.3000e-004	7.9000e-005
tblVehicleEF	SBUS	3.3050e-003	1.3170e-003
tblVehicleEF	SBUS	0.32	0.02
tblVehicleEF	SBUS	2.5240e-003	2.5140e-003
tblVehicleEF	SBUS	0.02	0.01
tblVehicleEF	SBUS	1.1900e-004	7.3000e-005
tblVehicleEF	SBUS	6.7200e-004	0.05
tblVehicleEF	SBUS	8.3910e-003	0.01
tblVehicleEF	SBUS	0.48	0.28
tblVehicleEF	SBUS	3.3200e-004	0.00

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tblVehicleEF	SBUS	0.09	0.07
tblVehicleEF	SBUS	0.01	0.04
tblVehicleEF	SBUS	0.06	0.05
tblVehicleEF	SBUS	3.5190e-003	1.8720e-003
tblVehicleEF	SBUS	9.3510e-003	8.9820e-003
tblVehicleEF	SBUS	8.0000e-005	5.9000e-005
tblVehicleEF	SBUS	6.7200e-004	0.05
tblVehicleEF	SBUS	8.3910e-003	0.01
tblVehicleEF	SBUS	0.70	0.44
tblVehicleEF	SBUS	3.3200e-004	0.00
tblVehicleEF	SBUS	0.11	0.17
tblVehicleEF	SBUS	0.01	0.04
tblVehicleEF	SBUS	0.06	0.05
tblVehicleEF	UBUS	1.52	0.55
tblVehicleEF	UBUS	0.01	6.4140e-003
tblVehicleEF	UBUS	11.42	6.30
tblVehicleEF	UBUS	0.83	0.87
tblVehicleEF	UBUS	1,603.69	1,061.97
tblVehicleEF	UBUS	9.21	5.58
tblVehicleEF	UBUS	0.26	0.16
tblVehicleEF	UBUS	7.3110e-003	9.5510e-003
tblVehicleEF	UBUS	0.69	0.25
tblVehicleEF	UBUS	0.10	0.07
tblVehicleEF	UBUS	0.08	0.14
tblVehicleEF	UBUS	0.03	0.05
tblVehicleEF	UBUS	4.9940e-003	4.6870e-003
tblVehicleEF	UBUS	5.3000e-005	2.3000e-005
tblVehicleEF	UBUS	0.03	0.05
tblVehicleEF	UBUS	7.8010e-003	0.01

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tblVehicleEF	UBUS	4.7760e-003	4.4790e-003
tblVehicleEF	UBUS	4.9000e-005	2.1000e-005
tblVehicleEF	UBUS	6.3800e-004	0.02
tblVehicleEF	UBUS	0.01	8.0370e-003
tblVehicleEF	UBUS	4.9700e-004	0.00
tblVehicleEF	UBUS	0.02	0.05
tblVehicleEF	UBUS	4.4160e-003	0.02
tblVehicleEF	UBUS	0.06	0.02
tblVehicleEF	UBUS	0.01	8.5230e-003
tblVehicleEF	UBUS	9.1000e-005	5.5000e-005
tblVehicleEF	UBUS	6.3800e-004	0.02
tblVehicleEF	UBUS	0.01	8.0370e-003
tblVehicleEF	UBUS	4.9700e-004	0.00
tblVehicleEF	UBUS	1.55	0.61
tblVehicleEF	UBUS	4.4160e-003	0.02
tblVehicleEF	UBUS	0.07	0.03
tblVehicleTrips	ST_TR	1.96	0.00
tblVehicleTrips	ST_TR	1.90	1.23
tblVehicleTrips	SU_TR	2.19	0.00
tblVehicleTrips	SU_TR	1.11	0.72
tblVehicleTrips	WD_TR	0.78	0.00
tblVehicleTrips	WD_TR	11.26	7.32

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	1.0222	2.2195	2.5288	4.4900e-003	0.1929	0.1107	0.3036	0.0904	0.1069	0.1973	0.0000	387.3709	387.3709	0.0639	0.0000	388.9691
2023	2.1341	1.2545	1.7352	3.0200e-003	0.0000	0.0602	0.0602	0.0000	0.0601	0.0601	0.0000	259.1346	259.1346	0.0167	0.0000	259.5526
2024	0.4054	0.1089	0.1663	2.5000e-004	0.0000	4.8200e-003	4.8200e-003	0.0000	4.5400e-003	4.5400e-003	0.0000	21.7925	21.7925	5.4900e-003	0.0000	21.9298
Maximum	**2.1341**	**2.2195**	**2.5288**	**4.4900e-003**	**0.1929**	**0.1107**	**0.3036**	**0.0904**	**0.1069**	**0.1973**	**0.0000**	**387.3709**	**387.3709**	**0.0639**	**0.0000**	**388.9691**

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	0.8501	1.6619	2.8282	4.4000e-003	0.0868	9.0300e-003	0.0959	0.0407	9.0300e-003	0.0497	0.0000	379.4492	379.4492	0.0614	0.0000	380.9833
2023	2.0408	1.1184	1.8848	3.0200e-003	0.0000	8.1200e-003	8.1200e-003	0.0000	8.1200e-003	8.1200e-003	0.0000	259.1343	259.1343	0.0167	0.0000	259.5523
2024	0.3992	0.1104	0.1788	2.5000e-004	0.0000	1.6000e-003	1.6000e-003	0.0000	1.6000e-003	1.6000e-003	0.0000	21.7925	21.7925	5.4900e-003	0.0000	21.9297
Maximum	**2.0408**	**1.6619**	**2.8282**	**4.4000e-003**	**0.0868**	**9.0300e-003**	**0.0959**	**0.0407**	**9.0300e-003**	**0.0497**	**0.0000**	**379.4492**	**379.4492**	**0.0614**	**0.0000**	**380.9833**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**7.62**	**19.32**	**-10.42**	**1.16**	**55.00**	**89.33**	**71.36**	**55.00**	**89.07**	**77.31**	**0.00**	**1.19**	**1.19**	**2.97**	**0.00**	**1.19**

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Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	2-10-2022	5-9-2022	0.2808	0.1910
2	5-10-2022	8-9-2022	1.5725	1.1391
3	8-10-2022	11-9-2022	0.9277	0.7922
4	11-10-2022	2-9-2023	0.8021	0.6865
5	2-10-2023	5-9-2023	0.6819	0.6000
6	5-10-2023	8-9-2023	0.7049	0.6202
7	8-10-2023	11-9-2023	1.1935	1.1647
8	11-10-2023	2-9-2024	0.8620	0.8748
9	2-10-2024	5-9-2024	0.1235	0.1122
		Highest	1.5725	1.1647

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	1.3219	5.0000e-005	5.9200e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0115	0.0115	3.0000e-005	0.0000	0.0123
Energy	0.0391	0.3553	0.2985	2.1300e-003		0.0270	0.0270		0.0270	0.0270	0.0000	386.7889	386.7889	7.4100e-003	7.0900e-003	389.0874
Mobile	0.8230	0.5515	5.7045	0.0148	1.3653	8.8800e-003	1.3742	0.3403	8.2600e-003	0.3485	0.0000	1,360.2753	1,360.2753	0.0645	0.0540	1,377.9873
Stationary	0.1540	0.6886	0.3926	7.4000e-004		0.0227	0.0227		0.0227	0.0227	0.0000	71.4566	71.4566	0.0100	0.0000	71.7071
Waste						0.0000	0.0000		0.0000	0.0000	4.5592	0.0000	4.5592	0.2694	0.0000	11.2952
Water						0.0000	0.0000		0.0000	0.0000	46.0176	0.0000	46.0176	4.7265	0.1116	197.4361
Total	**2.3380**	**1.5954**	**6.4015**	**0.0176**	**1.3653**	**0.0586**	**1.4238**	**0.3403**	**0.0579**	**0.3982**	**50.5768**	**1,818.5323**	**1,869.1091**	**5.0779**	**0.1727**	**2,047.5253**

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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	1.3219	5.0000e-005	5.9200e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0115	0.0115	3.0000e-005	0.0000	0.0123
Energy	0.0391	0.3553	0.2985	2.1300e-003		0.0270	0.0270		0.0270	0.0270	0.0000	386.7889	386.7889	7.4100e-003	7.0900e-003	389.0874
Mobile	0.8230	0.5515	5.7045	0.0148	1.3653	8.8800e-003	1.3742	0.3403	8.2600e-003	0.3485	0.0000	1,360.2753	1,360.2753	0.0645	0.0540	1,377.9873
Stationary	0.1540	0.6886	0.3926	7.4000e-004		0.0227	0.0227		0.0227	0.0227	0.0000	71.4566	71.4566	0.0100	0.0000	71.7071
Waste						0.0000	0.0000		0.0000	0.0000	4.5592	0.0000	4.5592	0.2694	0.0000	11.2952
Water						0.0000	0.0000		0.0000	0.0000	46.0176	0.0000	46.0176	4.7265	0.1116	197.4361
Total	**2.3380**	**1.5954**	**6.4015**	**0.0176**	**1.3653**	**0.0586**	**1.4238**	**0.3403**	**0.0579**	**0.3982**	**50.5768**	**1,818.5323**	**1,869.1091**	**5.0779**	**0.1727**	**2,047.5253**

	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**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description

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1	Demolition	Demolition	2/10/2022	2/16/2022	5	5	working portion
2	Site Preparation	Site Preparation	3/10/2022	3/15/2022	5	4	working portion
3	Soldier Piles/Micropiles	Building Construction	4/22/2022	5/26/2022	5	25	
4	Dewatering	Architectural Coating	4/22/2022	9/21/2023	7	518	Generator Pump
5	Trenching/Foundation	Trenching	4/28/2022	11/9/2022	5	140	
6	Soil Remediation	Site Preparation	5/27/2022	8/2/2022	5	48	
7	Grading	Grading	5/27/2022	8/2/2022	5	48	
8	Building Construction	Building Construction	7/14/2022	1/25/2023	5	140	
9	Building Interior	Architectural Coating	8/10/2023	2/15/2024	5	136	
10	Paving/landscaping/finishing	Paving	3/4/2024	5/3/2024	5	45	

Acres of Grading (Site Preparation Phase): 4

Acres of Grading (Grading Phase): 48

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 442,500; Non-Residential Outdoor: 147,500; Striped Parking Area: 10,691

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	1	8.00	158	0.38
Demolition	Rubber Tired Dozers	0	8.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Site Preparation	Graders	1	8.00	187	0.41
Site Preparation	Rubber Tired Dozers	1	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Soldier Piles/Micropiles	Bore/Drill Rigs	1	10.00	221	0.50
Soldier Piles/Micropiles	Cranes	1	10.00	231	0.29
Soldier Piles/Micropiles	Forklifts	1	10.00	89	0.20

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Soldier Piles/Micropiles	Generator Sets	0	0.00	84	0.74
Soldier Piles/Micropiles	Tractors/Loaders/Backhoes	0	6.00	97	0.37
Soldier Piles/Micropiles	Welders	0	8.00	46	0.45
Dewatering	Air Compressors	0	0.00	78	0.48
Dewatering	Pumps	1	24.00	84	0.74
Trenching/Foundation	Excavators	1	6.00	158	0.38
Trenching/Foundation	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Soil Remediation	Excavators	1	8.00	158	0.38
Soil Remediation	Graders	0	8.00	187	0.41
Soil Remediation	Rubber Tired Dozers	0	7.00	247	0.40
Soil Remediation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	0.00	231	0.29
Building Construction	Forklifts	1	8.00	89	0.20
Building Construction	Generator Sets	0	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	0	6.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Building Interior	Aerial Lifts	2	8.00	63	0.31
Building Interior	Air Compressors	1	8.00	78	0.48
Paving/landscaping/finishing	Cement and Mortar Mixers	1	0.40	9	0.56
Paving/landscaping/finishing	Pavers	1	0.40	130	0.42
Paving/landscaping/finishing	Paving Equipment	1	0.40	132	0.36
Paving/landscaping/finishing	Rollers	1	7.10	80	0.38
Paving/landscaping/finishing	Tractors/Loaders/Backhoes	1	7.10	97	0.37

Trips and VMT

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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	3	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
Soldier Piles/Micropiles	3	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Dewatering	1	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Trenching/Foundation	2	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Soil Remediation	2	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	3	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Interior	3	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving/landscaping/finishing	5	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

Water Exposed Area

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					1.2000e-003	0.0000	1.2000e-003	1.8000e-004	0.0000	1.8000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.8100e-003	0.0156	0.0229	4.0000e-005		8.2000e-004	8.2000e-004		7.8000e-004	7.8000e-004	0.0000	3.1614	3.1614	6.6000e-004	0.0000	3.1779

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Total	**1.8100e-003**	**0.0156**	**0.0229**	**4.0000e-005**	**1.2000e-003**	**8.2000e-004**	**2.0200e-003**	**1.8000e-004**	**7.8000e-004**	**9.6000e-004**	**0.0000**	**3.1614**	**3.1614**	**6.6000e-004**	**0.0000**	**3.1779**

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					5.4000e-004	0.0000	5.4000e-004	8.0000e-005	0.0000	8.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.2000e-004	0.0147	0.0253	4.0000e-005		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	3.1614	3.1614	6.6000e-004	0.0000	3.1779

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Total	**6.2000e-004**	**0.0147**	**0.0253**	**4.0000e-005**	**5.4000e-004**	**5.0000e-005**	**5.9000e-004**	**8.0000e-005**	**5.0000e-005**	**1.3000e-004**	**0.0000**	**3.1614**	**3.1614**	**6.6000e-004**	**0.0000**	**3.1779**

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					0.0142	0.0000	0.0142	6.8500e-003	0.0000	6.8500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.1600e-003	0.0348	0.0196	4.0000e-005		1.5300e-003	1.5300e-003		1.4100e-003	1.4100e-003	0.0000	3.7572	3.7572	1.2200e-003	0.0000	3.7876

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Total	**3.1600e-003**	**0.0348**	**0.0196**	**4.0000e-005**	**0.0142**	**1.5300e-003**	**0.0157**	**6.8500e-003**	**1.4100e-003**	**8.2600e-003**	**0.0000**	**3.7572**	**3.7572**	**1.2200e-003**	**0.0000**	**3.7876**

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					6.3700e-003	0.0000	6.3700e-003	3.0800e-003	0.0000	3.0800e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.7000e-004	0.0134	0.0255	4.0000e-005		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	3.7572	3.7572	1.2200e-003	0.0000	3.7876

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Total	**7.7000e-004**	**0.0134**	**0.0255**	**4.0000e-005**	**6.3700e-003**	**7.0000e-005**	**6.4400e-003**	**3.0800e-003**	**7.0000e-005**	**3.1500e-003**	**0.0000**	**3.7572**	**3.7572**	**1.2200e-003**	**0.0000**	**3.7876**

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 Soldier Piles/Micropiles - 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	0.0111	0.1173	0.0795	2.6000e-004		4.9400e-003	4.9400e-003		4.5500e-003	4.5500e-003	0.0000	22.9691	22.9691	7.4300e-003	0.0000	23.1548
Total	**0.0111**	**0.1173**	**0.0795**	**2.6000e-004**		**4.9400e-003**	**4.9400e-003**		**4.5500e-003**	**4.5500e-003**	**0.0000**	**22.9691**	**22.9691**	**7.4300e-003**	**0.0000**	**23.1548**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Unmitigated Construction Off-Site

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

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.9800e-003	0.0498	0.0973	1.7000e-004		2.8000e-004	2.8000e-004		2.8000e-004	2.8000e-004	0.0000	15.0478	15.0478	4.8700e-003	0.0000	15.1695
Total	**2.9800e-003**	**0.0498**	**0.0973**	**1.7000e-004**		**2.8000e-004**	**2.8000e-004**		**2.8000e-004**	**2.8000e-004**	**0.0000**	**15.0478**	**15.0478**	**4.8700e-003**	**0.0000**	**15.1695**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Mitigated Construction Off-Site

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

3.5 Dewatering - 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					
Archit. Coating	0.7725					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1341	1.1311	1.4218	2.5100e-003		0.0593	0.0593		0.0593	0.0593	0.0000	215.3440	215.3440	0.0110	0.0000	215.6188
Total	**0.9066**	**1.1311**	**1.4218**	**2.5100e-003**		**0.0593**	**0.0593**		**0.0593**	**0.0593**	**0.0000**	**215.3440**	**215.3440**	**0.0110**	**0.0000**	**215.6188**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Unmitigated Construction Off-Site

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

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.7725					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0460	0.8939	1.5455	2.5100e-003		3.3400e-003	3.3400e-003		3.3400e-003	3.3400e-003	0.0000	215.3438	215.3438	0.0110	0.0000	215.6185
Total	**0.8185**	**0.8939**	**1.5455**	**2.5100e-003**		**3.3400e-003**	**3.3400e-003**		**3.3400e-003**	**3.3400e-003**	**0.0000**	**215.3438**	**215.3438**	**0.0110**	**0.0000**	**215.6185**

Mitigated Construction Off-Site

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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

3.5 Dewatering - 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	0.8029					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1298	1.0901	1.4752	2.6000e-003		0.0534	0.0534		0.0534	0.0534	0.0000	223.8222	223.8222	0.0102	0.0000	224.0782
Total	**0.9327**	**1.0901**	**1.4752**	**2.6000e-003**		**0.0534**	**0.0534**		**0.0534**	**0.0534**	**0.0000**	**223.8222**	**223.8222**	**0.0102**	**0.0000**	**224.0782**

Unmitigated Construction Off-Site

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.8029					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0478	0.9291	1.6063	2.6000e-003		3.4700e-003	3.4700e-003		3.4700e-003	3.4700e-003	0.0000	223.8219	223.8219	0.0102	0.0000	224.0779
Total	**0.8507**	**0.9291**	**1.6063**	**2.6000e-003**		**3.4700e-003**	**3.4700e-003**		**3.4700e-003**	**3.4700e-003**	**0.0000**	**223.8219**	**223.8219**	**0.0102**	**0.0000**	**224.0779**

Mitigated Construction Off-Site

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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

3.6 Trenching/Foundation - 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	0.0193	0.1813	0.2884	4.3000e-004		9.2400e-003	9.2400e-003		8.5000e-003	8.5000e-003	0.0000	38.1615	38.1615	0.0123	0.0000	38.4701
Total	**0.0193**	**0.1813**	**0.2884**	**4.3000e-004**		**9.2400e-003**	**9.2400e-003**		**8.5000e-003**	**8.5000e-003**	**0.0000**	**38.1615**	**38.1615**	**0.0123**	**0.0000**	**38.4701**

Unmitigated Construction Off-Site

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	6.9900e-003	0.1906	0.3287	4.3000e-004		7.1000e-004	7.1000e-004		7.1000e-004	7.1000e-004	0.0000	38.1615	38.1615	0.0123	0.0000	38.4700
Total	**6.9900e-003**	**0.1906**	**0.3287**	**4.3000e-004**		**7.1000e-004**	**7.1000e-004**		**7.1000e-004**	**7.1000e-004**	**0.0000**	**38.1615**	**38.1615**	**0.0123**	**0.0000**	**38.4700**

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

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

3.7 Soil Remediation - 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					4.3000e-003	0.0000	4.3000e-003	6.5000e-004	0.0000	6.5000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.8100e-003	0.0829	0.1318	2.0000e-004		4.2200e-003	4.2200e-003		3.8900e-003	3.8900e-003	0.0000	17.4453	17.4453	5.6400e-003	0.0000	17.5863
Total	**8.8100e-003**	**0.0829**	**0.1318**	**2.0000e-004**	**4.3000e-003**	**4.2200e-003**	**8.5200e-003**	**6.5000e-004**	**3.8900e-003**	**4.5400e-003**	**0.0000**	**17.4453**	**17.4453**	**5.6400e-003**	**0.0000**	**17.5863**

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

580 Dubuque R&D - San Mateo County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.9300e-003	0.0000	1.9300e-003	2.9000e-004	0.0000	2.9000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.2000e-003	0.0872	0.1502	2.0000e-004		3.2000e-004	3.2000e-004		3.2000e-004	3.2000e-004	0.0000	17.4452	17.4452	5.6400e-003	0.0000	17.5863
Total	**3.2000e-003**	**0.0872**	**0.1502**	**2.0000e-004**	**1.9300e-003**	**3.2000e-004**	**2.2500e-003**	**2.9000e-004**	**3.2000e-004**	**6.1000e-004**	**0.0000**	**17.4452**	**17.4452**	**5.6400e-003**	**0.0000**	**17.5863**

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

580 Dubuque R&D - San Mateo County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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

3.8 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					0.1733	0.0000	0.1733	0.0827	0.0000	0.0827	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0477	0.5030	0.3910	7.6000e-004		0.0225	0.0225		0.0207	0.0207	0.0000	66.8593	66.8593	0.0216	0.0000	67.3999
Total	**0.0477**	**0.5030**	**0.3910**	**7.6000e-004**	**0.1733**	**0.0225**	**0.1957**	**0.0827**	**0.0207**	**0.1034**	**0.0000**	**66.8593**	**66.8593**	**0.0216**	**0.0000**	**67.3999**

Unmitigated Construction Off-Site

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

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580 Dubuque R&D - San Mateo County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0780	0.0000	0.0780	0.0372	0.0000	0.0372	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0123	0.2701	0.4936	7.6000e-004		1.2400e-003	1.2400e-003		1.2400e-003	1.2400e-003	0.0000	66.8592	66.8592	0.0216	0.0000	67.3998
Total	**0.0123**	**0.2701**	**0.4936**	**7.6000e-004**	**0.0780**	**1.2400e-003**	**0.0792**	**0.0372**	**1.2400e-003**	**0.0385**	**0.0000**	**66.8592**	**66.8592**	**0.0216**	**0.0000**	**67.3998**

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

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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

3.9 Building Construction - 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	0.0238	0.1536	0.1738	2.5000e-004		8.1600e-003	8.1600e-003		7.8200e-003	7.8200e-003	0.0000	19.6732	19.6732	4.0200e-003	0.0000	19.7738
Total	**0.0238**	**0.1536**	**0.1738**	**2.5000e-004**		**8.1600e-003**	**8.1600e-003**		**7.8200e-003**	**7.8200e-003**	**0.0000**	**19.6732**	**19.6732**	**4.0200e-003**	**0.0000**	**19.7738**

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					

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	4.7800e-003	0.1423	0.1622	2.5000e-004		3.0000e-003	3.0000e-003		3.0000e-003	3.0000e-003	0.0000	19.6732	19.6732	4.0200e-003	0.0000	19.7738
Total	**4.7800e-003**	**0.1423**	**0.1622**	**2.5000e-004**		**3.0000e-003**	**3.0000e-003**		**3.0000e-003**	**3.0000e-003**	**0.0000**	**19.6732**	**19.6732**	**4.0200e-003**	**0.0000**	**19.7738**

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

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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

3.9 Building Construction - 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	3.2100e-003	0.0214	0.0254	4.0000e-005		1.0300e-003	1.0300e-003		9.9000e-004	9.9000e-004	0.0000	2.9026	2.9026	5.8000e-004	0.0000	2.9170
Total	**3.2100e-003**	**0.0214**	**0.0254**	**4.0000e-005**		**1.0300e-003**	**1.0300e-003**		**9.9000e-004**	**9.9000e-004**	**0.0000**	**2.9026**	**2.9026**	**5.8000e-004**	**0.0000**	**2.9170**

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

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	7.1000e-004	0.0210	0.0239	4.0000e-005		4.4000e-004	4.4000e-004		4.4000e-004	4.4000e-004	0.0000	2.9026	2.9026	5.8000e-004	0.0000	2.9170
Total	**7.1000e-004**	**0.0210**	**0.0239**	**4.0000e-005**		**4.4000e-004**	**4.4000e-004**		**4.4000e-004**	**4.4000e-004**	**0.0000**	**2.9026**	**2.9026**	**5.8000e-004**	**0.0000**	**2.9170**

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

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.10 Building Interior - 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	1.1816					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0166	0.1430	0.2345	3.7000e-004		5.7600e-003	5.7600e-003		5.6800e-003	5.6800e-003	0.0000	32.4098	32.4098	5.9100e-003	0.0000	32.5574
Total	**1.1981**	**0.1430**	**0.2345**	**3.7000e-004**		**5.7600e-003**	**5.7600e-003**		**5.6800e-003**	**5.6800e-003**	**0.0000**	**32.4098**	**32.4098**	**5.9100e-003**	**0.0000**	**32.5574**

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

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**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	1.1816					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.9200e-003	0.1683	0.2546	3.7000e-004		4.2000e-003	4.2000e-003		4.2000e-003	4.2000e-003	0.0000	32.4098	32.4098	5.9100e-003	0.0000	32.5574
Total	**1.1895**	**0.1683**	**0.2546**	**3.7000e-004**		**4.2000e-003**	**4.2000e-003**		**4.2000e-003**	**4.2000e-003**	**0.0000**	**32.4098**	**32.4098**	**5.9100e-003**	**0.0000**	**32.5574**

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

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.10 Building Interior - 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	0.3939					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.2700e-003	0.0455	0.0782	1.2000e-004		1.6900e-003	1.6900e-003		1.6700e-003	1.6700e-003	0.0000	10.8033	10.8033	1.9500e-003	0.0000	10.8520
Total	**0.3991**	**0.0455**	**0.0782**	**1.2000e-004**		**1.6900e-003**	**1.6900e-003**		**1.6700e-003**	**1.6700e-003**	**0.0000**	**10.8033**	**10.8033**	**1.9500e-003**	**0.0000**	**10.8520**

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

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**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	0.3939					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.6400e-003	0.0561	0.0849	1.2000e-004		1.4000e-003	1.4000e-003		1.4000e-003	1.4000e-003	0.0000	10.8033	10.8033	1.9500e-003	0.0000	10.8520
Total	**0.3965**	**0.0561**	**0.0849**	**1.2000e-004**		**1.4000e-003**	**1.4000e-003**		**1.4000e-003**	**1.4000e-003**	**0.0000**	**10.8033**	**10.8033**	**1.9500e-003**	**0.0000**	**10.8520**

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

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.11 Paving/landscaping/finishing - 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	6.2400e-003	0.0634	0.0881	1.3000e-004		3.1300e-003	3.1300e-003		2.8800e-003	2.8800e-003	0.0000	10.9892	10.9892	3.5400e-003	0.0000	11.0778
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**6.2400e-003**	**0.0634**	**0.0881**	**1.3000e-004**		**3.1300e-003**	**3.1300e-003**		**2.8800e-003**	**2.8800e-003**	**0.0000**	**10.9892**	**10.9892**	**3.5400e-003**	**0.0000**	**11.0778**

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

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**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	2.6900e-003	0.0543	0.0939	1.3000e-004		2.0000e-004	2.0000e-004		2.0000e-004	2.0000e-004	0.0000	10.9892	10.9892	3.5400e-003	0.0000	11.0778
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**2.6900e-003**	**0.0543**	**0.0939**	**1.3000e-004**		**2.0000e-004**	**2.0000e-004**		**2.0000e-004**	**2.0000e-004**	**0.0000**	**10.9892**	**10.9892**	**3.5400e-003**	**0.0000**	**11.0778**

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

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.8230	0.5515	5.7045	0.0148	1.3653	8.8800e-003	1.3742	0.3403	8.2600e-003	0.3485	0.0000	1,360.2753	1,360.2753	0.0645	0.0540	1,377.9873
Unmitigated	0.8230	0.5515	5.7045	0.0148	1.3653	8.8800e-003	1.3742	0.3403	8.2600e-003	0.3485	0.0000	1,360.2753	1,360.2753	0.0645	0.0540	1,377.9873

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	0.00	0.00	0.00		
Enclosed Parking with Elevator	0.00	0.00	0.00		
Other Asphalt Surfaces	0.00	0.00	0.00		
Research & Development	2,159.40	362.85	212.40	4,071,667	4,071,667
Total	2,159.40	362.85	212.40	4,071,667	4,071,667

4.3 Trip Type Information

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	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
City Park	9.50	7.30	7.30	33.00	48.00	19.00	66	28	6
Enclosed Parking with Elevator	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Other Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Research & Development	9.50	7.30	7.30	33.00	48.00	19.00	82	15	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
City Park	0.448243	0.043109	0.275360	0.157817	0.028829	0.006330	0.008743	0.002558	0.002310	0.000743	0.023500	0.000418	0.002040
Enclosed Parking with Elevator	0.448243	0.043109	0.275360	0.157817	0.028829	0.006330	0.008743	0.002558	0.002310	0.000743	0.023500	0.000418	0.002040
Other Asphalt Surfaces	0.448243	0.043109	0.275360	0.157817	0.028829	0.006330	0.008743	0.002558	0.002310	0.000743	0.023500	0.000418	0.002040
Research & Development	0.448243	0.043109	0.275360	0.157817	0.028829	0.006330	0.008743	0.002558	0.002310	0.000743	0.023500	0.000418	0.002040

5.0 Energy Detail

Historical Energy Use: N

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	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0391	0.3553	0.2985	2.1300e-003		0.0270	0.0270		0.0270	0.0270	0.0000	386.7889	386.7889	7.4100e-003	7.0900e-003	389.0874

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

NaturalGas Unmitigated	0.0391	0.3553	0.2985	2.1300e-003		0.0270	0.0270		0.0270	0.0270	0.0000	386.7889	386.7889	7.4100e-003	7.0900e-003	389.0874

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					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	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
Research & Development	7.24815e+006	0.0391	0.3553	0.2985	2.1300e-003		0.0270	0.0270		0.0270	0.0270	0.0000	386.7889	386.7889	7.4100e-003	7.0900e-003	389.0874
Total		**0.0391**	**0.3553**	**0.2985**	**2.1300e-003**		**0.0270**	**0.0270**		**0.0270**	**0.0270**	**0.0000**	**386.7889**	**386.7889**	**7.4100e-003**	**7.0900e-003**	**389.0874**

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					
City Park	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

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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
Other Asphalt Surfaces	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
Research & Development	7.24815e+006	0.0391	0.3553	0.2985	2.1300e-003		0.0270	0.0270		0.0270	0.0270	0.0000	386.7889	386.7889	7.4100e-003	7.0900e-003	389.0874
Total		**0.0391**	**0.3553**	**0.2985**	**2.1300e-003**		**0.0270**	**0.0270**		**0.0270**	**0.0270**	**0.0000**	**386.7889**	**386.7889**	**7.4100e-003**	**7.0900e-003**	**389.0874**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Enclosed Parking with Elevator	850811	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Research & Development	2.19185e+006	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

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	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Enclosed Parking with Elevator	850811	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Research & Development	2.19185e+006	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	1.3219	5.0000e-005	5.9200e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0115	0.0115	3.0000e-005	0.0000	0.0123
Unmitigated	1.3219	5.0000e-005	5.9200e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0115	0.0115	3.0000e-005	0.0000	0.0123

6.2 Area by SubCategory

Date: 11/18/2021 9:22 AM

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	0.1575					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.1639					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	5.5000e-004	5.0000e-005	5.9200e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0115	0.0115	3.0000e-005	0.0000	0.0123
Total	**1.3219**	**5.0000e-005**	**5.9200e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0115**	**0.0115**	**3.0000e-005**	**0.0000**	**0.0123**

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	0.1575					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.1639					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	5.5000e-004	5.0000e-005	5.9200e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0115	0.0115	3.0000e-005	0.0000	0.0123
Total	**1.3219**	**5.0000e-005**	**5.9200e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0115**	**0.0115**	**3.0000e-005**	**0.0000**	**0.0123**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	46.0176	4.7265	0.1116	197.4361
Unmitigated	46.0176	4.7265	0.1116	197.4361

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 0.595741	0.0000	0.0000	0.0000	0.0000
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Research & Development	145.05 / 0	46.0176	4.7265	0.1116	197.4361
Total		**46.0176**	**4.7265**	**0.1116**	**197.4361**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 0.595741	0.0000	0.0000	0.0000	0.0000
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Research & Development	145.05 / 0	46.0176	4.7265	0.1116	197.4361
Total		**46.0176**	**4.7265**	**0.1116**	**197.4361**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			

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Mitigated	4.5592	0.2694	0.0000	11.2952
Unmitigated	4.5592	0.2694	0.0000	11.2952

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.04	8.1200e-003	4.8000e-004	0.0000	0.0201
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Research & Development	22.42	4.5511	0.2690	0.0000	11.2751
Total		**4.5592**	**0.2694**	**0.0000**	**11.2952**

Mitigated

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

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City Park	0.04	8.1200e-003	4.8000e-004	0.0000	0.0201
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Research & Development	22.42	4.5511	0.2690	0.0000	11.2751
Total		**4.5592**	**0.2694**	**0.0000**	**11.2952**

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	1	1	50	3753	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

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	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Equipment Type	tons/yr										MT/yr					
Emergency Generator - Diesel (750 - 9999 HP)	0.1540	0.6886	0.3926	7.4000e-004		0.0227	0.0227		0.0227	0.0227	0.0000	71.4566	71.4566	0.0100	0.0000	71.7071
Total	**0.1540**	**0.6886**	**0.3926**	**7.4000e-004**		**0.0227**	**0.0227**		**0.0227**	**0.0227**	**0.0000**	**71.4566**	**71.4566**	**0.0100**	**0.0000**	**71.7071**

11.0 Vegetation

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1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Research & Development	295.00	1000sqft	2.00	295,000.00	983
Enclosed Parking with Elevator	350.00	Space	0.00	156,399.00	0
Other Asphalt Surfaces	0.50	Acre	0.00	21,780.00	0
City Park	0.50	Acre	0.00	21,780.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	70
Climate Zone	5			**Operational Year**	2030
Utility Company	Peninsula Clean Energy				
CO2 Intensity (lb/MWhr)	0	**CH4 Intensity (lb/MWhr)**	0	**N2O Intensity (lb/MWhr)**	0

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Assume PCE

Land Use - Estimated roadway and landscaped surfaces - 1 employee/1ksf

Construction Phase - From construction worksheet

Off-road Equipment - Crane is Electric

Off-road Equipment - Based on construction worksheet

Off-road Equipment - Based on construction worksheet

Off-road Equipment - Based on construction worksheet

Off-road Equipment - Based on construction worksheet

Off-road Equipment - Based on construction worksheet

Date: 11/18/2021 9:34 AM

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Off-road Equipment - Based on construction worksheet

Off-road Equipment - Based on construction worksheet

Off-road Equipment - Based on construction worksheet - generator seperate overlapping phase

Off-road Equipment - Based on construction worksheet

Trips and VMT - All trips entered into EMFAC2021

Demolition - Based on construction worksheet

Grading - Based on construction worksheet

Vehicle Trips - Trip gen with TDM = 2159/295ksf = 7.32/1.23/0.72

Vehicle Emission Factors - Emfac2021

Construction Off-road Equipment Mitigation - All equipment t4i, BMP

Fleet Mix - Emfac2021

Stationary Sources - Emergency Generators and Fire Pumps - 2800 kw Generator = 3,753hp engine

Stationary Sources - Emergency Generators and Fire Pumps EF - Assume BAAQMD BACT= 0.5NOx 0.02PM

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	FuelType	Diesel	Electrical
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00

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tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	8.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstructionPhase	NumDays	10.00	518.00
tblConstructionPhase	NumDays	10.00	136.00
tblConstructionPhase	NumDays	200.00	25.00
tblConstructionPhase	NumDays	200.00	140.00
tblConstructionPhase	NumDays	20.00	5.00
tblConstructionPhase	NumDays	4.00	48.00
tblConstructionPhase	NumDays	10.00	45.00
tblConstructionPhase	NumDays	2.00	4.00
tblConstructionPhase	NumDays	2.00	48.00

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tblConstructionPhase	NumDaysWeek	5.00	7.00
tblFleetMix	HHD	1.7910e-003	2.3620e-003
tblFleetMix	HHD	1.7910e-003	2.3620e-003
tblFleetMix	HHD	1.7910e-003	2.3620e-003
tblFleetMix	HHD	1.7910e-003	2.3620e-003
tblFleetMix	LDA	0.43	0.39
tblFleetMix	LDA	0.43	0.39
tblFleetMix	LDA	0.43	0.39
tblFleetMix	LDA	0.43	0.39
tblFleetMix	LDT1	0.08	0.04
tblFleetMix	LDT1	0.08	0.04
tblFleetMix	LDT1	0.08	0.04
tblFleetMix	LDT1	0.08	0.04
tblFleetMix	LDT2	0.25	0.31
tblFleetMix	LDT2	0.25	0.31
tblFleetMix	LDT2	0.25	0.31
tblFleetMix	LDT2	0.25	0.31
tblFleetMix	LHD1	0.03	0.03
tblFleetMix	LHD1	0.03	0.03
tblFleetMix	LHD1	0.03	0.03
tblFleetMix	LHD1	0.03	0.03
tblFleetMix	LHD2	7.1360e-003	7.4140e-003
tblFleetMix	LHD2	7.1360e-003	7.4140e-003
tblFleetMix	LHD2	7.1360e-003	7.4140e-003
tblFleetMix	LHD2	7.1360e-003	7.4140e-003
tblFleetMix	MCY	0.03	0.02
tblFleetMix	MCY	0.03	0.02
tblFleetMix	MCY	0.03	0.02
tblFleetMix	MCY	0.03	0.02

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tblFleetMix	MDV	0.16	0.18
tblFleetMix	MDV	0.16	0.18
tblFleetMix	MDV	0.16	0.18
tblFleetMix	MDV	0.16	0.18
tblFleetMix	MH	2.9170e-003	2.1460e-003
tblFleetMix	MH	2.9170e-003	2.1460e-003
tblFleetMix	MH	2.9170e-003	2.1460e-003
tblFleetMix	MH	2.9170e-003	2.1460e-003
tblFleetMix	MHD	0.01	8.2620e-003
tblFleetMix	MHD	0.01	8.2620e-003
tblFleetMix	MHD	0.01	8.2620e-003
tblFleetMix	MHD	0.01	8.2620e-003
tblFleetMix	OBUS	1.3500e-003	2.2040e-003
tblFleetMix	OBUS	1.3500e-003	2.2040e-003
tblFleetMix	OBUS	1.3500e-003	2.2040e-003
tblFleetMix	OBUS	1.3500e-003	2.2040e-003
tblFleetMix	SBUS	4.2100e-004	3.9400e-004
tblFleetMix	SBUS	4.2100e-004	3.9400e-004
tblFleetMix	SBUS	4.2100e-004	3.9400e-004
tblFleetMix	SBUS	4.2100e-004	3.9400e-004
tblFleetMix	UBUS	4.9600e-004	6.4500e-004
tblFleetMix	UBUS	4.9600e-004	6.4500e-004
tblFleetMix	UBUS	4.9600e-004	6.4500e-004
tblFleetMix	UBUS	4.9600e-004	6.4500e-004
tblGrading	MaterialExported	0.00	58,000.00
tblGrading	MaterialExported	0.00	76,016.00
tblLandUse	LandUseSquareFeet	140,000.00	156,399.00
tblLandUse	LotAcreage	6.77	2.00
tblLandUse	LotAcreage	3.15	0.00

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tblLandUse	LotAcreage	0.50	0.00
tblLandUse	LotAcreage	0.50	0.00
tblLandUse	Population	0.00	983.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
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	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	6.00	0.40
tblOffRoadEquipment	UsageHours	6.00	10.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	6.00	10.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.40
tblOffRoadEquipment	UsageHours	8.00	0.40
tblOffRoadEquipment	UsageHours	7.00	7.10
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	8.00	7.10

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tblStationaryGeneratorsPumpsUse	HorsePowerValue	0.00	3,753.00
tblStationaryGeneratorsPumpsUse	HoursPerDay	0.00	1.00
tblStationaryGeneratorsPumpsUse	HoursPerYear	0.00	50.00
tblStationaryGeneratorsPumpsUse	NumberOfEquipment	0.00	1.00
tblTripsAndVMT	HaulingTripNumber	11.00	0.00
tblTripsAndVMT	HaulingTripNumber	9,502.00	0.00
tblTripsAndVMT	HaulingTripNumber	7,250.00	0.00
tblTripsAndVMT	VendorTripNumber	81.00	0.00
tblTripsAndVMT	VendorTripNumber	81.00	0.00
tblTripsAndVMT	WorkerTripNumber	8.00	0.00
tblTripsAndVMT	WorkerTripNumber	13.00	0.00
tblTripsAndVMT	WorkerTripNumber	10.00	0.00
tblTripsAndVMT	WorkerTripNumber	178.00	0.00
tblTripsAndVMT	WorkerTripNumber	36.00	0.00
tblTripsAndVMT	WorkerTripNumber	5.00	0.00
tblTripsAndVMT	WorkerTripNumber	5.00	0.00
tblTripsAndVMT	WorkerTripNumber	15.00	0.00
tblTripsAndVMT	WorkerTripNumber	178.00	0.00
tblTripsAndVMT	WorkerTripNumber	36.00	0.00
tblVehicleEF	HHD	0.04	0.23
tblVehicleEF	HHD	0.19	0.18
tblVehicleEF	HHD	3.0000e-006	0.00
tblVehicleEF	HHD	5.46	4.57
tblVehicleEF	HHD	1.06	1.44
tblVehicleEF	HHD	0.04	0.02
tblVehicleEF	HHD	860.08	692.39
tblVehicleEF	HHD	1,405.74	1,514.61
tblVehicleEF	HHD	0.35	0.20
tblVehicleEF	HHD	0.14	0.11

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tblVehicleEF	HHD	0.23	0.24
tblVehicleEF	HHD	3.0000e-006	0.00
tblVehicleEF	HHD	5.01	3.57
tblVehicleEF	HHD	2.73	1.87
tblVehicleEF	HHD	2.40	2.65
tblVehicleEF	HHD	2.7380e-003	2.0820e-003
tblVehicleEF	HHD	0.06	0.09
tblVehicleEF	HHD	0.04	0.03
tblVehicleEF	HHD	0.02	0.02
tblVehicleEF	HHD	3.0000e-006	2.0000e-006
tblVehicleEF	HHD	2.6200e-003	1.9850e-003
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.7570e-003	8.6350e-003
tblVehicleEF	HHD	0.02	0.02
tblVehicleEF	HHD	3.0000e-006	2.0000e-006
tblVehicleEF	HHD	6.0000e-006	2.3600e-004
tblVehicleEF	HHD	3.2200e-004	6.5000e-005
tblVehicleEF	HHD	0.36	0.27
tblVehicleEF	HHD	5.0000e-006	0.00
tblVehicleEF	HHD	0.03	0.02
tblVehicleEF	HHD	1.5200e-004	3.9100e-004
tblVehicleEF	HHD	1.4000e-005	2.0000e-006
tblVehicleEF	HHD	7.5950e-003	5.6170e-003
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	3.0000e-006	2.0000e-006
tblVehicleEF	HHD	6.0000e-006	2.3600e-004
tblVehicleEF	HHD	3.2200e-004	6.5000e-005
tblVehicleEF	HHD	0.43	0.53
tblVehicleEF	HHD	5.0000e-006	0.00

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tblVehicleEF	HHD	0.23	0.21
tblVehicleEF	HHD	1.5200e-004	3.9100e-004
tblVehicleEF	HHD	1.6000e-005	2.0000e-006
tblVehicleEF	LDA	8.5200e-004	1.0910e-003
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	0.38	0.43
tblVehicleEF	LDA	1.70	2.12
tblVehicleEF	LDA	197.85	218.14
tblVehicleEF	LDA	41.93	56.38
tblVehicleEF	LDA	2.9620e-003	2.8890e-003
tblVehicleEF	LDA	0.02	0.02
tblVehicleEF	LDA	0.02	0.02
tblVehicleEF	LDA	0.12	0.18
tblVehicleEF	LDA	0.04	6.3460e-003
tblVehicleEF	LDA	8.6000e-004	8.0000e-004
tblVehicleEF	LDA	1.2290e-003	1.4710e-003
tblVehicleEF	LDA	0.02	2.2210e-003
tblVehicleEF	LDA	7.9200e-004	7.3600e-004
tblVehicleEF	LDA	1.1300e-003	1.3530e-003
tblVehicleEF	LDA	0.02	0.21
tblVehicleEF	LDA	0.06	0.06
tblVehicleEF	LDA	0.02	0.00
tblVehicleEF	LDA	2.9250e-003	3.8520e-003
tblVehicleEF	LDA	0.03	0.16
tblVehicleEF	LDA	0.12	0.20
tblVehicleEF	LDA	1.9570e-003	2.1560e-003
tblVehicleEF	LDA	4.1500e-004	5.5700e-004
tblVehicleEF	LDA	0.02	0.21
tblVehicleEF	LDA	0.06	0.06

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tblVehicleEF	LDA	0.02	0.00
tblVehicleEF	LDA	4.2480e-003	5.6170e-003
tblVehicleEF	LDA	0.03	0.16
tblVehicleEF	LDA	0.13	0.22
tblVehicleEF	LDT1	1.1990e-003	2.2150e-003
tblVehicleEF	LDT1	0.03	0.06
tblVehicleEF	LDT1	0.44	0.66
tblVehicleEF	LDT1	1.81	2.84
tblVehicleEF	LDT1	236.05	285.53
tblVehicleEF	LDT1	50.08	72.58
tblVehicleEF	LDT1	3.1790e-003	4.5000e-003
tblVehicleEF	LDT1	0.02	0.03
tblVehicleEF	LDT1	0.03	0.05
tblVehicleEF	LDT1	0.14	0.23
tblVehicleEF	LDT1	0.04	7.9630e-003
tblVehicleEF	LDT1	9.9000e-004	1.0380e-003
tblVehicleEF	LDT1	1.3910e-003	1.7650e-003
tblVehicleEF	LDT1	0.02	2.7870e-003
tblVehicleEF	LDT1	9.1100e-004	9.5500e-004
tblVehicleEF	LDT1	1.2790e-003	1.6230e-003
tblVehicleEF	LDT1	0.03	0.31
tblVehicleEF	LDT1	0.07	0.08
tblVehicleEF	LDT1	0.03	0.00
tblVehicleEF	LDT1	4.4220e-003	9.0470e-003
tblVehicleEF	LDT1	0.05	0.24
tblVehicleEF	LDT1	0.13	0.27
tblVehicleEF	LDT1	2.3360e-003	2.8230e-003
tblVehicleEF	LDT1	4.9600e-004	7.1700e-004
tblVehicleEF	LDT1	0.03	0.31

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tblVehicleEF	LDT1	0.07	0.08
tblVehicleEF	LDT1	0.03	0.00
tblVehicleEF	LDT1	6.4520e-003	0.01
tblVehicleEF	LDT1	0.05	0.24
tblVehicleEF	LDT1	0.14	0.29
tblVehicleEF	LDT2	1.3110e-003	1.4510e-003
tblVehicleEF	LDT2	0.04	0.05
tblVehicleEF	LDT2	0.47	0.52
tblVehicleEF	LDT2	2.22	2.46
tblVehicleEF	LDT2	241.10	296.13
tblVehicleEF	LDT2	51.42	74.14
tblVehicleEF	LDT2	3.4280e-003	3.6740e-003
tblVehicleEF	LDT2	0.02	0.03
tblVehicleEF	LDT2	0.03	0.03
tblVehicleEF	LDT2	0.15	0.21
tblVehicleEF	LDT2	0.04	7.7670e-003
tblVehicleEF	LDT2	9.8200e-004	8.8300e-004
tblVehicleEF	LDT2	1.3140e-003	1.4990e-003
tblVehicleEF	LDT2	0.02	2.7180e-003
tblVehicleEF	LDT2	9.0400e-004	8.1200e-004
tblVehicleEF	LDT2	1.2080e-003	1.3780e-003
tblVehicleEF	LDT2	0.03	0.16
tblVehicleEF	LDT2	0.06	0.04
tblVehicleEF	LDT2	0.03	0.00
tblVehicleEF	LDT2	4.7820e-003	5.1450e-003
tblVehicleEF	LDT2	0.05	0.12
tblVehicleEF	LDT2	0.16	0.22
tblVehicleEF	LDT2	2.3850e-003	2.9270e-003
tblVehicleEF	LDT2	5.0900e-004	7.3300e-004

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tblVehicleEF	LDT2	0.03	0.16
tblVehicleEF	LDT2	0.06	0.04
tblVehicleEF	LDT2	0.03	0.00
tblVehicleEF	LDT2	6.9400e-003	7.4940e-003
tblVehicleEF	LDT2	0.05	0.12
tblVehicleEF	LDT2	0.17	0.24
tblVehicleEF	LHD1	3.9860e-003	4.1000e-003
tblVehicleEF	LHD1	4.4850e-003	2.8900e-003
tblVehicleEF	LHD1	7.3910e-003	0.01
tblVehicleEF	LHD1	0.18	0.18
tblVehicleEF	LHD1	0.40	0.47
tblVehicleEF	LHD1	0.86	2.16
tblVehicleEF	LHD1	8.08	7.48
tblVehicleEF	LHD1	689.79	647.78
tblVehicleEF	LHD1	9.94	16.36
tblVehicleEF	LHD1	7.0800e-004	5.3200e-004
tblVehicleEF	LHD1	0.04	0.03
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	0.04	0.03
tblVehicleEF	LHD1	0.18	0.18
tblVehicleEF	LHD1	0.20	0.30
tblVehicleEF	LHD1	9.1600e-004	6.1700e-004
tblVehicleEF	LHD1	0.08	0.07
tblVehicleEF	LHD1	9.8940e-003	9.2640e-003
tblVehicleEF	LHD1	5.8960e-003	6.6480e-003
tblVehicleEF	LHD1	2.0100e-004	1.0400e-004
tblVehicleEF	LHD1	8.7600e-004	5.9000e-004
tblVehicleEF	LHD1	0.03	0.03
tblVehicleEF	LHD1	2.4740e-003	2.3160e-003

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblVehicleEF	LHD1	5.5970e-003	6.3310e-003
tblVehicleEF	LHD1	1.8500e-004	9.6000e-005
tblVehicleEF	LHD1	8.5500e-004	0.06
tblVehicleEF	LHD1	0.04	0.01
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	5.9000e-004	0.00
tblVehicleEF	LHD1	0.07	0.04
tblVehicleEF	LHD1	0.14	0.08
tblVehicleEF	LHD1	0.03	0.07
tblVehicleEF	LHD1	7.8000e-005	7.3000e-005
tblVehicleEF	LHD1	6.7280e-003	6.3250e-003
tblVehicleEF	LHD1	9.8000e-005	1.6200e-004
tblVehicleEF	LHD1	8.5500e-004	0.06
tblVehicleEF	LHD1	0.04	0.01
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	5.9000e-004	0.00
tblVehicleEF	LHD1	0.08	0.04
tblVehicleEF	LHD1	0.14	0.08
tblVehicleEF	LHD1	0.04	0.07
tblVehicleEF	LHD2	2.4420e-003	2.3110e-003
tblVehicleEF	LHD2	4.9160e-003	3.5820e-003
tblVehicleEF	LHD2	4.1310e-003	7.5520e-003
tblVehicleEF	LHD2	0.13	0.14
tblVehicleEF	LHD2	0.44	0.32
tblVehicleEF	LHD2	0.49	1.19
tblVehicleEF	LHD2	12.62	12.88
tblVehicleEF	LHD2	670.16	684.09
tblVehicleEF	LHD2	6.49	8.64
tblVehicleEF	LHD2	1.6020e-003	1.5980e-003

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tblVehicleEF	LHD2	0.06	0.07
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.06	0.06
tblVehicleEF	LHD2	0.21	0.28
tblVehicleEF	LHD2	0.12	0.16
tblVehicleEF	LHD2	1.4740e-003	1.4290e-003
tblVehicleEF	LHD2	0.09	0.09
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	1.0700e-004	5.0000e-005
tblVehicleEF	LHD2	1.4100e-003	1.3670e-003
tblVehicleEF	LHD2	0.04	0.03
tblVehicleEF	LHD2	2.7060e-003	2.6170e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	9.9000e-005	4.6000e-005
tblVehicleEF	LHD2	4.2300e-004	0.03
tblVehicleEF	LHD2	0.02	8.3390e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	3.0400e-004	0.00
tblVehicleEF	LHD2	0.09	0.07
tblVehicleEF	LHD2	0.05	0.05
tblVehicleEF	LHD2	0.02	0.04
tblVehicleEF	LHD2	1.2100e-004	1.2300e-004
tblVehicleEF	LHD2	6.4670e-003	6.5820e-003
tblVehicleEF	LHD2	6.4000e-005	8.5000e-005
tblVehicleEF	LHD2	4.2300e-004	0.03
tblVehicleEF	LHD2	0.02	8.3390e-003
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	3.0400e-004	0.00

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tblVehicleEF	LHD2	0.11	0.08
tblVehicleEF	LHD2	0.05	0.05
tblVehicleEF	LHD2	0.02	0.04
tblVehicleEF	MCY	0.32	0.13
tblVehicleEF	MCY	0.25	0.14
tblVehicleEF	MCY	17.76	9.71
tblVehicleEF	MCY	9.39	7.58
tblVehicleEF	MCY	212.58	185.26
tblVehicleEF	MCY	58.78	39.68
tblVehicleEF	MCY	0.07	0.04
tblVehicleEF	MCY	0.02	5.5840e-003
tblVehicleEF	MCY	1.14	0.47
tblVehicleEF	MCY	0.27	0.09
tblVehicleEF	MCY	0.01	0.01
tblVehicleEF	MCY	2.2180e-003	2.0690e-003
tblVehicleEF	MCY	3.0130e-003	3.6390e-003
tblVehicleEF	MCY	5.0400e-003	4.2000e-003
tblVehicleEF	MCY	2.0680e-003	1.9300e-003
tblVehicleEF	MCY	2.8140e-003	3.4020e-003
tblVehicleEF	MCY	0.61	2.69
tblVehicleEF	MCY	0.49	3.54
tblVehicleEF	MCY	0.36	0.00
tblVehicleEF	MCY	2.13	0.79
tblVehicleEF	MCY	0.39	3.67
tblVehicleEF	MCY	1.89	1.03
tblVehicleEF	MCY	2.1040e-003	1.8310e-003
tblVehicleEF	MCY	5.8200e-004	3.9200e-004
tblVehicleEF	MCY	0.61	0.07
tblVehicleEF	MCY	0.49	3.54

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tblVehicleEF	MCY	0.36	0.00
tblVehicleEF	MCY	2.68	0.98
tblVehicleEF	MCY	0.39	3.67
tblVehicleEF	MCY	2.06	1.12
tblVehicleEF	MDV	1.2400e-003	1.4660e-003
tblVehicleEF	MDV	0.04	0.05
tblVehicleEF	MDV	0.45	0.52
tblVehicleEF	MDV	2.21	2.46
tblVehicleEF	MDV	289.25	352.66
tblVehicleEF	MDV	60.44	87.77
tblVehicleEF	MDV	4.5060e-003	4.1700e-003
tblVehicleEF	MDV	0.02	0.03
tblVehicleEF	MDV	0.02	0.03
tblVehicleEF	MDV	0.15	0.22
tblVehicleEF	MDV	0.04	7.7870e-003
tblVehicleEF	MDV	9.5700e-004	8.5800e-004
tblVehicleEF	MDV	1.2840e-003	1.4690e-003
tblVehicleEF	MDV	0.02	2.7250e-003
tblVehicleEF	MDV	8.8200e-004	7.9000e-004
tblVehicleEF	MDV	1.1810e-003	1.3510e-003
tblVehicleEF	MDV	0.03	0.17
tblVehicleEF	MDV	0.07	0.05
tblVehicleEF	MDV	0.04	0.00
tblVehicleEF	MDV	4.5430e-003	5.3030e-003
tblVehicleEF	MDV	0.05	0.13
tblVehicleEF	MDV	0.16	0.24
tblVehicleEF	MDV	2.8580e-003	3.4850e-003
tblVehicleEF	MDV	5.9800e-004	8.6800e-004
tblVehicleEF	MDV	0.03	0.17

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tblVehicleEF	MDV	0.07	0.05
tblVehicleEF	MDV	0.04	0.00
tblVehicleEF	MDV	6.5690e-003	7.7170e-003
tblVehicleEF	MDV	0.05	0.13
tblVehicleEF	MDV	0.18	0.26
tblVehicleEF	MH	4.0670e-003	4.8170e-003
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	0.22	0.26
tblVehicleEF	MH	1.59	1.85
tblVehicleEF	MH	1,315.39	1,657.15
tblVehicleEF	MH	15.06	19.91
tblVehicleEF	MH	0.05	0.07
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	0.84	1.00
tblVehicleEF	MH	0.22	0.25
tblVehicleEF	MH	0.13	0.04
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	9.1290e-003	0.01
tblVehicleEF	MH	2.2300e-004	2.4800e-004
tblVehicleEF	MH	0.06	0.02
tblVehicleEF	MH	3.2890e-003	3.3360e-003
tblVehicleEF	MH	8.6970e-003	0.01
tblVehicleEF	MH	2.0500e-004	2.2800e-004
tblVehicleEF	MH	0.16	10.82
tblVehicleEF	MH	0.01	2.82
tblVehicleEF	MH	0.08	0.00
tblVehicleEF	MH	0.03	0.04
tblVehicleEF	MH	2.9870e-003	0.07
tblVehicleEF	MH	0.07	0.08

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tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	1.4900e-004	1.9700e-004
tblVehicleEF	MH	0.16	10.82
tblVehicleEF	MH	0.01	2.82
tblVehicleEF	MH	0.08	0.00
tblVehicleEF	MH	0.04	0.05
tblVehicleEF	MH	2.9870e-003	0.07
tblVehicleEF	MH	0.08	0.09
tblVehicleEF	MHD	3.9010e-003	0.02
tblVehicleEF	MHD	9.3700e-004	9.6240e-003
tblVehicleEF	MHD	8.5280e-003	9.1350e-003
tblVehicleEF	MHD	0.38	0.63
tblVehicleEF	MHD	0.14	0.16
tblVehicleEF	MHD	0.87	0.98
tblVehicleEF	MHD	55.53	130.08
tblVehicleEF	MHD	958.82	1,103.52
tblVehicleEF	MHD	8.66	9.48
tblVehicleEF	MHD	7.8550e-003	0.02
tblVehicleEF	MHD	0.12	0.13
tblVehicleEF	MHD	8.0480e-003	6.8930e-003
tblVehicleEF	MHD	0.29	0.66
tblVehicleEF	MHD	1.31	0.56
tblVehicleEF	MHD	1.67	1.12
tblVehicleEF	MHD	1.1600e-004	6.3600e-004
tblVehicleEF	MHD	0.13	0.04
tblVehicleEF	MHD	6.3200e-003	5.3910e-003
tblVehicleEF	MHD	1.1300e-004	1.1800e-004
tblVehicleEF	MHD	1.1100e-004	6.0800e-004
tblVehicleEF	MHD	0.06	0.02

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tblVehicleEF	MHD	6.0400e-003	5.1470e-003
tblVehicleEF	MHD	1.0400e-004	1.0900e-004
tblVehicleEF	MHD	2.1500e-004	0.02
tblVehicleEF	MHD	0.01	3.9100e-003
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	1.5500e-004	0.00
tblVehicleEF	MHD	0.01	0.02
tblVehicleEF	MHD	0.01	0.03
tblVehicleEF	MHD	0.04	0.05
tblVehicleEF	MHD	5.2700e-004	1.1950e-003
tblVehicleEF	MHD	9.1510e-003	0.01
tblVehicleEF	MHD	8.6000e-005	9.4000e-005
tblVehicleEF	MHD	2.1500e-004	0.02
tblVehicleEF	MHD	0.01	3.9100e-003
tblVehicleEF	MHD	0.02	0.04
tblVehicleEF	MHD	1.5500e-004	0.00
tblVehicleEF	MHD	0.01	0.03
tblVehicleEF	MHD	0.01	0.03
tblVehicleEF	MHD	0.05	0.05
tblVehicleEF	OBUS	6.7860e-003	6.9140e-003
tblVehicleEF	OBUS	1.7360e-003	0.01
tblVehicleEF	OBUS	0.01	8.2390e-003
tblVehicleEF	OBUS	0.67	0.50
tblVehicleEF	OBUS	0.22	0.16
tblVehicleEF	OBUS	1.34	0.83
tblVehicleEF	OBUS	104.99	88.87
tblVehicleEF	OBUS	1,195.47	1,192.98
tblVehicleEF	OBUS	11.93	7.62
tblVehicleEF	OBUS	0.02	0.01

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblVehicleEF	OBUS	0.12	0.16
tblVehicleEF	OBUS	0.01	7.5270e-003
tblVehicleEF	OBUS	0.47	0.34
tblVehicleEF	OBUS	1.49	0.65
tblVehicleEF	OBUS	1.22	1.02
tblVehicleEF	OBUS	1.5600e-004	2.0700e-004
tblVehicleEF	OBUS	0.13	0.05
tblVehicleEF	OBUS	8.0770e-003	7.6200e-003
tblVehicleEF	OBUS	1.4600e-004	8.4000e-005
tblVehicleEF	OBUS	1.4900e-004	1.9800e-004
tblVehicleEF	OBUS	0.06	0.02
tblVehicleEF	OBUS	7.7140e-003	7.2850e-003
tblVehicleEF	OBUS	1.3400e-004	7.7000e-005
tblVehicleEF	OBUS	6.9700e-004	0.03
tblVehicleEF	OBUS	0.01	6.5600e-003
tblVehicleEF	OBUS	0.05	0.03
tblVehicleEF	OBUS	3.8500e-004	0.00
tblVehicleEF	OBUS	0.01	0.02
tblVehicleEF	OBUS	0.03	0.03
tblVehicleEF	OBUS	0.07	0.04
tblVehicleEF	OBUS	9.9600e-004	8.3400e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	1.1800e-004	7.5000e-005
tblVehicleEF	OBUS	6.9700e-004	0.03
tblVehicleEF	OBUS	0.01	6.5600e-003
tblVehicleEF	OBUS	0.06	0.04
tblVehicleEF	OBUS	3.8500e-004	0.00
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.03	0.03

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblVehicleEF	OBUS	0.07	0.05
tblVehicleEF	SBUS	0.16	0.11
tblVehicleEF	SBUS	5.7190e-003	0.07
tblVehicleEF	SBUS	0.01	8.9860e-003
tblVehicleEF	SBUS	5.81	2.80
tblVehicleEF	SBUS	0.52	0.91
tblVehicleEF	SBUS	2.02	1.22
tblVehicleEF	SBUS	372.76	200.53
tblVehicleEF	SBUS	883.04	857.53
tblVehicleEF	SBUS	11.09	6.59
tblVehicleEF	SBUS	0.04	0.02
tblVehicleEF	SBUS	0.08	0.09
tblVehicleEF	SBUS	0.01	6.2860e-003
tblVehicleEF	SBUS	2.28	1.04
tblVehicleEF	SBUS	2.37	1.45
tblVehicleEF	SBUS	0.99	0.50
tblVehicleEF	SBUS	1.7990e-003	7.5800e-004
tblVehicleEF	SBUS	0.74	0.04
tblVehicleEF	SBUS	9.6950e-003	9.8790e-003
tblVehicleEF	SBUS	0.01	7.0920e-003
tblVehicleEF	SBUS	1.8900e-004	9.4000e-005
tblVehicleEF	SBUS	1.7210e-003	7.2300e-004
tblVehicleEF	SBUS	0.32	0.02
tblVehicleEF	SBUS	2.4240e-003	2.4700e-003
tblVehicleEF	SBUS	0.01	6.7620e-003
tblVehicleEF	SBUS	1.7400e-004	8.6000e-005
tblVehicleEF	SBUS	1.0240e-003	0.05
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.71	0.33

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblVehicleEF	SBUS	5.6900e-004	0.00
tblVehicleEF	SBUS	0.06	0.05
tblVehicleEF	SBUS	0.02	0.04
tblVehicleEF	SBUS	0.08	0.05
tblVehicleEF	SBUS	3.5870e-003	1.8280e-003
tblVehicleEF	SBUS	8.5360e-003	8.0270e-003
tblVehicleEF	SBUS	1.1000e-004	6.5000e-005
tblVehicleEF	SBUS	1.0240e-003	0.05
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	1.03	0.51
tblVehicleEF	SBUS	5.6900e-004	0.00
tblVehicleEF	SBUS	0.07	0.13
tblVehicleEF	SBUS	0.02	0.04
tblVehicleEF	SBUS	0.09	0.06
tblVehicleEF	UBUS	1.75	0.64
tblVehicleEF	UBUS	8.0630e-003	4.5120e-003
tblVehicleEF	UBUS	13.25	7.38
tblVehicleEF	UBUS	0.82	0.83
tblVehicleEF	UBUS	1,616.16	954.90
tblVehicleEF	UBUS	7.49	5.22
tblVehicleEF	UBUS	0.27	0.14
tblVehicleEF	UBUS	5.7250e-003	6.8380e-003
tblVehicleEF	UBUS	0.67	0.21
tblVehicleEF	UBUS	0.07	0.04
tblVehicleEF	UBUS	0.08	0.16
tblVehicleEF	UBUS	0.03	0.06
tblVehicleEF	UBUS	4.9300e-003	3.9500e-003
tblVehicleEF	UBUS	9.1000e-005	2.5000e-005
tblVehicleEF	UBUS	0.03	0.05

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblVehicleEF	UBUS	7.8010e-003	0.02
tblVehicleEF	UBUS	4.7140e-003	3.7730e-003
tblVehicleEF	UBUS	8.3000e-005	2.3000e-005
tblVehicleEF	UBUS	1.3500e-004	0.01
tblVehicleEF	UBUS	1.6730e-003	3.4250e-003
tblVehicleEF	UBUS	8.4000e-005	0.00
tblVehicleEF	UBUS	0.03	0.05
tblVehicleEF	UBUS	5.1800e-004	0.01
tblVehicleEF	UBUS	0.04	0.02
tblVehicleEF	UBUS	0.01	7.2300e-003
tblVehicleEF	UBUS	7.4000e-005	5.2000e-005
tblVehicleEF	UBUS	1.3500e-004	0.01
tblVehicleEF	UBUS	1.6730e-003	3.4250e-003
tblVehicleEF	UBUS	8.4000e-005	0.00
tblVehicleEF	UBUS	1.79	0.69
tblVehicleEF	UBUS	5.1800e-004	0.01
tblVehicleEF	UBUS	0.04	0.02
tblVehicleTrips	ST_TR	1.96	0.00
tblVehicleTrips	ST_TR	1.90	1.23
tblVehicleTrips	SU_TR	2.19	0.00
tblVehicleTrips	SU_TR	1.11	0.72
tblVehicleTrips	WD_TR	0.78	0.00
tblVehicleTrips	WD_TR	11.26	7.32

2.0 Emissions Summary

2.2 Overall Operational

Date: 11/18/2021 9:34 AM

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	1.3219	5.0000e-005	5.9100e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0115	0.0115	3.0000e-005	0.0000	0.0123
Energy	0.0391	0.3553	0.2985	2.1300e-003		0.0270	0.0270		0.0270	0.0270	0.0000	386.7889	386.7889	7.4100e-003	7.0900e-003	389.0874
Mobile	0.6794	0.4107	4.8140	0.0137	1.3661	6.7000e-003	1.3728	0.3405	6.2400e-003	0.3468	0.0000	1,266.6016	1,266.6016	0.0520	0.0473	1,281.9927
Stationary	0.1540	0.6886	0.3926	7.4000e-004		0.0227	0.0227		0.0227	0.0227	0.0000	71.4566	71.4566	0.0100	0.0000	71.7071
Waste						0.0000	0.0000		0.0000	0.0000	4.5592	0.0000	4.5592	0.2694	0.0000	11.2952
Water						0.0000	0.0000		0.0000	0.0000	46.0176	0.0000	46.0176	4.7265	0.1116	197.4361
Total	**2.1944**	**1.4547**	**5.5109**	**0.0166**	**1.3661**	**0.0564**	**1.4224**	**0.3405**	**0.0559**	**0.3964**	**50.5768**	**1,724.8587**	**1,775.4354**	**5.0653**	**0.1660**	**1,951.5306**

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	1.3219	5.0000e-005	5.9100e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0115	0.0115	3.0000e-005	0.0000	0.0123
Energy	0.0391	0.3553	0.2985	2.1300e-003		0.0270	0.0270		0.0270	0.0270	0.0000	386.7889	386.7889	7.4100e-003	7.0900e-003	389.0874
Mobile	0.6794	0.4107	4.8140	0.0137	1.3661	6.7000e-003	1.3728	0.3405	6.2400e-003	0.3468	0.0000	1,266.6016	1,266.6016	0.0520	0.0473	1,281.9927

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Stationary	0.1540	0.6886	0.3926	7.4000e-004		0.0227	0.0227		0.0227	0.0227	0.0000	71.4566	71.4566	0.0100	0.0000	71.7071
Waste						0.0000	0.0000		0.0000	0.0000	4.5592	0.0000	4.5592	0.2694	0.0000	11.2952
Water						0.0000	0.0000		0.0000	0.0000	46.0176	0.0000	46.0176	4.7265	0.1116	197.4361
Total	**2.1944**	**1.4547**	**5.5109**	**0.0166**	**1.3661**	**0.0564**	**1.4224**	**0.3405**	**0.0559**	**0.3964**	**50.5768**	**1,724.8587**	**1,775.4354**	**5.0653**	**0.1660**	**1,951.5306**

	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	0.6794	0.4107	4.8140	0.0137	1.3661	6.7000e-003	1.3728	0.3405	6.2400e-003	0.3468	0.0000	1,266.6016	1,266.6016	0.0520	0.0473	1,281.9927
Unmitigated	0.6794	0.4107	4.8140	0.0137	1.3661	6.7000e-003	1.3728	0.3405	6.2400e-003	0.3468	0.0000	1,266.6016	1,266.6016	0.0520	0.0473	1,281.9927

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	0.00	0.00	0.00		
Enclosed Parking with Elevator	0.00	0.00	0.00		
Other Asphalt Surfaces	0.00	0.00	0.00		
Research & Development	2,159.40	362.85	212.40	4,071,667	4,071,667
Total	2,159.40	362.85	212.40	4,071,667	4,071,667

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4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	9.50	7.30	7.30	33.00	48.00	19.00	66	28	6
Enclosed Parking with Elevator	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Other Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Research & Development	9.50	7.30	7.30	33.00	48.00	19.00	82	15	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
City Park	0.392609	0.040642	0.308969	0.177896	0.031644	0.007414	0.008262	0.002362	0.002204	0.000645	0.024811	0.000394	0.002146
Enclosed Parking with Elevator	0.392609	0.040642	0.308969	0.177896	0.031644	0.007414	0.008262	0.002362	0.002204	0.000645	0.024811	0.000394	0.002146
Other Asphalt Surfaces	0.392609	0.040642	0.308969	0.177896	0.031644	0.007414	0.008262	0.002362	0.002204	0.000645	0.024811	0.000394	0.002146
Research & Development	0.392609	0.040642	0.308969	0.177896	0.031644	0.007414	0.008262	0.002362	0.002204	0.000645	0.024811	0.000394	0.002146

5.0 Energy Detail

Historical Energy Use: N

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	0.0000	0.0000	0.0000	0.0000	0.0000

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Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0391	0.3553	0.2985	2.1300e-003		0.0270	0.0270		0.0270	0.0270	0.0000	386.7889	386.7889	7.4100e-003	7.0900e-003	389.0874
NaturalGas Unmitigated	0.0391	0.3553	0.2985	2.1300e-003		0.0270	0.0270		0.0270	0.0270	0.0000	386.7889	386.7889	7.4100e-003	7.0900e-003	389.0874

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					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	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
Research & Development	7.24815e+006	0.0391	0.3553	0.2985	2.1300e-003		0.0270	0.0270		0.0270	0.0270	0.0000	386.7889	386.7889	7.4100e-003	7.0900e-003	389.0874
Total		**0.0391**	**0.3553**	**0.2985**	**2.1300e-003**		**0.0270**	**0.0270**		**0.0270**	**0.0270**	**0.0000**	**386.7889**	**386.7889**	**7.4100e-003**	**7.0900e-003**	**389.0874**

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

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Land Use	kBTU/yr	tons/yr										MT/yr					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	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
Research & Development	7.24815e+006	0.0391	0.3553	0.2985	2.1300e-003		0.0270	0.0270		0.0270	0.0270	0.0000	386.7889	386.7889	7.4100e-003	7.0900e-003	389.0874
Total		**0.0391**	**0.3553**	**0.2985**	**2.1300e-003**		**0.0270**	**0.0270**		**0.0270**	**0.0270**	**0.0000**	**386.7889**	**386.7889**	**7.4100e-003**	**7.0900e-003**	**389.0874**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Enclosed Parking with Elevator	850811	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Research & Development	2.19185e+006	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

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	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Enclosed Parking with Elevator	850811	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Research & Development	2.19185e+006	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	1.3219	5.0000e-005	5.9100e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0115	0.0115	3.0000e-005	0.0000	0.0123
Unmitigated	1.3219	5.0000e-005	5.9100e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0115	0.0115	3.0000e-005	0.0000	0.0123

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	0.1575					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.1639					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	5.4000e-004	5.0000e-005	5.9100e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0115	0.0115	3.0000e-005	0.0000	0.0123
Total	**1.3219**	**5.0000e-005**	**5.9100e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0115**	**0.0115**	**3.0000e-005**	**0.0000**	**0.0123**

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	0.1575					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.1639					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	5.4000e-004	5.0000e-005	5.9100e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0115	0.0115	3.0000e-005	0.0000	0.0123
Total	**1.3219**	**5.0000e-005**	**5.9100e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0115**	**0.0115**	**3.0000e-005**	**0.0000**	**0.0123**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	46.0176	4.7265	0.1116	197.4361
Unmitigated	46.0176	4.7265	0.1116	197.4361

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 0.595741	0.0000	0.0000	0.0000	0.0000
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Research & Development	145.05 / 0	46.0176	4.7265	0.1116	197.4361
Total		**46.0176**	**4.7265**	**0.1116**	**197.4361**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 0.595741	0.0000	0.0000	0.0000	0.0000
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Research & Development	145.05 / 0	46.0176	4.7265	0.1116	197.4361
Total		**46.0176**	**4.7265**	**0.1116**	**197.4361**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

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	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	4.5592	0.2694	0.0000	11.2952
Unmitigated	4.5592	0.2694	0.0000	11.2952

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.04	8.1200e-003	4.8000e-004	0.0000	0.0201
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Research & Development	22.42	4.5511	0.2690	0.0000	11.2751
Total		**4.5592**	**0.2694**	**0.0000**	**11.2952**

Mitigated

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	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.04	8.1200e-003	4.8000e-004	0.0000	0.0201
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Research & Development	22.42	4.5511	0.2690	0.0000	11.2751
Total		**4.5592**	**0.2694**	**0.0000**	**11.2952**

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	1	1	50	3753	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

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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)	0.1540	0.6886	0.3926	7.4000e-004		0.0227	0.0227		0.0227	0.0227	0.0000	71.4566	71.4566	0.0100	0.0000	71.7071
Total	**0.1540**	**0.6886**	**0.3926**	**7.4000e-004**		**0.0227**	**0.0227**		**0.0227**	**0.0227**	**0.0000**	**71.4566**	**71.4566**	**0.0100**	**0.0000**	**71.7071**

11.0 Vegetation

Attachment 3: EMFAC2021 Calculations

Summary of Construction Traffic Emissions (EMFAC2021)

Pollutants YEAR	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	NBio- CO2	CH4	N2O	CO2e
					Tons							*Metric Tons*		
Criteria Pollutants														
2022	0.0421	0.6828	0.6582	0.0039	0.1318	0.0322	0.1641	0.0198	0.0136	0.0335	384.5333	0.0480	0.0515	401.0681
2023	0.0418	0.6668	0.7066	0.0042	0.1481	0.0356	0.1837	0.0223	0.0149	0.0371	424.6888	0.0528	0.0568	442.9384
2024	0.0132	0.2153	0.2303	0.0014	0.0503	0.0120	0.0623	0.0076	0.0050	0.0126	141.5940	0.0173	0.0189	147.6677
Toxic Air Contaminants (1.0 Mile Trip Length)														
2022	0.0301	0.1226	0.1839	0.0004	0.0109	0.0023	0.0132	0.0016	0.0010	0.0027	36.4283	0.0069	0.0053	38.1801
2023	0.0314	0.1298	0.1982	0.0004	0.0122	0.0025	0.0148	0.0018	0.0011	0.0029	40.1238	0.0078	0.0058	42.0499
2024	0.0100	0.0430	0.0642	0.0001	0.0041	0.0009	0.0050	0.0006	0.0004	0.0010	13.3828	0.0025	0.0019	14.0223

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	8	0	40	0	11	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT	432	0	220
Site Preparation	10	0	40	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT	432	0	0
Soldier Piles/Micropiles	172	78	4300	1950	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT	46440	14235	0
Dewatering	34	0	17612	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT	190209.6	0	0
Trenching/Foundation	5	0	700	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT	7560	0	0
Soil Remediation	5	0	240	0	9,502	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT	2592	0	190040
Grading	15	0	720	0	7,250	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT	7776	0	145000
Building Construction	172	78	24080	10920	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT	260064	79716	0
Building Interior	34	0	4624	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT	49939.2	0	0
Paving/landscaping/finishing	13	0	585	0	40	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT	6318	0	800

Number of Days Per Year					
2022	2/10/22	12/31/22	325	233	
2023	1/1/23	12/31/23	365	261	
2024	1/1/24	5/3/24	124	89	
			814	**582**	***Total Workdays***

Phase	Start Date	End Date	Days/Week	Workdays
Demolition	2/10/2022	2/16/2022	5	5
Site Preparation	3/10/2022	3/15/2022	5	4
Soldier Piles/Micropiles	4/22/2022	5/26/2022	5	25
Dewatering	4/22/2022	9/21/2023	5	518
Trenching/Foundation	4/28/2022	11/9/2022	5	140
Soil Remediation	5/27/2022	8/2/2022	5	48
Grading	5/27/2022	8/2/2022	5	48
Building Construction	7/14/2022	1/25/2023	5	140
Building Interior	8/10/2023	2/15/2024	5	136
Paving/landscaping/finishing	3/4/2024	5/3/2024	5	45

Source: EMFAC2021 (v1.0.1) Emission Rates
Region Type: County
Region: San Mateo
Calendar Year: 2022
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for CVMT and EVMT, trips/day for Trips, kWh/day for Energy Consumption, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HOTSOAK and RUNLOSS, g/vehicle/day for IDLEX and DIURN

Region	Calendar Y	Vehicle Cat	Model Yea	Speed	Fuel	Population	Total VMT	CVMT	EVMT	Trips	Energy Con	NOx_RUNEX	NOx_IDLEX	NOx_STREX	PM2.5_RU	PM2.5_IDL	PM2.5_STR	PM2.5_PM	PM2.5_RUN	PM10_RUN	PM10_IDLE	PM10_STR	PM10_PM	PM10_PMI	CO2_RUNEX	CO2_IDLEX	CO2_STREX	CH4_RUNEX	CH4_IDLEX	CH4_STREX	N2O_RUNEX	N2O_IDLEX	N2O_STREX	ROG_RUNEX	ROG_IDLEX	ROG_STREX	ROG_HOTSO	ROG_RUNL	ROG_DIUR	TOG_RUNEX	TOG_IDLEX	TOG_STREX	TOG_HOTSO	TOG_RUNL	TOG_DIUR	NH3_RUNEX	CO_RUNEX	CO_IDLEX	CO_STREX	SOx_RUNE	SOx_IDLEX	SOx_STREX
San Mateo	2022	HHDT	Aggregate	Aggregate	Gasoline	4.26179	607.5295	607.5295	0	85.26989	0	4.217209	0	0.00281	0.00146	0	0.000935	0.005	0.031258	0.001588	0	0.001017	0.02	0.089308	2276.876	0	54.98009	0.116906	0	0.000119	0.151563	0	0.000135	0.60109	0	0.000644	0.048478	0.400153	3.469663	0.877108	0	0.000705	0.048478	0.400153	3.469663	0.045	33.53367	0	6.080621	0.022509	0	0.000544
San Mateo	2022	HHDT	Aggregate	Aggregate	Diesel	1289.917	118758.5	118758.5	0	13886.59	0	3.367467	50.13908	2.567805	0.026697	0.041054	0	0.00861	0.031515	0.027904	0.04291	0	0.03444	0.090042	1868.7	8522.619	0	0.001942	0.155104	0	0.294414	1.342742	0	0.041821	1.339355	0	0	0	0	0.04761	3.801601	0	0	0	0	0.186789	0.159005	43.82276	0	0.017695	0.080704	0
San Mateo	2022	HHDT	Aggregate	Aggregate	Natural Ga	144.1612	9768.638	9768.638	0	950.7524	0	1.845139	10.30429	0	0.002051	0.011217	0	0.009	0.058943	0.00223	0.012199	0	0.036	0.168408	1557.751	8370.006	0	3.666383	25.60841	0	0.317558	1.706281	0	0.087249	0.429393	0	0	0	0	3.781534	26.2076	0	0	0	0	0.734123	18.35301	67.58246	0	0	0	0
San Mateo	2022	LDA	Aggregate	Aggregate	Gasoline	240666.4	7995565	7995565	0	1130997	0	0.047702	0	0.275282	0.001241	0	0.002105	0.002	0.002347	0.00135	0	0.002289	0.008	0.006707	282.9533	0	72.26541	0.002546	0	0.077367	0.004869	0	0.033486	0.010142	0	0.368004	0.090257	0.23026	1.365279	0.014797	0	0.402916	0.090257	0.23026	1.365279	0.034582	0.726065	0	3.617602	0.002797	0	0.000714
San Mateo	2022	LDA	Aggregate	Aggregate	Diesel	888.5395	22501.88	22501.88	0	3790.786	0	0.240012	0	0	0.015881	0	0	0.002	0.002391	0.016599	0	0	0.008	0.006831	236.6875	0	0	0.001267	0	0	0.03729	0	0	0.02727	0	0	0	0	0	0.031045	0	0	0	0	0	0.0031	0.330004	0	0	0.002243	0	0
San Mateo	2022	LDA	Aggregate	Aggregate	Electricity	14591.4	568258.7	0	568258.7	72996.66	219394.7	0	0	0	0	0	0	0.002	0.001529	0	0	0	0.008	0.004368	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
San Mateo	2022	LDA	Aggregate	Aggregate	Plug-in Hyb	6271.758	249381.9	127562.4	121819.5	25933.72	36793.12	0.003286	0	0.117199	0.000663	0	0.002168	0.002	0.001311	0.000722	0	0.002358	0.008	0.003747	137.9916	0	66.6249	0.00043	0	0.042806	0.00058	0	0.020671	0.001381	0	0.176635	0.036142	0.032302	0.39726	0.002015	0	0.193393	0.036142	0.032302	0.39726	0.020013	0.205923	0	1.37819	0.001364	0	0.000659
San Mateo	2022	LDT1	Aggregate	Aggregate	Gasoline	24136.47	736196.1	736196.1	0	109571	0	0.134919	0	0.395074	0.001791	0	0.002798	0.002	0.002838	0.001948	0	0.003043	0.008	0.008107	332.0233	0	88.05436	0.00631	0	0.109218	0.009543	0	0.038745	0.028415	0	0.569782	0.157522	0.456069	2.467901	0.036499	1.368916	0	5.624448	0.003282	0	0.000871
San Mateo	2022	LDT1	Aggregate	Aggregate	Diesel	8.510916	119.4982	119.4982	0	25.11455	0	1.690269	0	0	0.241464	0	0	0.002	0.00334	0.252382	0	0	0.008	0.009543	418.5155	0	0	0.014886	0	0	0.065937	0	0	0.320488	0	0	0	0	0	0.364855	0	0	0	0	0	0.0031	1.709562	0	0	0.003966	0	0
San Mateo	2022	LDT1	Aggregate	Aggregate	Electricity	61.93893	2054.9	0	2054.9	294.187	793.3611	0	0	0	0	0	0	0.002	0.001538	0	0	0	0.008	0.004394	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
San Mateo	2022	LDT1	Aggregate	Aggregate	Plug-in Hyb	19.40692	849.1339	406.2744	442.8594	80.24761	133.7567	0.003074	0	0.117199	0.000413	0	0.001456	0.002	0.001322	0.000449	0	0.001583	0.008	0.003777	129.0739	0	73.49717	0.000404	0	0.042967	0.000546	0	0.02082	0.001292	0	0.176635	0.024905	0.022892	0.287748	0.001885	0	0.193393	0.024905	0.022892	0.287748	0.020095	0.192615	0	1.37819	0.001276	0	0.000727
San Mateo	2022	LDT2	Aggregate	Aggregate	Gasoline	128775.8	4489208	4489208	0	617258.5	0	0.062575	0	0.324659	0.001272	0	0.002033	0.002	0.002716	0.001384	0	0.002212	0.008	0.007761	346.2249	0	88.33688	0.002639	0	0.081429	0.005428	0	0.036476	0.010335	0	0.378106	0.068121	0.172205	1.07279	0.015078	0	0.413978	0.068121	0.172205	1.07279	0.03686	0.748119	0	3.725451	0.003423	0	0.000873
San Mateo	2022	LDT2	Aggregate	Aggregate	Diesel	498.9179	17455.1	17455.1	0	2406.111	0	0.047726	0	0	0.005147	0	0	0.002	0.002738	0.00538	0	0	0.008	0.007822	319.776	0	0	0.000624	0	0	0.050381	0	0	0.013436	0	0	0	0	0	0.015295	0	0	0	0	0	0.0031	0.124515	0	0	0.00303	0	0
San Mateo	2022	LDT2	Aggregate	Aggregate	Electricity	502.691	16536.35	0	16536.35	2591.33	6384.394	0	0	0	0	0	0	0.002	0.001523	0	0	0	0.008	0.004353	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
San Mateo	2022	LDT2	Aggregate	Aggregate	Plug-in Hyb	938.5352	39780.13	19647.25	20132.88	3880.843	6080.728	0.003173	0	0.117199	0.000533	0	0.001824	0.002	0.001316	0.00058	0	0.001984	0.008	0.003761	133.2387	0	79.72461	0.000417	0	0.042967	0.000564	0	0.02082	0.001334	0	0.176635	0.026237	0.024762	0.312901	0.001946	0	0.193393	0.026237	0.024762	0.312901	0.020712	0.18883	0	1.37819	0.001317	0	0.000788
San Mateo	2022	LHDT1	Aggregate	Aggregate	Gasoline	10003.64	379521.5	379521.5	0	149039.3	0	0.147855	0.036625	0.627998	0.001475	0	0.00028	0.002	0.0273	0.001604	0	0.000304	0.008	0.078	873.9961	119.3318	27.2104	0.00734	0.115266	0.0324	0.008388	0.003078	0.051835	0.036131	0.419759	0.159081	0.039876	0.21247	2.143205	0.052722	0.612512	0.174174	0.039876	0.21247	2.143205	0.044922	1.060707	3.758503	3.2802	0.00864	0.00118	0.000269
San Mateo	2022	LHDT1	Aggregate	Aggregate	Diesel	4125.911	163656.9	163656.9	0	51898.77	0	1.504213	1.931831	0	0.031512	0.027157	0	0.003	0.0273	0.032937	0.028385	0	0.012	0.078	637.8215	131.7515	0	0.007485	0.005098	0	0.100489	0.020757	0	0.161141	0.10976	0	0	0	0	0.183448	0.124954	0	0	0	0	0.175401	0.431298	0.909745	0	0.006044	0.001248	0
San Mateo	2022	LHDT2	Aggregate	Aggregate	Gasoline	1166.848	41928.69	41928.69	0	17384.3	0	0.172444	0.036335	0.63879	0.001438	0	0.000256	0.002	0.03185	0.001563	0	0.000279	0.008	0.091	987.4952	138.4793	25.88997	0.006917	0.113246	0.032524	0.010039	0.002938	0.050567	0.032554	0.416435	0.161154	0.042451	0.223651	2.256912	0.047503	0.60766	0.176444	0.042451	0.223651	2.256912	0.044984	0.96909	3.758162	3.27211	0.009762	0.001369	0.000256
San Mateo	2022	LHDT2	Aggregate	Aggregate	Diesel	1718.365	70077.77	70077.77	0	21614.87	0	1.063364	1.845339	0	0.026451	0.026962	0	0.003	0.03185	0.027647	0.028181	0	0.012	0.091	760.4369	209.0317	0	0.0066	0.005098	0	0.119807	0.032933	0	0.142091	0.10976	0	0	0	0	0.161761	0.124954	0	0	0	0	0.190222	0.33883	0.909745	0	0.007206	0.001981	0
San Mateo	2022	MCY	Aggregate	Aggregate	Gasoline	11775.11	70029.62	70029.62	0	23550.22	0	0.563376	0	0.148145	0.00188	0	0.003836	0.001	0.0042	0.002007	0	0.00407	0.004	0.012	188.692	0	50.07102	0.159449	0	0.191389	0.038859	0	0.008671	1.054922	0	1.43267	3.559039	3.722371	3.591267	1.259821	0	1.557156	3.559039	3.722371	3.591267	0.008767	12.33015	0	7.963377	0.001865	0	0.000495
San Mateo	2022	MDV	Aggregate	Aggregate	Gasoline	72399.54	2561532	2561532	0	344969.9	0	0.082284	0	0.405736	0.001302	0	0.002201	0.002	0.002736	0.001416	0	0.002394	0.008	0.007817	417.1287	0	107.0056	0.003285	0	0.097944	0.006421	0	0.03969	0.013708	0	0.489899	0.078175	0.208676	1.264413	0.019977	0	0.536373	0.078175	0.208676	1.264413	0.037279	0.822259	0	4.057961	0.004124	0	0.001058
San Mateo	2022	MDV	Aggregate	Aggregate	Diesel	1048.144	37479.46	37479.46	0	5036.896	0	0.047538	0	0	0.004777	0	0	0.002	0.002777	0.004993	0	0	0.008	0.007934	415.9683	0	0	0.000486	0	0	0.065536	0	0	0.010456	0	0	0	0	0	0.011904	0	0	0	0	0	0.0031	0.180998	0	0	0.003942	0	0
San Mateo	2022	MDV	Aggregate	Aggregate	Electricity	497.8274	16375.41	0	16375.41	2565.598	6322.26	0	0	0	0	0	0	0.002	0.001523	0	0	0	0.008	0.004351	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
San Mateo	2022	MDV	Aggregate	Aggregate	Plug-in Hyb	517.8537	21966.08	11106.12	10859.96	2141.325	3280.032	0.003248	0	0.117199	0.000662	0	0.002216	0.002	0.001313	0.00072	0	0.00241	0.008	0.003752	136.3969	0	99.02064	0.000428	0	0.043094	0.000581	0	0.020938	0.001365	0	0.176635	0.028658	0.027868	0.344841	0.001992	0	0.193393	0.028658	0.027868	0.344841	0.021235	0.203543	0	1.37819	0.001348	0	0.000979
San Mateo	2022	MH	Aggregate	Aggregate	Gasoline	751.6488	7043.926	7043.926	0	75.19494	0	0.465552	0	0.403779	0.001863	0	0.00047	0.003	0.015756	0.002026	0	0.000512	0.012	0.045017	1948.174	0	32.24518	0.017921	0	0.039048	0.027477	0	0.041219	0.080748	0	0.17064	12.70927	0.296989	4.339134	0.117828	0	0.186829	12.70927	0.296989	4.339134	0.044744	2.072946	0	3.847624	0.01926	0	0.000319
San Mateo	2022	MH	Aggregate	Aggregate	Diesel	300.3894	3250.689	3250.689	0	30.03894	0	3.401996	0	0	0.063019	0	0	0.004	0.015675	0.065868	0	0	0.016	0.044785	1084.767	0	0	0.00458	0	0	0.170906	0	0	0.09861	0	0	0	0	0	0.112261	0	0	0	0	0	0.179676	0.315592	0	0	0.010279	0	0
San Mateo	2022	MHDT	Aggregate	Aggregate	Gasoline	756.5401	44483.7	44483.7	0	15136.85	0	0.604094	0.088245	0.46581	0.00141	0	0.000575	0.003	0.015756	0.001534	0	0.000625	0.012	0.045017	1795.462	537.4412	47.64422	0.019663	0.256996	0.051354	0.028235	0.007106	0.034029	0.098372	1.009116	0.288081	0.038151	0.314095	2.937981	0.143545	1.4725	0.315413	0.038151	0.314095	2.937981	0.044954	2.080066	15.07471	6.396341	0.01775	0.005313	0.000471
San Mateo	2022	MHDT	Aggregate	Aggregate	Diesel	4156.051	174304	174304	0	49995.69	0	1.853334	15.89701	1.436117	0.023182	0.047988	0	0.003	0.015983	0.02423	0.050158	0	0.012	0.045666	1163.775	2327.752	0	0.002813	0.013999	0	0.183353	0.366738	0	0.060556	0.301404	0	0	0	0	0.068939	0.343126	0	0	0	0	0.193605	0.190383	7.265304	0	0.01102	0.022042	0
San Mateo	2022	MHDT	Aggregate	Aggregate	Natural Ga	40.6324	1873.257	1873.257	0	381.7521	0	0.153851	6.514328	0	0.001104	0.016957	0	0.003	0.016076	0.001201	0.018442	0	0.012	0.045932	1016.708	5323.016	0	0.747144	17.79445	0	0.207263	1.085132	0	0.010675	0.254248	0	0	0	0	0.762515	18.16055	0	0	0	0	1.06	3.046292	32.12184	0	0	0	0
San Mateo	2022	OBUS	Aggregate	Aggregate	Gasoline	256.1924	15869.04	15869.04	0	5125.898	0	0.334451	0.065049	0.372974	0.000967	0	0.000281	0.003	0.01568	0.001052	0	0.000306	0.012	0.044799	1762.688	376.5742	30.5752	0.010394	0.20597	0.033776	0.01844	0.005899	0.032179	0.049248	0.746076	0.166832	0.02655	0.111811	1.875172	0.071862	1.088672	0.18266	0.02655	0.111811	1.875172	0.044917	1.077968	5.773479	3.517583	0.017426	0.003723	0.000302
San Mateo	2022	OBUS	Aggregate	Aggregate	Diesel	1024.18	74221.67	74221.67	0	10035.19	0	1.072703	6.342591	1.429669	0.010592	0.00365	0	0.003	0.01742	0.011071	0.003815	0	0.012	0.04977	1257.365	1266.668	0	0.001405	0.014292	0	0.198098	0.199564	0	0.030244	0.307698	0	0	0	0	0.03443	0.350291	0	0	0	0	0.210134	0.116655	5.413261	0	0.011906	0.011995	0
San Mateo	2022	OBUS	Aggregate	Aggregate	Natural Ga	11.96887	654.3713	654.3713	0	106.5229	0	0.293719	1.58105	0	0.000566	0.002858	0	0.003	0.016148	0.000615	0.003109	0	0.012	0.046137	1069.812	1202.184	0	0.733013	4.775652	0	0.218088	0.245073	0	0.010473	0.068235	0	0	0	0	0.748094	4.873903	0	0	0	0	1.06	3.101343	5.006328	0	0	0	0
San Mateo	2022	SBUS	Aggregate	Aggregate	Gasoline	57.57285	3267.931	3267.931	0	230.2914	0	0.981493	0.921357	0.655387	0.001299	0	0.000777	0.002	0.015721	0.001412	0	0.000845	0.008	0.044917	807.8108	2570.697	63.52492	0.024786	2.43655	0.092559	0.045477	0.081943	0.056213	0.121107	10.56494	0.538292	0.15493	0.449507	2.231691	0.17672	15.41634	0.589362	0.15493	0.449507	2.231691	0.045	3.134679	81.77802	13.70908	0.007986	0.025414	0.000628
San Mateo	2022	SBUS	Aggregate	Aggregate	Diesel	168.1521	3799.171	3799.171	0	2434.843	0	5.308039	24.50088	0.415745	0.025509	0.027927	0	0.003	0.015721	0.026662	0.02919	0	0.012	0.044917	1155.182	2256.975	0	0.003351	0.008427	0	0.181999	0.355587	0	0.072141	0.18143	0	0	0	0	0.082127	0.206545	0	0	0	0	0.128799	0.214547	4.164591	0	0.010939	0.021372	0
San Mateo	2022	SBUS	Aggregate	Aggregate	Natural Ga	5.747464	147.755	147.755	0	83.22328	0	0.580038	5.278861	0	0.003378	0.011167	0	0.003	0.015721	0.003674	0.012145	0	0.012	0.044917	1270.028	4071.06	0	3.473989	15.35501	0	0.258904	0.829912	0	0.049636	0.219393	0	0	0	0	3.545461	15.67091	0	0	0	0	1.06	11.82462	20.31851	0	0	0	0
San Mateo	2022	UBUS	Aggregate	Aggregate	Gasoline	61.08139	4153.342	4153.342	0	244.3256	0	0.052732	0	0.593554	0.000924	0	0.000101	0.002	0.002073	0.032333	0.001005	0	0.00011	0.00829	0.092379	1026.004	0	41.36564	0.002283	0	0.05585	0.006009	0	0.07764	0.006738	0	0.216361	0.059157	0.09606	0.592841	0.009832	0	0.236888	0.059157	0.09606	0.592841	0.045	0.562776	0	5.939286	0.010143	0	0.000409
San Mateo	2022	UBUS	Aggregate	Aggregate	Diesel	341.0475	28477.87	28477.87	0	1364.19	0	2.903167	0	0	0.007622	0	0	0.007913	0.0385	0.007966	0	0	0.031652	0.11	1452.079	0	0	0.00732	0	0	0.228776	0	0	0.157595	0	0	0	0	0	0.179409	0	0	0	0	0	0.12243	0.193248	0	0	0.013759	0	0
San Mateo	2022	UBUS	Aggregate	Aggregate	Electricity	2.018703	15.3193	0	15.3193	8.074811	26.70528	0	0	0	0	0	0	0.009	0.01925	0	0	0	0.036	0.055	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
San Mateo	2022	UBUS	Aggregate	Aggregate	Natural Ga	34.62042	1174.257	1174.257	0	138.4817	0	0.063543	0	0	0.000296	0	0	0.008807	0.0385	0.000331	0	0	0.035229	0.11	1350.881	0	0	4.451808	0	0	0.275386	0	0	0.063608	0	0	0	0	0	4.543397	0	0	0	0	0	0.97	52.64109	0	0	0	0	0

Source: EMFAC2021 (v1.0.1) Emission Rates
Region Type: County
Region: San Mateo
Calendar Year: 2023
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for CVMT and EVMT, trips/day for Trips, kWh/day for Energy Consumption, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HOTSOAK and RUNLOSS, g/vehicle/day for IDLEX and DIURN

Region	Calendar Y	Vehicle Cat	Model Yea	Speed	Fuel	Population	Total VMT	CVMT	EVMT	Trips	Energy Con	NOx_RUNEX	NOx_IDLEX	NOx_STREX	PM2.5_RU	PM2.5_IDL	PM2.5_ST	PM2.5_PM	PM2.5_PM	PM10_RUN	PM10_IDLE	PM10_STR	PM10_PM	PM10_PMI	CO2_RUNE	CO2_IDLEX	CO2_STREX	CH4_RUNE	CH4_IDLEX	CH4_STREX	N2O_RUNEX	N2O_IDLEX	N2O_STREX	ROG_RUNI	ROG_IDLEX	ROG_STREX	ROG_HOTS	ROG_RUNI	ROG_DIUR	TOG_RUNE	TOG_IDLEX	TOG_STREX	TOG_HOTS	TOG_RUNI	TOG_DIUR	NH3_RUNEX	CO_RUNEX	CO_IDLEX	CO_STREX	SOx_RUNE	SOx_IDLEX	SOx_STREX
San Mateo	2023	HHDT	Aggregate	Aggregate	Gasoline	4.303891	593.3265	593.3265	0	0	86.11225	0	4.056089	0	0.0028	0.00142	0	0.000834	0.005	0.031149	0.001544	0	0.000907	0.02	0.088996	2258.184	0	54.48492	0.114491	0	0.000118	0.150249	0	0.000135	0.581376	0	0.000638	0.041838	0.335524	2.939257	0.848342	0	0.000699	0.041838	0.335524	2.939257	0.845	33.28789	0	6.069294	0.022324	0	0.000539
San Mateo	2023	HHDT	Aggregate	Aggregate	Diesel	1295.72	119079.6	119079.6	0	0	14027.66	0	2.889862	47.02809	2.876808	0.025432	0.037858	0	0.008609	0.030943	0.026582	0.03957	0	0.034434	0.08841	1843.774	8291.615	0	0.001322	0.156217	0	0.290487	1.306347	0	0.028463	3.363316	0	0	0	0	0.032403	3.828879	0	0	0	0	0.197741	0.123869	46.58006	0	0.017459	0.078517	0
San Mateo	2023	HHDT	Aggregate	Aggregate	Electricity	0.738781	40.81187	0	40.81187	9.636589	75.42902	0	0	0	0	0	0	0	0.008666	0.01378	0	0	0	0.034663	0.039372	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
San Mateo	2023	HHDT	Aggregate	Aggregate	Natural Ga	157.5655	10602.72	10602.72	0	0	1067.368	0	1.650268	10.1232	0	0.001897	0.012167	0	0.009	0.058575	0.002063	0.013232	0	0.036	0.167357	1522.593	8490.533	0	3.343054	25.56751	0	0.310391	1.730851	0	0.076973	0.418135	0	0	0	0	3.445109	26.1537	0	0	0	0	0.73711	17.41229	66.41256	0	0	0	0
San Mateo	2023	LDA	Aggregate	Aggregate	Gasoline	240378.8	7727537	7727537	0	0	1126355	0	0.042338	0	0.260506	0.001198	0	0.002031	0.002	0.002348	0.001303	0	0.002208	0.008	0.006708	278.3785	0	70.81713	0.002267	0	0.072534	0.004517	0	0.032351	0.008874	0	0.341649	0.087062	0.222247	1.324707	0.012948	0	0.374061	0.087062	0.222247	1.324707	0.035408	0.677749	0	0.395649	0.002752	0	0.0007
San Mateo	2023	LDA	Aggregate	Aggregate	Diesel	833.7612	19906.52	19906.52	0	0	3528.191	0	0.213764	0	0	0.014362	0	0	0	0.002	0.002398	0.015012	0	0	0.008	0.006851	234.8149	0	0	0.001164	0	0	0	0	0	0.036995	0	0	0	0.02507	0	0	0	0	0	0.02854	0	0	0	0.00231	0.317118	0	0	0.002225	0	0
San Mateo	2023	LDA	Aggregate	Aggregate	Electricity	16299	630419.6	0	630419.6	81240.99	243394	0	0	0	0	0	0	0	0.002	0.001529	0	0	0	0.008	0.00437	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
San Mateo	2023	LDA	Aggregate	Aggregate	Plug-in Hyb	6930.414	264587.6	131767.9	132819.8	28657.26	40115.53	0.003199	0	0.117199	0.000615	0	0.002065	0.002	0.001318	0.000669	0	0.002246	0.008	0.003766	134.3501	0	65.86248	0.000415	0	0.042451	0.000556	0	0.02034	0.001345	0	0.176635	0.03705	0.032896	0.392427	0.019696	0.200492	0	1.37819	0.001328	0	0.000651
San Mateo	2023	LDT1	Aggregate	Aggregate	Gasoline	24557.61	732297.8	732297.8	0	0	111855.3	0	0.11638	0	0.364578	0.001649	0	0.002601	0.002	0.002829	0.001794	0	0.002828	0.008	0.008082	326.1114	0	85.73673	0.005448	0	0.099842	0.008499	0	0.037022	0.024289	0	0.513929	0.14557	0.416379	2.294434	0.035435	0	0.562687	0.14557	0.416379	2.294434	0.037022	1.217988	0	5.093009	0.003224	0	0.000848
San Mateo	2023	LDT1	Aggregate	Aggregate	Diesel	7.655601	101.9185	101.9185	0	0	22.20173	0	1.676086	0	0	0.239368	0	0	0	0.002	0.003332	0.250191	0	0	0.008	0.00952	418.3389	0	0	0.014739	0	0	0.065909	0	0	0.317327	0	0	0	0	0	0	0.361255	0	0	0	0	0.0031	1.688168	0	0.003964	0	0	0
San Mateo	2023	LDT1	Aggregate	Aggregate	Electricity	74.62331	2574.77	0	2574.77	357.9526	994.0736	0	0	0	0	0	0	0	0.002	0.001535	0	0	0	0.008	0.004386	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
San Mateo	2023	LDT1	Aggregate	Aggregate	Plug-in Hyb	34.67073	1451.31	668.3078	783.0024	143.3635	236.4901	0.002958	0	0.117199	0.000383	0	0.001401	0.002	0.001331	0.000416	0	0.001524	0.008	0.003802	124.2265	0	72.42832	0.000385	0	0.042531	0.000515	0	0.020414	0.001243	0	0.176635	0.024383	0.02158	0.274849	0.001814	0	0.193393	0.024383	0.02158	0.274849	0.01934	0.185385	0	1.37819	0.001228	0	0.000716
San Mateo	2023	LDT2	Aggregate	Aggregate	Gasoline	139222.3	4716888	4716888	0	0	668266.1	0	0.05408	0	0.29713	0.001207	0	0.001949	0.002	0.002716	0.001313	0	0.002119	0.008	0.007759	339.1094	0	86.14007	0.00237	0	0.075845	0.004959	0	0.034716	0.009113	0	0.347984	0.063629	0.160781	1.007437	0.013297	0	0.380999	0.063629	0.160781	1.007437	0.037748	0.693563	0	3.480515	0.003352	0	0.000852
San Mateo	2023	LDT2	Aggregate	Aggregate	Diesel	541.6894	18280.98	18280.98	0	0	2609.031	0	0.042759	0	0	0.004694	0	0	0	0.002	0.002739	0.004906	0	0	0.008	0.007825	314.2391	0	0	0.000594	0	0	0.049508	0	0	0.012791	0	0	0	0.014562	0	0	0	0	0	0.0031	0.121058	0	0	0.002978	0	0
San Mateo	2023	LDT2	Aggregate	Aggregate	Electricity	855.0521	26877.43	0	26877.43	4389.934	10376.91	0	0	0	0	0	0	0	0.002	0.001524	0	0	0	0.008	0.004355	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
San Mateo	2023	LDT2	Aggregate	Aggregate	Plug-in Hyb	1293.229	52235.96	24959.1	27276.86	5347.502	8238.424	0.00307	0	0.117199	0.000478	0	0.001688	0.002	0.001325	0.00052	0	0.001836	0.008	0.003785	128.9014	0	78.74622	0.000399	0	0.042537	0.000535	0	0.02042	0.00129	0	0.176635	0.025663	0.02377	0.299211	0.001883	0	0.193393	0.025663	0.02377	0.299211	0.020047	0.192361	0	1.37819	0.001274	0	0.000778
San Mateo	2023	LHDT1	Aggregate	Aggregate	Gasoline	10572.08	392533.1	392533.1	0	0	157508.2	0	0.12528	0.035112	0.59784	0.00142	0	0.000253	0.002	0.0273	0.001545	0	0.000275	0.008	0.078	853.4932	117.883	26.97693	0.006321	0.111177	0.030421	0.00715	0.002997	0.050012	0.03091	0.4025	0.148384	0.036924	0.198922	2.014404	0.045104	0.587327	0.162462	0.036924	0.198922	2.014404	0.044937	0.986439	3.761565	3.318076	0.008438	0.001165	0.000267
San Mateo	2023	LHDT1	Aggregate	Aggregate	Diesel	4577.109	179686.5	179686.5	0	0	57574.27	0	1.224717	1.76206	0	0.0273	0.026942	0	0.003	0.0273	0.028534	0.02816	0	0.012	0.078	630.6192	129.0392	0	0.006697	0.005098	0	0.099354	0.02033	0	0.144187	0.10976	0	0	0	0	0.164147	0.124954	0	0	0	0	0.184546	0.371953	0.909745	0	0.005975	0.001223	0
San Mateo	2023	LHDT2	Aggregate	Aggregate	Gasoline	1231.236	43549.94	43549.94	0	0	18343.59	0	0.144	0.03443	0.605262	0.001368	0	0.000226	0.002	0.03185	0.001487	0	0.000246	0.008	0.091	963.6905	136.6851	25.60031	0.005686	0.108022	0.030291	0.008533	0.002829	0.048554	0.026382	0.394722	0.148891	0.038757	0.204501	2.085419	0.038496	0.575977	0.163017	0.038757	0.204501	2.085419	0.044989	0.878989	3.762499	3.300689	0.009527	0.001351	0.000253
San Mateo	2023	LHDT2	Aggregate	Aggregate	Diesel	1952.709	77798.97	77798.97	0	0	24562.62	0	0.883685	1.679482	0	0.023677	0.026872	0	0.003	0.03185	0.024747	0.028087	0	0.012	0.091	747.9998	204.9987	0	0.006098	0.005098	0	0.117848	0.032298	0	0.131288	0.10976	0	0	0	0	0.149463	0.124954	0	0	0	0	0.196309	0.303972	0.909745	0	0.007088	0.001942	0
San Mateo	2023	MCY	Aggregate	Aggregate	Gasoline	12536.77	73820.04	73820.04	0	0	25073.54	0	0.537143	0	0.136291	0.001883	0	0.003663	0.001	0.0042	0.002012	0	0.003894	0.004	0.012	187.6396	0	47.90752	0.151085	0	0.181429	0.037735	0	0.008068	0.98245	0	1.347169	3.555217	3.717102	3.435381	1.181139	0	1.464498	3.555217	3.717102	3.435381	0.008844	11.57445	0	7.838613	0.001855	0	0.000474
San Mateo	2023	MDV	Aggregate	Aggregate	Gasoline	78398.02	2704273	2704273	0	0	374408	0	0.068743	0	0.362909	0.001222	0	0.002069	0.002	0.002734	0.001329	0	0.002251	0.008	0.00781	408.872	0	104.3819	0.002844	0	0.089064	0.005703	0	0.037349	0.01161	0	0.437746	0.072395	0.194625	1.190411	0.016926	0	0.479274	0.072395	0.194625	1.190411	0.038092	0.747341	0	3.739188	0.004042	0	0.001032
San Mateo	2023	MDV	Aggregate	Aggregate	Diesel	1107.903	37908.13	37908.13	0	0	5305.818	0	0.04176	0	0	0.004328	0	0	0	0.002	0.002788	0.004524	0	0	0.008	0.007965	410.1053	0	0	0.000449	0	0	0.066412	0	0	0.009665	0	0	0	0.011002	0	0	0	0	0	0.0031	0.175602	0	0	0.003886	0	0
San Mateo	2023	MDV	Aggregate	Aggregate	Electricity	906.5115	28548.82	0	28548.82	4657.021	11022.2	0	0	0	0	0	0	0	0.002	0.001524	0	0	0	0.008	0.004354	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
San Mateo	2023	MDV	Aggregate	Aggregate	Plug-in Hyb	678.1174	27547.88	13448.47	14099.41	2804.015	4258.442	0.003136	0	0.117199	0.000578	0	0.002002	0.002	0.001322	0.000628	0	0.002177	0.008	0.003776	131.6991	0	97.50736	0.000409	0	0.04268	0.00055	0	0.020553	0.001318	0	0.176635	0.027976	0.026258	0.325091	0.001923	0	0.193393	0.027976	0.026258	0.325091	0.020504	0.196536	0	1.37819	0.001302	0	0.000964
San Mateo	2023	MH	Aggregate	Aggregate	Gasoline	774.8115	7442.976	7442.976	0	0	77.51215	0	0.375927	0	0.404893	0.001719	0	0.000436	0.003	0.015756	0.001869	0	0.000474	0.012	0.045017	1947.17	0	31.89355	0.01417	0	0.038105	0.023764	0	0.042528	0.061382	0	0.162444	11.11371	0.261936	3.902966	0.089569	0	0.177852	11.11371	0.261936	3.902966	0.044861	1.492455	0	3.64337	0.01925	0	0.000315
San Mateo	2023	MH	Aggregate	Aggregate	Diesel	328.5822	3487.262	3487.262	0	0	32.85822	0	3.229197	0	0	0.055455	0	0	0	0.004	0.015675	0.057962	0	0	0.016	0.044785	1085.349	0	0	0.004377	0	0	0.170997	0	0	0.094242	0	0	0	0.107288	0	0	0	0	0	0	0	0	0	0.185977	0.297993	0	0	0.010284	0	0
San Mateo	2023	MHDT	Aggregate	Aggregate	Gasoline	780.1924	45998.29	45998.29	0	0	15610.09	0	0.48063	0.088485	0.45368	0.001377	0	0.000542	0.003	0.015756	0.001498	0	0.00059	0.012	0.045017	1763.945	530.3326	46.39494	0.015519	0.261469	0.049092	0.023565	0.00737	0.034436	0.076573	1.012695	0.270574	0.033571	0.274671	2.598982	0.111736	1.477722	0.296245	0.033571	0.274671	2.598982	0.044979	1.599932	15.11623	5.97113	0.017438	0.005243	0.000459
San Mateo	2023	MHDT	Aggregate	Aggregate	Diesel	4189.443	175901.2	175901.2	0	0	50462.49	0	1.42648	14.09475	1.586053	0.018782	0.040011	0	0.003	0.015983	0.019631	0.041821	0	0.012	0.045665	1155.919	2264.351	0	0.002009	0.012779	0	0.182115	0.356749	0	0.043248	0.275121	0	0	0	0	0.049234	0.313205	0	0	0	0	0.206918	0.148734	7.579195	0	0.010946	0.021442	0
San Mateo	2023	MHDT	Aggregate	Aggregate	Electricity	2.059294	44.11104	0	44.11104	25.56596	47.28311	0	0	0	0	0	0	0	0.003	0.007991	0	0	0	0.012	0.022833	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
San Mateo	2023	MHDT	Aggregate	Aggregate	Natural Ga	38.13508	1832.77	1832.77	0	0	342.2075	0	0.132951	6.609544	0	0.001228	0.018659	0	0.003	0.016094	0.001336	0.020293	0	0.012	0.045982	1008.408	5458.884	0	0.769477	17.52611	0	0.20557	1.112829	0	0.010994	0.250414	0	0	0	0	0.785307	17.88668	0	0	0	0	1.06	3.064735	35.81803	0	0	0	0
San Mateo	2023	OBUS	Aggregate	Aggregate	Gasoline	256.5607	15177.04	15177.04	0	0	5133.267	0	0.308106	0.065063	0.369453	0.001	0	0.000287	0.003	0.01568	0.001088	0	0.000312	0.012	0.044799	1742.276	373.6354	30.27704	0.009595	0.205564	0.033157	0.017281	0.005903	0.031894	0.045405	0.746279	0.163878	0.026481	0.113352	1.902307	0.066255	1.088969	0.179425	0.026481	0.113352	1.902307	0.044919	0.985887	5.774707	3.460301	0.017224	0.003694	0.000299
San Mateo	2023	OBUS	Aggregate	Aggregate	Diesel	1051.799	74746.95	74746.95	0	0	10288.18	0	0.843686	5.779548	1.508936	0.009565	0.003378	0	0.003	0.017376	0.009998	0.003531	0	0.012	0.049647	1250.895	1225.784	0	0.000947	0.013995	0	0.197079	0.193123	0	0.020398	0.301313	0	0	0	0	0.023222	0.343022	0	0	0	0	0.217631	0.094166	5.629794	0	0.011845	0.011607	0
San Mateo	2023	OBUS	Aggregate	Aggregate	Natural Ga	6.660994	415.1452	415.1452	0	0	59.28285	0	0.232948	1.556882	0	0.000856	0.003435	0	0.003	0.016148	0.000931	0.003736	0	0.012	0.046137	1029.36	1194.248	0	0.766347	4.477255	0	0.209842	0.243455	0	0.01095	0.063971	0	0	0	0	0.782113	4.569367	0	0	0	0	1.06	3.19115	6.306096	0	0	0	0
San Mateo	2023	SBUS	Aggregate	Aggregate	Gasoline	62.11288	3411.923	3411.923	0	0	248.4515	0	0.897656	0.923288	0.643317	0.001164	0	0.000721	0.002	0.015721	0.001266	0	0.000784	0.008	0.044917	797.3184	2541.99	62.30631	0.021738	2.445799	0.089765	0.041731	0.084017	0.05658	0.106456	10.59413	0.521132	0.139121	0.406864	2.094566	0.15534	15.45893	0.570574	0.139121	0.406864	2.094566	0.045	2.707181	81.95312	13.2835	0.007882	0.02513	0.000616
San Mateo	2023	SBUS	Aggregate	Aggregate	Diesel	168.8118	3793.041	3793.041	0	0	2444.395	0	5.00314	23.87172	0.437587	0.023953	0.025817	0	0.003	0.015721	0.025036	0.026985	0	0.012	0.044917	1149.738	2246.853	0	0.003233	0.008312	0	0.181142	0.353993	0	0.069615	0.178964	0	0	0	0	0.079252	0.203737	0	0	0	0	0.134019	0.208594	4.289616	0	0.010887	0.021276	0
San Mateo	2023	SBUS	Aggregate	Aggregate	Electricity	0.041475	0.481131	0	0.481131	0.600564	0.50685	0	0	0	0	0	0	0	0.003	0.00786	0	0	0	0.012	0.022459	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
San Mateo	2023	SBUS	Aggregate	Aggregate	Natural Ga	6.023036	153.4041	153.4041	0	0	87.21356	0	0.556332	5.264261	0	0.003378	0.011516	0	0.003	0.015721	0.003674	0.012524	0	0.012	0.044917	1258.036	4080.42	0	3.408583	15.17474	0	0.256459	0.83182	0	0.048702	0.216817	0	0	0	0	3.478709	15.48694	0	0	0	0	1.06	11.51682	21.10371	0	0	0	0
San Mateo	2023	UBUS	Aggregate	Aggregate	Gasoline	61.26278	4165.676	4165.676	0	0	245.0511	0	0.037017	0	0.578233	0.000989	0	0.000127	0.002	0.002073	0.032333	0.001076	0	0.000139	0.00829	0.092379	1025.682	0	41.23868	0.002259	0	0.053565	0.004956	0	0.077039	0.006631	0	0.206281	0.070589	0.114555	0.693653	0.009677	0	0.225852	0.070589	0.114555	0.693653	0.045	0.556154	0	5.887541	0.01014	0	0.000408
San Mateo	2023	UBUS	Aggregate	Aggregate	Diesel	341.8463	28540.62	28540.62	0	0	1367.385	0	2.897593	0	0	0.007619	0	0	0	0.007913	0.0385	0.007964	0	0	0.031652	0.11	1451.453	0	0	0.007311	0	0	0.228677	0	0	0.157395	0	0	0	0.179182	0	0	0	0	0	0.122644	0.192989	0	0	0.013753	0	0
San Mateo	2023	UBUS	Aggregate	Aggregate	Electricity	2.018703	15.3193	0	15.3193	8.074811	26.70528	0	0	0	0	0	0	0	0.009	0.01925	0	0	0	0.036	0.055	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
San Mateo	2023	UBUS	Aggregate	Aggregate	Natural Ga	34.94319	1199.611	1199.611	0	0	139.7728	0	0.063405	0	0	0.000296	0	0	0	0.008789	0.0385	0.000309	0	0	0.035157	0.11	1349.38	0	0	4.445831	0	0	0.27508	0	0	0.063522	0	0	0	4.537297	0	0	0	0	0	0.97	52.53671	0	0	0	0	0

Source: EMFAC2021 (v1.0.1) Emission Rates
Region Type: County
Region: San Mateo
Calendar Year: 2024
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for CVMT and EVMT, trips/day for Trips, kWh/day for Energy Consumption, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HOTSOAK and RUNLOSS, g/vehicle/day for IDLEx and DIURN

Region	Calendar Y	Vehicle Cat	Model Yea	Speed	Fuel	Population	Total VMT	CVMT	EVMT	Trips	Energy Con	NOx_RUNEX	NOx_IDLEX	NOx_STREX	PM2.5_RU	PM2.5_IDL	PM2.5_STR	PM2.5_PM	PM2.5_PM	PM10_RUN	PM10_IDLE	PM10_STR	PM10_PM	PM10_PMI	CO2_RUNE	CO2_IDLEX	CO2_STREX	CH4_RUNE	CH4_IDLEX	CH4_STREX	N2O_RUNE	N2O_IDLEX	N2O_STRE	ROG_RUNI	ROG_IDLEX	ROG_STRE	ROG_HOTS	ROG_RUNI	ROG_DIUR	TOG_RUNE	TOG_IDLEX	TOG_STRE	TOG_HOTS	TOG_RUNI	TOG_DIUR	NH3_RUNE	CO_RUNEX	CO_IDLEX	CO_STREX	SOx_RUNE	SOx_IDLEX	SOx_STREX
San Mateo	2024	HHDT	Aggregate	Aggregate	Gasoline	4.38411	570.1519	570.1519	0	87.71727	0	4.048188	0	0.002195	0.001412	0	0.000781	0.005	0.031087	0.001536	0	0.000849	0.02	0.08882	2242.616	0	52.51813	0.114927	0	9.83E-05	0.151409	0	0.000106	0.580011	0	0.000534	0.038164	0.298441	2.621146	0.84635	0	0.000584	0.038164	0.298441	2.621146	0.045	33.76595	0	5.064106	0.022171	0	0.000519
San Mateo	2024	HHDT	Aggregate	Aggregate	Diesel	1314.625	119489.1	119489.1	0	14359.46	0	2.758523	46.67792	2.948259	0.025016	0.035273	0	0.008607	0.030666	0.026147	0.036868	0	0.034429	0.087616	1815.874	8218.84	0	0.001264	0.157243	0	0.286092	1.294882	0	0.027205	3.385404	0	0	0	0	0.030971	3.854024	0	0	0	0	0	0.19939	0.118425	47.19978	0	0.017195	0.077828	0
San Mateo	2024	HHDT	Aggregate	Aggregate	Electricity	4.22305	364.2879	0	364.2879	41.8342	680.3172	0	0	0	0	0	0	0.008582	0.016829	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
San Mateo	2024	HHDT	Aggregate	Aggregate	Natural Ga	168.5495	11187.83	11187.83	0	1132.175	0	1.492552	9.520927	0	0.001788	0.012243	0	0.009	0.059336	0.001944	0.013315	0	0.036	0.169533	1498.953	8407.645	0	3.081874	24.13874	0	0.305571	1.713953	0	0.069062	0.389544	0	0	0	0	3.173794	24.68622	0	0	0	0	0	0.729125	16.65962	64.84398	0	0	0	0
San Mateo	2024	LDA	Aggregate	Aggregate	Gasoline	239419.7	7454000	7454000	0	1124271	0	0.038087	0	0.247841	0.001162	0	0.001964	0.002	0.002348	0.001263	0	0.002136	0.008	0.006709	273.8201	0	69.41898	0.002038	0	0.068169	0.004236	0	0.031309	0.007847	0	0.318313	0.083377	0.213338	1.277502	0.01145	0	0.348512	0.083377	0.213338	1.277502	0.036176	0.637775	0	0.199778	0.002707	0	0.000686
San Mateo	2024	LDA	Aggregate	Aggregate	Diesel	770.443	17557.03	17557.03	0	3247.138	0	0.188593	0	0	0.01271	0	0	0.002	0.002404	0.013285	0	0	0.008	0.006869	232.7779	0	0	0.001054	0	0	0.036674	0	0	0.022696	0	0	0	0	0	0.025838	0	0	0	0	0	0.0031	0.304144	0	0	0.002206	0	0
San Mateo	2024	LDA	Aggregate	Aggregate	Electricity	17934.86	689392.1	0	689392.1	89072.05	2661662.3	0	0	0	0	0	0	0.002	0.00153	0	0	0	0.008	0.004371	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
San Mateo	2024	LDA	Aggregate	Aggregate	Plug-in Hyb	7500.936	275231.1	133857.4	141373.7	31016.37	42699.07	0.003125	0	0.117199	0.000577	0	0.001988	0.002	0.001324	0.000628	0	0.002162	0.008	0.003783	131.2036	0	65.11921	0.000402	0	0.042117	0.000534	0	0.020029	0.001313	0	0.176635	0.037635	0.03379	0.393665	0.01916	0	0.193393	0.037635	0.03379	0.393665	0.0194	0.1958	0	1.37819	0.001297	0	0.000644
San Mateo	2024	LDT1	Aggregate	Aggregate	Gasoline	25010.05	728708.6	728708.6	0	114230.1	0	0.101175	0	0.337766	0.001531	0	0.002433	0.002	0.002823	0.001665	0	0.002647	0.008	0.008066	320.3175	0	83.57506	0.004741	0	0.091509	0.007635	0	0.035447	0.020943	0	0.464929	0.13393	0.378571	2.119435	0.03751	0	0.509038	0.13393	0.378571	2.119435	0.03751	1.098083	0	4.642443	0.003167	0	0.000826
San Mateo	2024	LDT1	Aggregate	Aggregate	Diesel	6.907674	87.50597	87.50597	0	19.69868	0	1.656035	0	0	0.236493	0	0	0.002	0.003323	0.247186	0	0	0.008	0.009495	417.763	0	0	0.014564	0	0	0.065819	0	0	0.313559	0	0	0	0	0	0.356966	0	0	0	0	0	0.0031	1.668132	0	0	0.003959	0	0
San Mateo	2024	LDT1	Aggregate	Aggregate	Electricity	91.59654	3278.131	0	3278.131	443.5442	1265.629	0	0	0	0	0	0	0.002	0.001533	0	0	0	0.008	0.004381	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
San Mateo	2024	LDT1	Aggregate	Aggregate	Plug-in Hyb	54.25069	2174.893	971.2907	1203.602	224.3266	363.5237	0.002869	0	0.117199	0.000364	0	0.001376	0.002	0.001338	0.000396	0	0.001496	0.008	0.003823	120.4792	0	71.41059	0.00037	0	0.042142	0.000491	0	0.020052	0.001206	0	0.176635	0.024003	0.020809	0.269408	0.00176	0	0.193393	0.024003	0.020809	0.269408	0.018757	0.179795	0	1.37819	0.001191	0	0.000706
San Mateo	2024	LDT2	Aggregate	Aggregate	Gasoline	149536	4914901	4914901	0	718035.6	0	0.047837	0	0.275637	0.001155	0	0.001881	0.002	0.002719	0.001256	0	0.002046	0.008	0.007768	332.6183	0	84.15109	0.002154	0	0.070859	0.004613	0	0.03323	0.008159	0	0.321903	0.059457	0.151098	0.950815	0.011906	0	0.352443	0.059457	0.151098	0.950815	0.038479	0.65082	0	3.265171	0.003288	0	0.000832
San Mateo	2024	LDT2	Aggregate	Aggregate	Diesel	582.1748	18954.02	18954.02	0	2798.233	0	0.039602	0	0	0.004525	0	0	0.002	0.002742	0.00473	0	0	0.008	0.007835	308.9591	0	0	0.000583	0	0	0.048677	0	0	0.012549	0	0	0	0	0	0.014287	0	0	0	0	0	0.0031	0.119356	0	0	0.002928	0	0
San Mateo	2024	LDT2	Aggregate	Aggregate	Electricity	1250.957	37598.89	0	37598.89	6394.245	14516.27	0	0	0	0	0	0	0.002	0.001525	0	0	0	0.008	0.004358	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
San Mateo	2024	LDT2	Aggregate	Aggregate	Plug-in Hyb	1631.391	62724.85	29203.5	33521.35	6745.803	10124.45	0.002991	0	0.117199	0.000445	0	0.001613	0.002	0.001331	0.000484	0	0.001754	0.008	0.003803	125.6019	0	77.89253	0.000385	0	0.042141	0.000512	0	0.020051	0.001257	0	0.176635	0.025289	0.023061	0.293714	0.001834	0	0.193393	0.025289	0.023061	0.293714	0.019538	0.18744	0	1.37819	0.001242	0	0.00077
San Mateo	2024	LHDT1	Aggregate	Aggregate	Gasoline	11110.29	401258.4	401258.4	0	165526.8	0	0.108054	0.033789	0.571117	0.001381	0	0.000231	0.002	0.0273	0.001502	0	0.000252	0.008	0.078	836.8766	116.5649	26.73629	0.005557	0.107506	0.028745	0.006197	0.00292	0.048292	0.02703	0.387394	0.139437	0.033968	0.18488	1.873078	0.039443	0.565284	0.152666	0.033968	0.18488	1.873078	0.044949	0.932434	3.763967	3.345475	0.008273	0.001152	0.000264
San Mateo	2024	LHDT1	Aggregate	Aggregate	Diesel	4996.692	191551.4	191551.4	0	62852.09	0	1.027551	1.628055	0	0.024469	0.026784	0	0.003	0.0273	0.025575	0.027995	0	0.012	0.078	625.1858	126.8159	0	0.006142	0.005098	0	0.098498	0.01998	0	0.132227	0.10976	0	0	0	0	0.150532	0.124954	0	0	0	0	0	0.191039	0.331515	0.909745	0	0.005924	0.001202	0
San Mateo	2024	LHDT1	Aggregate	Aggregate	Electricity	56.88552	3530.642	0	3530.642	794.6546	2311.167	0	0	0	0	0	0	0.002	0.01365	0	0	0	0.008	0.039	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
San Mateo	2024	LHDT2	Aggregate	Aggregate	Gasoline	1289.385	44551.76	44551.76	0	19209.92	0	0.122228	0.032802	0.574333	0.001317	0	0.000203	0.002	0.03185	0.001432	0	0.00022	0.008	0.091	944.5417	135.0667	25.31696	0.004775	0.10351	0.028373	0.007371	0.002735	0.046606	0.02185	0.376166	0.138457	0.035403	0.189345	1.948594	0.04499	0.81417	3.766002	3.313222	0.009338	0.001335	0.00025
San Mateo	2024	LHDT2	Aggregate	Aggregate	Diesel	2173.662	83732.44	83732.44	0	27341.93	0	0.758817	1.552593	0	0.021905	0.026813	0	0.003	0.03185	0.022896	0.028026	0	0.012	0.091	738.893	201.7788	0	0.00575	0.005098	0	0.116413	0.03179	0	0.123794	0.10976	0	0	0	0	0.140931	0.124954	0	0	0	0	0	0.200587	0.280863	0.909745	0	0.007001	0.001912	0
San Mateo	2024	LHDT2	Aggregate	Aggregate	Electricity	14.72375	865.8383	0	865.8383	194.8979	558.2118	0	0	0	0	0	0	0.002	0.015925	0	0	0	0.008	0.0455	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
San Mateo	2024	MCY	Aggregate	Aggregate	Gasoline	13263.89	76675.37	76675.37	0	26527.78	0	0.518793	0	0.126152	0.001881	0	0.003482	0.001	0.0042	0.002012	0	0.003708	0.004	0.012	186.9256	0	46.09461	0.145168	0	0.173078	0.036969	0	0.007549	0.930365	0	1.275208	3.551353	3.70872	3.28364	1.125127	0	1.386524	3.551353	3.70872	3.28364	0.008901	11.0461	0	7.750076	0.001848	0	0.000456
San Mateo	2024	MDV	Aggregate	Aggregate	Gasoline	84173.19	2823183	2823183	0	402441.6	0	0.058434	0	0.328591	0.001156	0	0.001958	0.002	0.002737	0.001258	0	0.002129	0.008	0.007819	401.2877	0	101.9843	0.002492	0	0.08141	0.005161	0	0.035386	0.009941	0	0.393656	0.066904	0.180975	1.115277	0.014501	0	0.431003	0.066904	0.180975	1.115277	0.038746	0.686178	0	3.45873	0.003967	0	0.001008
San Mateo	2024	MDV	Aggregate	Aggregate	Diesel	1163.667	38157.5	38157.5	0	5552.1	0	0.037261	0	0	0.004001	0	0	0.002	0.002798	0.004182	0	0	0.008	0.007995	404.1827	0	0	0.000421	0	0	0.063679	0	0	0.009074	0	0	0	0	0	0.01033	0	0	0	0	0	0.0031	0.171126	0	0	0.00383	0	0
San Mateo	2024	MDV	Aggregate	Aggregate	Electricity	1347.217	40547.66	0	40547.66	6889.415	15654.74	0	0	0	0	0	0	0.002	0.001525	0	0	0	0.008	0.004357	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
San Mateo	2024	MDV	Aggregate	Aggregate	Plug-in Hyb	894.3672	35015.17	16467.11	18548.06	3698.208	5602.067	0.003021	0	0.117199	0.000509	0	0.001829	0.002	0.00133	0.000553	0	0.001989	0.008	0.0038	126.8709	0	95.82464	0.000391	0	0.042289	0.000521	0	0.020188	0.00127	0	0.176635	0.028115	0.024943	0.310017	0.001853	0	0.193393	0.028115	0.024943	0.310017	0.019752	0.189334	0	1.37819	0.001254	0	0.000947
San Mateo	2024	MH	Aggregate	Aggregate	Gasoline	801.8479	7786.339	7786.339	0	80.21686	0	0.31412	0	0.403344	0.001626	0	0.000414	0.003	0.015756	0.001768	0	0.00045	0.012	0.045017	1946.554	0	31.59379	0.011734	0	0.037106	0.021154	0	0.043344	0.049091	0	0.154768	9.691274	0.229932	3.473479	0.071633	0	0.169451	9.691274	0.229932	3.473479	0.044918	1.137792	0	3.470688	0.019244	0	0.000312
San Mateo	2024	MH	Aggregate	Aggregate	Diesel	356.6509	3693.518	3693.518	0	35.66509	0	3.096233	0	0	0.049578	0	0	0.004	0.015675	0.05182	0	0	0.016	0.044785	1085.795	0	0	0.004225	0	0	0.171067	0	0	0.090961	0	0	0	0	0	0.103553	0	0	0	0	0	0.190835	0.284597	0	0	0.010288	0	0
San Mateo	2024	MHDT	Aggregate	Aggregate	Gasoline	803.5707	46997.14	46997.14	0	1607.84	0	0.392706	0.088662	0.440106	0.001362	0	0.000524	0.003	0.015756	0.001481	0	0.00057	0.012	0.045017	1738.217	524.0271	45.30167	0.012668	0.264735	0.046933	0.020191	0.007577	0.034475	0.061766	1.015329	0.254725	0.030087	0.246862	2.353612	0.090129	1.481566	0.278892	0.030087	0.246862	2.353612	0.044986	1.274083	15.14683	5.603458	0.017184	0.005181	0.000448
San Mateo	2024	MHDT	Aggregate	Aggregate	Diesel	4233.233	177028	177028	0	51051.04	0	1.307284	13.59602	1.607655	0.016259	0.033511	0	0.003	0.015983	0.016994	0.035026	0	0.012	0.045664	1151.344	2248.491	0	0.001748	0.011985	0	0.181395	0.354251	0	0.037635	0.258043	0	0	0	0	0.042845	0.293763	0	0	0	0	0	0.208724	0.13444	7.547588	0	0.010903	0.021292	0
San Mateo	2024	MHDT	Aggregate	Aggregate	Electricity	14.28233	871.0875	0	871.0875	206.3119	980.3084	0	0	0	0	0	0	0.003	0.007951	0	0	0	0.012	0.022718	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
San Mateo	2024	MHDT	Aggregate	Aggregate	Natural Ga	40.94682	1935.863	1935.863	0	369.2827	0	0.126627	6.578363	0	0.00126	0.019031	0	0.003	0.016095	0.001371	0.020698	0	0.012	0.045986	1003.333	5452.112	0	0.773152	17.27614	0	0.204536	1.111449	0	0.011047	0.246842	0	0	0	0	0.789058	17.63157	0	0	0	0	0	1.06	3.066853	36.67055	0	0	0	0
San Mateo	2024	OBUS	Aggregate	Aggregate	Gasoline	254.1967	14438.68	14438.68	0	5085.967	0	0.276687	0.065109	0.370674	0.00102	0	0.000283	0.003	0.01568	0.00111	0	0.000308	0.012	0.044799	1723.101	370.7574	29.97676	0.008478	0.205512	0.032818	0.016007	0.005919	0.031879	0.039535	0.746984	0.162428	0.025788	0.11331	1.92621	0.05769	1.089998	0.177838	0.025788	0.11331	1.92621	0.044947	0.847792	5.778931	3.396221	0.017035	0.003665	0.000296
San Mateo	2024	OBUS	Aggregate	Aggregate	Diesel	1077.493	75002.36	75002.36	0	10539.7	0	0.835238	5.759378	1.510482	0.009497	0.003284	0	0.003	0.017376	0.009927	0.003433	0	0.012	0.049647	1241.911	1216.11	0	0.000936	0.013985	0	0.195664	0.191599	0	0.020157	0.301093	0	0	0	0	0.022947	0.342772	0	0	0	0	0	0.217754	0.093918	5.631167	0	0.01176	0.011516	0
San Mateo	2024	OBUS	Aggregate	Aggregate	Electricity	0.873406	79.58076	0	79.58076	17.47512	88.16331	0	0	0	0	0	0	0.003	0.00784	0	0	0	0.012	0.022399	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
San Mateo	2024	OBUS	Aggregate	Aggregate	Natural Ga	7.797528	492.5585	492.5585	0	69.398	0	0.196374	1.542446	0	0.001031	0.003779	0	0.003	0.016148	0.001121	0.00411	0	0.012	0.046137	1012.331	1198.177	0	0.786409	4.299019	0	0.20637	0.244256	0	0.011236	0.061424	0	0	0	0	0.802588	4.387464	0	0	0	0	0	1.06	3.2452	7.082462	0	0	0	0
San Mateo	2024	SBUS	Aggregate	Aggregate	Gasoline	66.88141	3561.549	3561.549	0	267.5256	0	0.835223	0.92382	0.639831	0.001152	0	0.000724	0.002	0.015721	0.001252	0	0.000787	0.008	0.044917	789.442	2519.886	61.00487	0.01963	2.446302	0.087874	0.039135	0.085207	0.056875	0.09611	10.60191	0.509805	0.133122	0.399591	2.076885	0.140243	15.47029	0.558173	0.133122	0.399591	2.076885	0.045	2.460202	82.00038	12.72081	0.007804	0.024912	0.000603
San Mateo	2024	SBUS	Aggregate	Aggregate	Diesel	168.96	3777.202	3777.202	0	2446.541	0	4.696712	23.22062	0.459253	0.022409	0.023726	0	0.003	0.015721	0.023422	0.024798	0	0.012	0.044917	1144.311	2236.593	0	0.003112	0.008208	0	0.180287	0.352376	0	0.067	0.176716	0	0	0	0	0.076275	0.201177	0	0	0	0	0	0.139187	0.202372	4.417573	0	0.010836	0.021179	0
San Mateo	2024	SBUS	Aggregate	Aggregate	Electricity	0.90883	36.62057	0	36.62057	8.140217	38.57814	0	0	0	0	0	0	0.002304	0.00786	0	0	0	0.009214	0.022459	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
San Mateo	2024	SBUS	Aggregate	Aggregate	Natural Ga	6.288614	158.6097	158.6097	0	91.05913	0	0.535215	5.251389	0	0.003378	0.011823	0	0.003	0.015721	0.003674	0.012858	0	0.012	0.044917	1247.354	4088.672	0	3.35032	15.01581	0	0.254281	0.833502	0	0.047869	0.214546	0	0	0	0	3.419247	15.32474	0	0	0	0	0	1.06	11.24264	21.79598	0	0	0	0
San Mateo	2024	UBUS	Aggregate	Aggregate	Gasoline	61.44418	4178.01	4178.01	0	245.7767	0	0.036235	0	0.500251	0.001083	0	0.000148	0.002	0.002073	0.032333	0.001178	0	0.000161	0.00829	0.092379	1002.317	0	40.2745	0.00211	0	0.046538	0.004853	0	0.069658	0.006117	0	0.175043	0.050072	0.096281	0.505947	0.008925	0	0.19165	0.050072	0.096281	0.505947	0.045	0.556675	0	6.169996	0.009909	0	0.000398
San Mateo	2024	UBUS	Aggregate	Aggregate	Diesel	277.5893	21477.78	21477.78	0	1110.357	0	0.375565	0	0	0.006827	0	0	0.002	0.008097	0.0385	0.007136	0	0	0.032388	0.11	1223.727	0	0	0.003145	0	0	0.192799	0	0	0.067719	0	0	0	0	0	0.077093	0	0	0	0	0	0.22	0.077195	0	0	0.011595	0	0
San Mateo	2024	UBUS	Aggregate	Aggregate	Electricity	37.0794	3851.303	0	3851.303	148.3176	6713.762	0	0	0	0	0	0	0.007366	0.01925	0	0	0	0.029466	0.055	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
San Mateo	2024	UBUS	Aggregate	Aggregate	Natural Ga	65.26114	4514.573	4514.573	0	261.0446	0	0.055424	0	0	0.000272	0	0	0.007741	0.0385	0.000285	0	0	0.030963	0.11	1262.656	0	0	4.100531	0	0	0.257401	0	0	0.058588	0	0	0	0	0	4.184893	0	0	0	0	0	0.97	46.50633	0	0	0	0	0

Source: EMFAC2021 (v1.0.1) Emission Rates
Region Type: County
Region: San Mateo
Calendar Year: 2025
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for CVMT and EVMT, trips/day for Trips, kWh/day for Energy Consumption, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HOTSOAK and RUNLOSS, g/vehicle/day for IDLEX and DIURN

Region	Calendar Y	Vehicle Cat	Model Yea	Speed	Fuel	Population	Total VMT	CVMT	EVMT	Trips	Energy Con	NOx_RUNEX	NOx_IDLEX	NOx_STREX	PM2.5_RU	PM2.5_IDL	PM2.5_STR	PM2.5_PM	PM2.5_PM	PM10_RUN	PM10_IDLE	PM10_STR	PM10_PM	PM10_PM	CO2_RUNE	CO2_IDLEX	CO2_STREX	CH4_RUNE	CH4_IDLEX	CH4_STREX	N2O_RUNE	N2O_IDLEX	N2O_STREX	ROG_RUNI	ROG_IDLEX	ROG_STREX	ROG_HOTS	ROG_RUNI	ROG_DIUR	TOG_RUNE	TOG_IDLEX	TOG_STREX	TOG_HOTS	TOG_RUNI	TOG_DIUR	NH3_RUNE	CO_RUNEX	CO_IDLEX	CO_STREX	SOx_RUNE	SOx_IDLEX	SOx_STREX
San Mateo	2025	HHDT	Aggregate	Aggregate	Gasoline	4.335984	539.4434	539.4434	0	86.75436	0	3.993891	0	0.002022	0.001378	0	0.000669	0.005	0.031006	0.001498	0	0.000751	0.02	0.088589	2223.743	0	51.99251	0.111171	0	9.85E-05	0.151221	0	0.000104	0.548787	0	0.000535	0.032327	0.240688	2.160104	0.800789	0	0.000585	0.032327	0.240688	2.160104	0.045	33.0787	0	5.031545	0.021984	0	0.000514
San Mateo	2025	HHDT	Aggregate	Aggregate	Diesel	1328.41	119560.7	1195960.7	0	14621.91	0	2.632025	46.34757	3.000431	0.02461	0.033159	0	0.008607	0.030397	0.025723	0.034658	0	0.034427	0.086848	1783.935	8133.144	0	0.001211	0.15815	0	0.28106	1.28138	0	0.02607	3.404928	0	0	0	0	0.029679	3.876252	0	0	0	0	0.201044	0.113335	47.75386	0	0.016893	0.077016	0
San Mateo	2025	HHDT	Aggregate	Aggregate	Electricity	10.02384	901.0022	0	901.0022	96.27797	1681.601	0	0	0	0	0	0	0.008517	0.017099	0	0	0	0.034067	0.044854	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
San Mateo	2025	HHDT	Aggregate	Aggregate	Natural Ga	180.5549	11842.66	11842.66	0	1200.105	0	1.331412	8.859598	0	0.001692	0.012232	0	0.009	0.060148	0.00184	0.013304	0	0.036	0.171851	1473.274	8308.135	0	2.792898	22.57518	0	0.300337	1.693668	0	0.061153	0.360007	0	0	0	0	2.874566	23.0823	0	0	0	0	0.720658	15.82056	63.0407	0	0	0	0
San Mateo	2025	LDA	Aggregate	Aggregate	Gasoline	238618	7185689	7185689	0	1119872	0	0.034615	0	0.235851	0.001128	0	0.001911	0.002	0.002349	0.001227	0	0.002078	0.008	0.00671	269.175	0	68.0394	0.001838	0	0.063866	0.004	0	0.030182	0.006975	0	0.296397	0.080623	0.207785	1.246636	0.010177	0	0.324517	0.080623	0.207785	1.246636	0.036919	0.602664	0	3.018989	0.002661	0	0.000673
San Mateo	2025	LDA	Aggregate	Aggregate	Diesel	710.5834	15407.46	15407.46	0	2980.227	0	0.166025	0	0	0.01142	0	0	0.002	0.00241	0.011937	0	0	0.008	0.006884	230.6071	0	0	0.00097	0	0	0.036332	0	0	0.020877	0	0	0	0	0	0.023767	0	0	0	0	0	0.00231	0.292415	0	0	0.002185	0	0
San Mateo	2025	LDA	Aggregate	Aggregate	Electricity	19564.98	745853.8	0	745853.8	96825.51	287961.1	0	0	0	0	0	0	0.002	0.001531	0	0	0	0.008	0.004373	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
San Mateo	2025	LDA	Aggregate	Aggregate	Plug-in Hyb	8044.117	283509.4	134548.1	148961.4	33262.42	44990.77	0.003049	0	0.117199	0.000543	0	0.001919	0.002	0.00133	0.000591	0	0.002087	0.008	0.0038	128.0305	0	64.36156	0.00039	0	0.041777	0.000513	0	0.019713	0.001281	0	0.176635	0.037974	0.033851	0.389847	0.00187	0	0.193393	0.037974	0.033851	0.389847	0.019071	0.191067	0	1.37819	0.001266	0	0.000636
San Mateo	2025	LDT1	Aggregate	Aggregate	Gasoline	25473.09	722986.2	722986.2	0	116608.1	0	0.088465	0	0.313819	0.001428	0	0.002288	0.002	0.002819	0.001554	0	0.002489	0.008	0.008056	314.602	0	81.51978	0.004138	0	0.083876	0.006908	0	0.033921	0.018105	0	0.421017	0.123314	0.343281	1.948219	0.026418	0	0.460961	0.123314	0.343281	1.948219	0.037997	0.996198	0	4.245316	0.003311	0	0.000806
San Mateo	2025	LDT1	Aggregate	Aggregate	Diesel	6.297196	75.91061	75.91061	0	17.6629	0	1.633241	0	0	0.233227	0	0	0.002	0.003314	0.243773	0	0	0.008	0.009467	417.0098	0	0	0.014366	0	0	0.0657	0	0	0.309282	0	0	0	0	0	0.352097	0	0	0	0	0	0.0031	1.645498	0	0	0.003951	0	0
San Mateo	2025	LDT1	Aggregate	Aggregate	Electricity	114.3013	4207.979	0	4207.979	557.9394	1624.627	0	0	0	0	0	0	0.002	0.001532	0	0	0	0.008	0.004376	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
San Mateo	2025	LDT1	Aggregate	Aggregate	Plug-in Hyb	78.69736	3019.599	1309.635	1709.964	325.4136	516.46	0.002786	0	0.117199	0.00035	0	0.001361	0.002	0.001345	0.000381	0	0.00148	0.008	0.003842	117.005	0	70.40325	0.000356	0	0.041758	0.000468	0	0.019694	0.001171	0	0.176635	0.023751	0.020249	0.266848	0.001709	0	0.193393	0.023751	0.020249	0.266848	0.018216	0.174613	0	1.37819	0.001157	0	0.000696
San Mateo	2025	LDT2	Aggregate	Aggregate	Gasoline	159673.6	5072144	5072144	0	766397.2	0	0.043155	0	0.259038	0.001111	0	0.001824	0.002	0.002725	0.001208	0	0.001983	0.008	0.007785	326.5862	0	82.3296	0.001976	0	0.066383	0.004349	0	0.031999	0.007386	0	0.299178	0.056614	0.145016	0.911896	0.010777	0	0.327563	0.056614	0.145016	0.911896	0.039093	0.616696	0	3.075211	0.003229	0	0.000814
San Mateo	2025	LDT2	Aggregate	Aggregate	Diesel	618.9276	19447.24	19447.24	0	2972.356	0	0.035316	0	0	0.004147	0	0	0.002	0.002746	0.004334	0	0	0.008	0.007845	303.5847	0	0	0.00056	0	0	0.04783	0	0	0.012057	0	0	0	0	0	0.013726	0	0	0	0	0	0.0031	0.116837	0	0	0.002877	0	0
San Mateo	2025	LDT2	Aggregate	Aggregate	Electricity	1700.502	48819.4	0	48819.4	8654.222	18848.32	0	0	0	0	0	0	0.002	0.001526	0	0	0	0.008	0.004361	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
San Mateo	2025	LDT2	Aggregate	Aggregate	Plug-in Hyb	1989.466	72787.26	33032.95	39754.31	8226.444	12206.99	0.002916	0	0.117199	0.00042	0	0.00156	0.002	0.001337	0.000457	0	0.001696	0.008	0.003821	122.4321	0	77.02717	0.000372	0	0.041746	0.00049	0	0.019683	0.001225	0	0.176635	0.025353	0.02271	0.287953	0.001788	0	0.193393	0.025353	0.02271	0.287953	0.019048	0.182712	0	1.37819	0.00121	0	0.000761
San Mateo	2025	LHDT1	Aggregate	Aggregate	Gasoline	11613.82	405927.2	405927.2	0	173028.5	0	0.093969	0.032618	0.546788	0.00135	0	0.000213	0.002	0.0273	0.001468	0	0.000231	0.008	0.078	823.2657	115.3954	26.50069	0.004903	0.104178	0.027302	0.005418	0.002847	0.046638	0.023679	0.374027	0.131854	0.03142	0.171421	1.736909	0.034552	0.545779	0.144364	0.03142	0.171421	1.736909	0.044961	0.885236	3.766067	3.36368	0.008139	0.001141	0.000262
San Mateo	2025	LHDT1	Aggregate	Aggregate	Diesel	5396.711	200335.3	200335.3	0	67883.84	0	0.878137	1.51814	0	0.022391	0.026666	0	0.003	0.0273	0.023404	0.027871	0	0.012	0.078	621.1678	124.9932	0	0.005716	0.005098	0	0.097865	0.019693	0	0.123053	0.10976	0	0	0	0	0.140088	0.124954	0	0	0	0	0.196014	0.301645	0.909745	0	0.005886	0.001184	0
San Mateo	2025	LHDT1	Aggregate	Aggregate	Electricity	157.5841	8786.546	0	8786.546	2203.775	5753.375	0	0	0	0	0	0	0.002	0.001365	0	0	0	0.008	0.039	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
San Mateo	2025	LHDT2	Aggregate	Aggregate	Gasoline	1342.429	45031.5	45031.5	0	20000.19	0	0.105135	0.031386	0.546043	0.001282	0	0.000185	0.002	0.03185	0.001395	0	0.000201	0.008	0.091	929.119	133.658	25.05861	0.00412	0.095506	0.026702	0.006445	0.00265	0.044736	0.018664	0.360001	0.12953	0.032846	0.178071	1.845904	0.027234	0.525313	0.141819	0.032846	0.178071	1.845904	0.044991	0.769359	3.768677	3.317456	0.009185	0.001321	0.000248
San Mateo	2025	LHDT2	Aggregate	Aggregate	Diesel	2386.592	88314.97	88314.97	0	30020.32	0	0.665843	1.451157	0	0.020707	0.02679	0	0.003	0.03185	0.021644	0.028001	0	0.012	0.091	732.0694	199.191	0	0.00549	0.005098	0	0.115338	0.031383	0	0.118205	0.10976	0	0	0	0	0.134569	0.124954	0	0	0	0	0.203813	0.264963	0.909745	0	0.006937	0.001887	0
San Mateo	2025	LHDT2	Aggregate	Aggregate	Electricity	40.48817	2145.224	0	2145.224	536.9131	1383.682	0	0	0	0	0	0	0.002	0.015925	0	0	0	0.008	0.0455	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
San Mateo	2025	MCY	Aggregate	Aggregate	Gasoline	13994.78	78703.42	78703.42	0	27989.55	0	0.505421	0	0.117673	0.001897	0	0.003489	0.001	0.0042	0.002031	0	0.003719	0.004	0.012	186.4281	0	44.64197	0.140818	0	0.16646	0.036419	0	0.007111	0.891986	0	1.219242	3.548067	3.701315	3.154868	1.084139	0	1.325883	3.548067	3.701315	3.154868	0.008947	10.66577	0	7.691483	0.001843	0	0.000441
San Mateo	2025	MDV	Aggregate	Aggregate	Gasoline	89810.74	2915872	2915872	0	429459.7	0	0.050748	0	0.301319	0.001104	0	0.001871	0.002	0.002743	0.0012	0	0.002035	0.008	0.007838	394.1876	0	99.80167	0.002219	0	0.074825	0.004749	0	0.03376	0.008671	0	0.356712	0.062664	0.169351	1.048331	0.012652	0	0.390555	0.062664	0.169351	1.048331	0.039288	0.640699	0	3.225835	0.003897	0	0.000987
San Mateo	2025	MDV	Aggregate	Aggregate	Diesel	1216.213	38222.55	38222.55	0	5783.756	0	0.033166	0	0	0.003666	0	0	0.002	0.002807	0.003832	0	0	0.008	0.008021	398.1179	0	0	0.000395	0	0	0.062724	0	0	0.008497	0	0	0	0	0	0.009674	0	0	0	0	0	0.0031	0.166794	0	0	0.003772	0	0
San Mateo	2025	MDV	Aggregate	Aggregate	Electricity	1824.97	52408.32	0	52408.32	9288.746	20233.94	0	0	0	0	0	0	0.002	0.001526	0	0	0	0.008	0.004361	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
San Mateo	2025	MDV	Aggregate	Aggregate	Plug-in Hyb	1131.124	42471.44	19328.41	23143.04	4677.198	6989.887	0.002924	0	0.117199	0.000462	0	0.001715	0.002	0.001337	0.000502	0	0.001865	0.008	0.003821	122.7729	0	94.34392	0.000374	0	0.041896	0.000495	0	0.019823	0.001229	0	0.176635	0.027524	0.023796	0.299651	0.001793	0	0.193393	0.027524	0.023796	0.299651	0.019114	0.18322	0	1.37819	0.001214	0	0.000933
San Mateo	2025	MH	Aggregate	Aggregate	Gasoline	830.5401	8053.177	8053.177	0	83.08723	0	0.268304	0	0.400493	0.001562	0	0.000397	0.003	0.015756	0.001698	0	0.000432	0.012	0.045017	1946.149	0	31.33114	0.010026	0	0.036115	0.019184	0	0.043891	0.040666	0	0.147699	8.452557	0.201566	3.076801	0.05934	0	0.161711	8.452557	0.201566	3.076801	0.044943	0.905305	0	3.320123	0.01924	0	0.00031
San Mateo	2025	MH	Aggregate	Aggregate	Diesel	384.5125	3863.222	3863.222	0	38.45125	0	0.299063	0	0	0.044795	0	0	0.004	0.015675	0.04682	0	0	0.016	0.044785	1086.155	0	0	0.004106	0	0	0.171124	0	0	0.088396	0	0	0	0	0	0.100633	0	0	0	0	0	0.194759	0.273956	0	0	0.010292	0	0
San Mateo	2025	MHDT	Aggregate	Aggregate	Gasoline	825.6427	47612.58	47612.58	0	16519.46	0	0.323037	0.085434	0.420472	0.001351	0	0.000505	0.003	0.015756	0.00147	0	0.00055	0.012	0.045017	1716.102	518.1406	44.32653	0.010425	0.267434	0.04506	0.017424	0.007433	0.033886	0.050062	1.017725	0.241229	0.026732	0.218345	2.098508	0.073051	1.485063	0.264116	0.026732	0.218345	2.098508	0.044995	1.017203	15.17464	5.286069	0.016965	0.005122	0.000438
San Mateo	2025	MHDT	Aggregate	Aggregate	Diesel	4294.917	177557.8	177557.8	0	51845.95	0	1.188939	13.12716	1.614768	0.013944	0.027675	0	0.003	0.015982	0.014575	0.028927	0	0.012	0.045664	1145.121	2228.697	0	0.001506	0.011276	0	0.180414	0.351132	0	0.032415	0.242771	0	0	0	0	0.036902	0.276376	0	0	0	0	0.210368	0.120818	7.522952	0	0.010844	0.021104	0
San Mateo	2025	MHDT	Aggregate	Aggregate	Electricity	41.49574	2407.793	0	2407.793	583.4118	2680.293	0	0	0	0	0	0	0.003	0.007951	0	0	0	0.012	0.022716	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
San Mateo	2025	MHDT	Aggregate	Aggregate	Natural Ga	44.4449	2054.281	2054.281	0	404.8873	0	0.119383	6.528501	0	0.001296	0.019376	0	0.003	0.016094	0.001409	0.021073	0	0.012	0.045982	997.1964	5429.729	0	0.776466	16.96742	0	0.203285	1.106886	0	0.011094	0.242431	0	0	0	0	0.79244	17.3165	0	0	0	0	1.06	3.065754	37.47811	0	0	0	0
San Mateo	2025	OBUS	Aggregate	Aggregate	Gasoline	252.722	13715.02	13715.02	0	5056.462	0	0.254289	0.063619	0.364813	0.00105	0	0.000289	0.003	0.01568	0.001142	0	0.000314	0.012	0.044799	1704.936	368.0466	29.69841	0.007842	0.204874	0.032288	0.014975	0.005762	0.031384	0.036425	0.747093	0.159999	0.025822	0.116247	1.973857	0.053152	1.090157	0.175179	0.025822	0.116247	1.973857	0.044948	0.777227	5.779588	3.340614	0.016855	0.003639	0.000294
San Mateo	2025	OBUS	Aggregate	Aggregate	Diesel	1111.576	75305.13	75305.13	0	10889.45	0	0.812155	5.594758	1.4975	0.009252	0.003188	0	0.003	0.01738	0.009671	0.003332	0	0.012	0.049657	1227.827	1209.887	0	0.000915	0.014161	0	0.193445	0.190618	0	0.019696	0.304888	0	0	0	0	0.022422	0.347092	0	0	0	0	0.217867	0.092546	5.69186	0	0.011627	0.011457	0
San Mateo	2025	OBUS	Aggregate	Aggregate	Electricity	2.143949	185.5536	0	185.5536	42.89613	205.565	0	0	0	0	0	0	0.003	0.00784	0	0	0	0.012	0.022399	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
San Mateo	2025	OBUS	Aggregate	Aggregate	Natural Ga	9.18414	584.7868	584.7868	0	81.73885	0	0.165457	1.529579	0	0.001178	0.004086	0	0.003	0.016148	0.001282	0.004444	0	0.012	0.046137	991.5916	1195.033	0	0.803368	4.140164	0	0.202142	0.243615	0	0.011479	0.059155	0	0	0	0	0.819896	4.225341	0	0	0	0	1.06	3.290889	7.77441	0	0	0	0
San Mateo	2025	SBUS	Aggregate	Aggregate	Gasoline	71.37135	3679.781	3679.781	0	285.4854	0	0.767242	0.883319	0.626471	0.001129	0	0.000724	0.002	0.015721	0.001228	0	0.000787	0.008	0.044917	782.2289	2499.775	59.80097	0.017691	2.446506	0.085381	0.036296	0.082358	0.056445	0.086658	10.61248	0.494948	0.122618	0.362839	1.907752	0.126452	15.4857	0.541906	0.122618	0.362839	1.907752	0.045	2.216556	82.06454	12.20654	0.007733	0.024713	0.000591
San Mateo	2025	SBUS	Aggregate	Aggregate	Diesel	168.9397	3758.24	3758.24	0	4387.797	22.54247	0.476886	0.020913	0.021713	0	0	0	0.003	0.015721	0.021858	0.022694	0	0.012	0.044917	1138.881	2225.679	0	0.002986	0.00812	0	0.179431	0.350657	0	0.064283	0.174818	0	0	0	0	0.073182	0.199017	0	0	0	0	0.144353	0.19584	4.548944	0	0.010785	0.021076	0
San Mateo	2025	SBUS	Aggregate	Aggregate	Electricity	1.984894	78.89105	0	78.89105	17.7986	83.10822	0	0	0	0	0	0	0.002	0.002318	0.00786	0	0	0	0.00927	0.022459	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
San Mateo	2025	SBUS	Aggregate	Aggregate	Natural Ga	6.552799	163.6295	163.6295	0	94.88454	0	0.515656	5.239615	0	0.003378	0.012103	0	0.003	0.015721	0.003674	0.013164	0	0.012	0.044917	1237.46	4096.22	0	3.296356	14.87044	0	0.252264	0.835041	0	0.047098	0.212469	0	0	0	0	3.364173	15.17638	0	0	0	0	1.06	10.9887	22.4292	0	0	0	0
San Mateo	2025	UBUS	Aggregate	Aggregate	Gasoline	61.62557	4190.344	4190.344	0	246.5023	0	0.03738	0	0.492117	0.001105	0	0.000151	0.002	0.002073	0.032333	0.001202	0	0.000164	0.00829	0.092379	995.3027	0	40.11712	0.002043	0	0.046071	0.00491	0	0.06861	0.005911	0	0.17302	0.05773	0.119898	0.618422	0.008625	0	0.189435	0.05773	0.119898	0.618422	0.045	0.562303	0	6.218459	0.00984	0	0.000397
San Mateo	2025	UBUS	Aggregate	Aggregate	Diesel	278.2185	21526.83	21526.83	0	1112.874	0	0.375553	0	0	0.006827	0	0	0.002	0.008097	0.0385	0.007136	0	0	0.032387	0.11	1223.606	0	0.003145	0	0	0.19278	0	0	0.067717	0	0	0	0	0	0.077091	0	0	0	0	0	0.22	0.077193	0	0	0.011594	0	0
San Mateo	2025	UBUS	Aggregate	Aggregate	Electricity	37.31748	3870.538	0	3870.538	149.2699	6747.293	0	0	0	0	0	0	0.002	0.007369	0.01925	0	0	0	0.029474	0.055	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
San Mateo	2025	UBUS	Aggregate	Aggregate	Natural Ga	65.5154	4534.391	4534.391	0	262.0616	0	0.055433	0	0	0.000272	0	0	0.002	0.007742	0.0385	0.000285	0	0	0.030968	0.11	1262.747	0	0	4.100892	0	0	0.257419	0	0	0.058594	0	0	0	0	0	4.185261	0	0	0	0	0	0.97	46.51263	0	0	0	0	0

CalEEMod EMFAC2021 Emission Factors Input

Season	EmissionType	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
A	CH4_IDLEX	0	0	0	0	0.00509	0.002914	0.014756	0.267799843	0.006567	0	0	0.096127	0
A	CH4_RUNEX	0.00162	0.0041	0.00193	0.002132	0.005098	0.004948	0.010272	0.250520376	0.007197	0.54719132	0.140818	0.080164	0.008107
A	CH4_STREX	0.058192	0.083348	0.065143	0.071971	0.019431	0.010676	0.010733	5.34126E-07	0.010159	0.006413618	0.16646	0.008569	0.024689
A	CO_IDLEX	0	0	0	0	0.200102	0.144548	0.670548	4.674714728	0.489029	0	0	2.380991	0
A	CO_RUNEX	0.533291	0.987128	0.602996	0.617373	0.682501	0.428407	0.331755	1.646685682	0.217767	6.298686532	10.66577	1.391898	0.700626
A	CO_STREX	2.734945	4.216581	3.011981	3.098359	2.39397	1.326451	1.259096	0.027273177	1.051096	0.865678808	7.691483	1.225133	2.269732
A	CO2_NBIO_IDLEX	0	0	0	0	8.287123	13.09091	147.6661	768.7716723	90.15686	0	0	204.3512	0
A	CO2_NBIO_RUNEX	239.848	311.9829	320.5917	383.6805	745.6768	785.9693	1250.179	1745.927029	1296.627	1061.974886	186.4281	958.4095	1667.344
A	CO2_NBIO_STREX	62.52193	81.08968	81.05668	96.39616	18.86084	10.01943	10.5582	0.281822196	9.34435	5.584749803	44.64197	6.002043	21.41888
A	NOX_IDLEX	0	0	0	0	0.035258	0.07008	0.818136	3.946769356	0.388856	0	0	1.37311	0
A	NOX_RUNEX	0.030637	0.087761	0.04216	0.048989	0.348047	0.468946	0.987366	2.50375798	0.721054	0.248884	0.505421	2.52561	1.150681
A	NOX_STREX	0.213914	0.311737	0.253723	0.289292	0.389155	0.21833	1.307286	2.741148405	1.129496	0.068508137	0.117673	0.473007	0.273789
A	PM10_IDLEX	0	0	0	0	0.000619	0.001336	0.001805	0.003026664	0.000233	0	0	0.001378	0
A	PM10_PMBW	0.006399	0.008017	0.007697	0.007724	0.077443	0.09028	0.045292	0.094175481	0.048836	0.142306362	0.012	0.044686	0.044942
A	PM10_PMTW	0.008	0.008	0.008	0.008	0.009303	0.010607	0.012	0.034505767	0.012	0.050724608	0.004	0.010056	0.013297
A	PM10_RUNEX	0.001114	0.001565	0.001198	0.001203	0.008592	0.014571	0.011587	0.023321334	0.008293	0.004687081	0.002031	0.011362	0.016327
A	PM10_STREX	0.001913	0.002474	0.001951	0.001965	0.000165	8.04E-05	0.000131	4.07065E-06	9.88E-05	2.28997E-05	0.003719	7.9E-05	0.000296
A	PM25_IDLEX	0	0	0	0	0.000592	0.001278	0.001726	0.002890137	0.000223	0	0	0.001317	0
A	PM25_PMBW	0.00224	0.002806	0.002694	0.002704	0.027105	0.031598	0.015852	0.032961418	0.017092	0.049807227	0.0042	0.01564	0.01573
A	PM25_PMTW	0.002	0.002	0.002	0.002	0.002326	0.002652	0.003	0.008626442	0.003	0.012681152	0.001	0.002514	0.003324
A	PM25_RUNEX	0.001025	0.00144	0.001102	0.001108	0.008184	0.013924	0.011074	0.022306121	0.007928	0.004478818	0.001897	0.010846	0.015578
A	PM25_STREX	0.001759	0.002275	0.001794	0.001807	0.000151	7.39E-05	0.00012	3.74281E-06	9.08E-05	2.10555E-05	0.003489	7.27E-05	0.000272
A	ROG_DIURN	0.23992	0.422505	0.185919	0.210348	0.082973	0.04954	0.024982	0.000585202	0.03104	0.021522802	3.154868	0.047869	21.0255
A	ROG_HTSK	0.073069	0.122434	0.05545	0.060196	0.022362	0.013133	0.006367	0.000175225	0.008125	0.008036694	3.548067	0.012307	5.778413
A	ROG_IDLEX	0	0	0	0	0.020304	0.014898	0.027305	0.286668504	0.032871	0	0	0.277158	0
A	ROG_RESTL	0	0	0	0	0	0	0	0	0	0	0	0	0
A	ROG_RUNEX	0.006173	0.01796	0.007248	0.008416	0.055709	0.083251	0.035544	0.031143571	0.022157	0.051233319	0.891986	0.073977	0.05614
A	ROG_RUNLS	0.186625	0.340705	0.141591	0.162153	0.122003	0.0712	0.052008	0.001304636	0.036576	0.016691129	3.701315	0.036417	0.137796
A	ROG_STREX	0.269607	0.418278	0.293472	0.342868	0.093842	0.051791	0.057459	2.89774E-06	0.050342	0.024086249	1.219242	0.049676	0.100971
A	SO2_IDLEX	0	0	0	0	8.08E-05	0.000126	0.001368	0.006392287	0.00085	0	0	0.001872	0
A	SO2_RUNEX	0.002371	0.003084	0.003169	0.003791	0.007289	0.007574	0.011902	0.015292952	0.012326	0.008522909	0.001843	0.008982	0.016339
A	SO2_STREX	0.000618	0.000802	0.000801	0.000953	0.000186	9.91E-05	0.000104	2.7861E-06	9.24E-05	5.52109E-05	0.000441	5.93E-05	0.000212
A	TOG_DIURN	0.23992	0.422505	0.185919	0.210348	0.082973	0.04954	0.024982	0.000585202	0.03104	0.021522802	0.07414	0.047869	21.0255
A	TOG_HTSK	0.073069	0.122434	0.05545	0.060196	0.022362	0.013133	0.006367	0.000175225	0.008125	0.008036694	3.548067	0.012307	5.778413
A	TOG_IDLEX	0	0	0	0	0.028846	0.02006	0.045892	0.58212113	0.043566	0	0	0.435346	0
A	TOG_RESTL	0	0	0	0	0	0	0	0	0	0	0	0	0
A	TOG_RUNEX	0.008994	0.026198	0.010562	0.012246	0.068434	0.096765	0.050769	0.286222734	0.032263	0.60586165	1.084139	0.168065	0.072727
A	TOG_RUNLS	0.186625	0.340705	0.141591	0.162153	0.122003	0.0712	0.052008	0.001304636	0.036576	0.016691129	3.701315	0.036417	0.137796
A	TOG_STREX	0.295186	0.457962	0.321315	0.375397	0.102745	0.056705	0.06291	3.17266E-06	0.055119	0.026371411	1.325883	0.054389	0.110551
A	N2O_IDLEX	0	0	0	0	0.000573	0.001568	0.022543	0.125460338	0.013415	0	0	0.024817	0
A	N2O_RUNEX	0.003578	0.006848	0.004417	0.005335	0.035453	0.077321	0.144932	0.280344669	0.165841	0.156430799	0.036419	0.110563	0.068442
A	N2O_STREX	0.0275	0.033715	0.031397	0.032482	0.033192	0.017887	0.008071	5.62128E-07	0.009875	0.009551223	0.007111	0.005665	0.030005

CalEEMod EMFAC2021 Fleet Mix Input

FleetMixLandUseSubType	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
	0.448243	0.043109	0.27536	0.157817	0.028829	0.00633	0.008743	0.002558	0.00231	0.000743	0.0235	0.000418	0.00204

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

Region	Calendar Y	Vehicle Cat	Model Yea	Speed	Fuel	Population	Total VMT	CVMT	EVMT	Trips	Energy Con	NOx_RUNEX	NOx_IDLEX	NOx_STREX	PM2.5_RU	PM2.5_IDL	PM2.5_STF	PM2.5_PM	PM2.5_PM	PM10_RUN	PM10_IDLE	PM10_STR	PM10_PM	PM10_PMI	CO2_RUNE	CO2_IDLEX	CO2_STREX	CH4_RUNE	CH4_IDLEX	CH4_STREX	N2O_RUNE	N2O_IDLEX	N2O_STREX	ROG_RUNI	ROG_IDLEX	ROG_STREX	ROG_HOTS	ROG_RUNI	ROG_DIUR	TOG_RUNE	TOG_IDLEX	TOG_STREX	TOG_HOTS	TOG_RUNI	TOG_DIUR	NH3_RUNE	CO_RUNEX	CO_IDLEX	CO_STREX	SOx_RUNE	SOx_IDLEX	SOx_STREX
San Mateo	2030	HHDT	Aggregate	Aggregate	Gasoline	3.582613	348.8502	348.8502	0	71.68092	0	3.309536	0	0.000636	0.001281	0	0.000408	0.005	0.031258	0.001393	0	0.000444	0.02	0.08931	2124.112	0	48.3003	0.102341	0	7.44E-05	0.139473	0	4.21E-05	0.479172	0	0.000403	0.0158	0.095238	1.146877	0.699207	0	0.000441	0.0158	0.095238	1.146877	0.045	32.18037	0	4.037713	0.020999	0	0.000477
San Mateo	2030	HHDT	Aggregate	Aggregate	Diesel	1338.439	117080	117080	0	15181.71	0	2.116368	45.39119	3.044846	0.023283	0.023862	0	0.008615	0.030087	0.024335	0.024941	0	0.03446	0.085963	1627.718	7731.446	0	0.000972	0.162527	0	0.256448	1.218092	0	0.020928	3.499162	0	0	0	0	0.023825	3.98353	0	0	0	0	0	0	0.207747	0.090912	50.23689	0	0.015414	0.073212	0
San Mateo	2030	HHDT	Aggregate	Aggregate	Electricity	84.88807	7748.726	0	7748.726	800.5398	14460.23	0	0	0	0	0	0	0	0.00845	0.017769	0	0	0	0.033801	0.050769	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
San Mateo	2030	HHDT	Aggregate	Aggregate	Natural Ga	216.9868	13750.35	13750.35	0	1391.47	0	0.831786	6.734329	0	0.001446	0.012428	0	0.009	0.062879	0.001573	0.013516	0	0.036	0.179654	1389.59	7977.287	0	1.838591	17.41083	0	0.283277	1.626222	0	0.037223	0.267421	0	0	0	0	1.888896	17.79029	0	0	0	0	0	0	0.693529	12.98287	57.90215	0	0	0	0
San Mateo	2030	LDA	Aggregate	Aggregate	Gasoline	237797.8	6358120	6358120	0	1114767	0	0.025015	0	0.198441	0.00084	0	0.0015	0.002	0.002348	0.000914	0	0.001631	0.008	0.006709	250.3795	0	62.47074	0.001264	0	0.048749	0.003327	0	0.026593	0.004452	0	0.219797	0.064961	0.182842	1.100035	0.006497	0	0.240455	0.064961	0.182842	1.100035	0.039859	0.49519	0	2.387223	0.002475	0	0.000618
San Mateo	2030	LDA	Aggregate	Aggregate	Diesel	401.2092	8094.892	8094.892	0	1723.63	0	0.081629	0	0	0.005614	0	0	0.002	0.002417	0.005867	0	0	0.008	0.006907	217.7249	0	0	0.000572	0	0	0.034303	0	0	0.012309	0	0	0	0	0	0.014013	0	0	0	0	0	0	0.00231	0.228322	0	0	0.000263	0	0
San Mateo	2030	LDA	Aggregate	Aggregate	Electricity	25244.08	809588.1	0	809588.1	122638.4	312567.8	0	0	0	0	0	0	0.002	0.001533	0	0	0	0.008	0.004381	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
San Mateo	2030	LDA	Aggregate	Aggregate	Plug-in Hyb	9770.495	287561.1	127243.4	160317.7	40401	48420.73	0.002843	0	0.117199	0.000375	0	0.001465	0.002	0.001348	0.000407	0	0.001593	0.008	0.00385	119.3761	0	61.72963	0.000352	0	0.040464	0.000449	0	0.018494	0.001195	0	0.176635	0.03873	0.045962	0.467089	0.001743	0	0.193393	0.03873	0.045962	0.467089	0.018225	0.17816	0	1.37819	0.00118	0	0.00061
San Mateo	2030	LDT1	Aggregate	Aggregate	Gasoline	27717.91	705667.7	705667.7	0	127669.4	0	0.047693	0	0.23518	0.000977	0	0.001648	0.002	0.002822	0.001063	0	0.001793	0.008	0.008064	291.8441	0	73.503	0.00227	0	0.057547	0.004614	0	0.028888	0.009274	0	0.271146	0.085215	0.246386	1.458315	0.013533	0	0.29687	0.085215	0.246386	1.458315	0.039865	0.675828	0	2.884818	0.002885	0	0.000727
San Mateo	2030	LDT1	Aggregate	Aggregate	Diesel	0.204115	6.131891	6.131891	0	1.004394	0	0.025448	0	0	0.003365	0	0	0.002	0.002682	0.003517	0	0	0.008	0.007662	360.704	0	0	0.000511	0	0	0.056829	0	0	0.011001	0	0	0	0	0	0.012524	0	0	0	0	0	0	0.0031	0.101404	0	0	0.003418	0	0
San Mateo	2030	LDT1	Aggregate	Aggregate	Electricity	315.4332	10759.94	0	10759.94	1561.79	4154.226	0	0	0	0	0	0	0.002	0.00153	0	0	0	0.008	0.004372	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
San Mateo	2030	LDT1	Aggregate	Aggregate	Plug-in Hyb	248.8694	7950.15	3286.476	4663.674	1029.075	1408.569	0.002656	0	0.117199	0.000235	0	0.000982	0.002	0.001357	0.000256	0	0.001068	0.008	0.003878	111.5238	0	67.77418	0.000329	0	0.040538	0.000421	0	0.018562	0.001116	0	0.176635	0.022993	0.019942	0.267154	0.001629	0	0.193393	0.022993	0.019942	0.267154	0.017362	0.166441	0	1.37819	0.001103	0	0.00067
San Mateo	2030	LDT2	Aggregate	Aggregate	Gasoline	206077.5	5643289	5643289	0	980667.9	0	0.031039	0	0.220236	0.000827	0	0.001417	0.002	0.002768	0.000899	0	0.001541	0.008	0.007907	305.2696	0	76.05021	0.001503	0	0.052526	0.003653	0	0.029181	0.005296	0	0.229711	0.045237	0.123667	0.765395	0.007728	0	0.251505	0.045237	0.123667	0.765395	0.040897	0.539909	0	2.545867	0.003018	0	0.000752
San Mateo	2030	LDT2	Aggregate	Aggregate	Diesel	779.569	21227.36	21227.36	0	3709.708	0	0.028723	0	0	0.003778	0	0	0.002	0.002772	0.003949	0	0	0.008	0.00792	283.3526	0	0	0.000535	0	0	0.044642	0	0	0.011525	0	0	0	0	0	0.013121	0	0	0	0	0	0	0.0031	0.115181	0	0	0.002685	0	0
San Mateo	2030	LDT2	Aggregate	Aggregate	Electricity	4330.718	103349.1	0	103349.1	21553.59	39901.28	0	0	0	0	0	0	0.002	0.001531	0	0	0	0.008	0.004374	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
San Mateo	2030	LDT2	Aggregate	Aggregate	Plug-in Hyb	3821.263	114216.7	48686.66	65530.03	15800.92	19792.02	0.002739	0	0.117199	0.000291	0	0.001179	0.002	0.001354	0.000317	0	0.001283	0.008	0.003869	114.9886	0	74.21213	0.000338	0	0.040354	0.00043	0	0.018393	0.001151	0	0.176635	0.026073	0.02498	0.30357	0.00168	0	0.193393	0.026073	0.02498	0.30357	0.017899	0.171627	0	1.37819	0.001137	0	0.000734
San Mateo	2030	LHDT1	Aggregate	Aggregate	Gasoline	13418.94	401266.7	401266.7	0	199922.2	0	0.04859	0.028514	0.462341	0.001251	0	0.000149	0.002	0.0273	0.001361	0	0.000162	0.008	0.078	782.2571	111.312	25.41512	0.002474	0.092233	0.022399	0.003012	0.002564	0.040565	0.010703	0.327199	0.105404	0.022577	0.12944	1.313798	0.015618	0.477448	0.115404	0.022577	0.12944	1.313798	0.045	0.67997	3.773798	3.355298	0.007733	0.00111	0.000251
San Mateo	2030	LHDT1	Aggregate	Aggregate	Diesel	6950.283	217964.5	217964.5	0	87425.82	0	0.484943	1.179571	0	0.017739	0.02636	0	0.003	0.0273	0.018541	0.027552	0	0.012	0.078	610.5039	119.3947	0	0.004593	0.005098	0	0.096185	0.018811	0	0.098884	0.10976	0	0	0	0	0.112573	0.124954	0	0	0	0	0.209503	0.232836	0.909745	0	0.005785	0.001131	0
San Mateo	2030	LHDT1	Aggregate	Aggregate	Electricity	1651.837	70758.49	0	70758.49	23140.54	46352.96	0	0	0	0	0	0	0.002	0.01365	0	0	0	0.008	0.039	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
San Mateo	2030	LHDT2	Aggregate	Aggregate	Gasoline	1516.427	44034.41	44034.41	0	22592.5	0	0.0535	0.026469	0.446387	0.001188	0	0.000128	0.002	0.03185	0.001292	0	0.000139	0.008	0.091	883.1295	128.7905	24.14624	0.002097	0.08544	0.021117	0.003676	0.002338	0.038045	0.00861	0.303836	0.099505	0.023317	0.135292	1.428649	0.012564	0.443356	0.108945	0.023317	0.135292	1.428649	0.045	0.63201	3.776933	3.316614	0.008731	0.001273	0.000239
San Mateo	2030	LHDT2	Aggregate	Aggregate	Diesel	3226.044	98642.37	98642.37	0	40579.57	0	0.436422	1.156649	0	0.01874	0.026765	0	0.003	0.03185	0.019587	0.027975	0	0.012	0.091	713.7283	191.5832	0	0.004866	0.005098	0	0.112448	0.030184	0	0.104751	0.10976	0	0	0	0	0.119253	0.124954	0	0	0	0	0.212304	0.238694	0.909745	0	0.006763	0.001815	0
San Mateo	2030	LHDT2	Aggregate	Aggregate	Electricity	416.7471	17085.75	0	17085.75	5526.66	11020.92	0	0	0	0	0	0	0.002	0.015925	0	0	0	0.008	0.0455	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
San Mateo	2030	MCY	Aggregate	Aggregate	Gasoline	17265.42	85331.57	85331.57	0	34530.84	0	0.471636	0	0.087961	0.00193	0	0.003402	0.001	0.0042	0.002069	0	0.003639	0.004	0.012	185.2558	0	39.68002	0.129549	0	0.143907	0.035104	0	0.005584	0.790266	0	1.025021	3.535952	3.670486	2.694632	0.977152	0	1.115488	3.535952	3.670486	2.694632	0.00908	9.714966	0	7.581403	0.001831	0	0.000392
San Mateo	2030	MDV	Aggregate	Aggregate	Gasoline	115764.2	3248131	3248131	0	549832.1	0	0.032414	0	0.238074	0.000811	0	0.001423	0.002	0.002792	0.000882	0	0.001547	0.008	0.007976	368.7759	0	92.22249	0.00155	0	0.05581	0.003744	0	0.030164	0.005553	0	0.251972	0.048156	0.134906	0.832269	0.008103	0	0.275878	0.048156	0.134906	0.832269	0.040906	0.545181	0	2.607134	0.003646	0	0.000912
San Mateo	2030	MDV	Aggregate	Aggregate	Diesel	1415.877	38111.74	38111.74	0	6658.508	0	0.017624	0	0	0.002054	0	0	0.002	0.002838	0.002147	0	0	0.008	0.008109	372.2787	0	0	0.000277	0	0	0.058653	0	0	0.005968	0	0	0	0	0	0.006794	0	0	0	0	0	0	0.0031	0.147116	0	0	0.003528	0	0
San Mateo	2030	MDV	Aggregate	Aggregate	Electricity	4329.635	102706.8	0	102706.8	21508.26	39653.32	0	0	0	0	0	0	0.002	0.001532	0	0	0	0.008	0.004377	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
San Mateo	2030	MDV	Aggregate	Aggregate	Plug-in Hyb	2286.849	70894.89	30074.66	40820.23	9456.121	12328.93	0.002725	0	0.117199	0.000297	0	0.001215	0.002	0.001355	0.000323	0	0.001322	0.008	0.003872	114.4453	0	90.22943	0.000338	0	0.040515	0.000432	0	0.018541	0.001145	0	0.176635	0.026805	0.026275	0.314563	0.001671	0	0.193393	0.026805	0.026275	0.314563	0.017817	0.170801	0	1.37819	0.001131	0	0.000892
San Mateo	2030	MH	Aggregate	Aggregate	Gasoline	975.2695	8905.399	8905.399	0	97.56596	0	0.146497	0	0.389106	0.001397	0	0.00035	0.003	0.015756	0.001519	0	0.00038	0.012	0.045017	1945.035	0	30.49184	0.005338	0	0.03291	0.013993	0	0.045078	0.017368	0	0.125455	4.324204	0.104731	1.656784	0.025343	0	0.137357	4.324204	0.104731	1.656784	0.045	0.266588	0	2.838247	0.019229	0	0.000301
San Mateo	2030	MH	Aggregate	Aggregate	Diesel	518.1906	4498.521	4498.521	0	53.81906	0	2.677361	0	0	0.030184	0	0	0.004	0.015675	0.031549	0	0	0.016	0.044785	1087.256	0	0	0.003786	0	0	0.171298	0	0	0.081505	0	0	0	0	0	0.092788	0	0	0	0	0	0	0.206555	0.243761	0	0	0.010302	0	0
San Mateo	2030	MHDT	Aggregate	Aggregate	Gasoline	896.2067	46600.57	46600.57	0	17931.3	0	0.14535	0.071332	0.336727	0.001349	0	0.000468	0.003	0.015756	0.001468	0	0.000509	0.012	0.045017	1641.475	495.3697	40.83701	0.005139	0.272865	0.039358	0.010032	0.006541	0.029695	0.022413	1.024632	0.19997	0.016844	0.142325	1.402001	0.032705	1.49514	0.218942	0.016844	0.142325	1.402001	0.045	0.405969	15.25491	4.210824	0.016228	0.004897	0.000404
San Mateo	2030	MHDT	Aggregate	Aggregate	Diesel	4347.362	170380.4	170380.4	0	52605.86	0	0.755775	11.60663	1.523653	0.006958	0.010527	0	0.003	0.015983	0.007273	0.011003	0	0.012	0.045667	1112.069	2136.504	0	0.000749	0.00921	0	0.175207	0.336607	0	0.016126	0.198289	0	0	0	0	0.018358	0.225736	0	0	0	0	0	0	0.215702	0.077124	7.484208	0	0.010531	0.020231	0
San Mateo	2030	MHDT	Aggregate	Aggregate	Electricity	446.3324	23740.44	0	23740.44	6143.241	26136.71	0	0	0	0	0	0	0.003	0.007953	0	0	0	0.012	0.022724	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
San Mateo	2030	MHDT	Aggregate	Aggregate	Natural Ga	59.81429	2526.343	2526.343	0	572.8236	0	0.0963	6.310343	0	0.001402	0.020216	0	0.003	0.016078	0.001525	0.021987	0	0.012	0.045938	974.2403	5301.669	0	0.781312	15.85967	0	0.198605	1.08078	0	0.011163	0.226603	0	0	0	0	0.797386	16.18596	0	0	0	0	0	0	1.06	3.053339	39.52768	0	0	0	0
San Mateo	2030	OBUS	Aggregate	Aggregate	Gasoline	235.2431	10564.99	10564.99	0	4706.745	0	0.160976	0.055683	0.334188	0.001132	0	0.000289	0.003	0.01568	0.001231	0	0.000315	0.012	0.044799	1631.402	356.5246	28.55452	0.004957	0.201951	0.030859	0.010543	0.00494	0.028192	0.021402	0.748646	0.154359	0.024573	0.126962	2.196095	0.03123	1.092423	0.169003	0.024573	0.126962	2.196095	0.045	0.436972	5.788883	3.119712	0.016128	0.003525	0.000282
San Mateo	2030	OBUS	Aggregate	Aggregate	Diesel	1265.064	76747.17	76747.17	0	12416.27	0	0.731147	4.662626	1.324481	0.008334	0.002706	0	0.003	0.017521	0.008711	0.002828	0	0.012	0.050059	1157.144	1158.301	0	0.000821	0.014331	0	0.182309	0.182491	0	0.017683	0.308549	0	0	0	0	0.020131	0.351259	0	0	0	0	0.218276	0.087625	5.772448	0	0.010957	0.010968	0
San Mateo	2030	OBUS	Aggregate	Aggregate	Electricity	18.67716	1366.971	0	1366.971	373.6926	1514.395	0	0	0	0	0	0	0.003	0.00784	0	0	0	0.012	0.022399	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
San Mateo	2030	OBUS	Aggregate	Aggregate	Natural Ga	14.94448	957.8955	957.8955	0	133.0059	0	0.101418	1.499098	0	0.001484	0.004813	0	0.003	0.016148	0.001614	0.005235	0	0.012	0.046137	931.1349	1169.497	0	0.838494	3.763815	0	0.189818	0.23841	0	0.01198	0.053777	0	0	0	0	0.855745	3.84125	0	0	0	0	1.06	3.385525	9.413723	0	0	0	0
San Mateo	2030	SBUS	Aggregate	Aggregate	Gasoline	87.98822	4038.39	4038.39	0	351.9529	0	0.489617	0.750616	0.559502	0.001063	0	0.000722	0.002	0.015721	0.001156	0	0.000786	0.008	0.044917	757.0149	2429.667	55.27111	0.010391	2.44431	0.075405	0.024791	0.073975	0.052746	0.050694	10.64152	0.434086	0.098112	0.31801	1.752705	0.073972	15.52808	0.47527	0.098112	0.31801	1.752705	0.045	1.308566	82.24088	10.22191	0.007484	0.02402	0.000546
San Mateo	2030	SBUS	Aggregate	Aggregate	Diesel	160.7253	3531.519	3531.519	0	2327.302	0	2.868955	18.37325	0.553036	0.014701	0.012669	0	0.003	0.015721	0.015365	0.013242	0	0.012	0.044917	1113.173	2158.09	0	0.002281	0.007956	0	0.175381	0.340008	0	0.049109	0.1713	0	0	0	0	0.055907	0.195012	0	0	0	0	0.169646	0.15856	5.305748	0	0.010541	0.020436	0
San Mateo	2030	SBUS	Aggregate	Aggregate	Electricity	17.84997	651.998	0	651.998	163.1263	686.851	0	0	0	0	0	0	0.003	0.00786	0	0	0	0.009438	0.022459	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
San Mateo	2030	SBUS	Aggregate	Aggregate	Natural Ga	7.671522	180.9535	180.9535	0	111.0836	0	0.443878	5.198476	0	0.003378	0.013085	0	0.003	0.015721	0.003674	0.014231	0	0.012	0.044917	1201.138	4122.528	0	3.098317	14.36251	0	0.24486	0.840404	0	0.044269	0.205212	0	0	0	0	3.16206	14.658	0	0	0	0	1.06	10.05674	24.64166	0	0	0	0
San Mateo	2030	UBUS	Aggregate	Aggregate	Gasoline	62.5174	4249.774	4249.774	0	250.0696	0	0.035638	0	0.310547	0.001201	0	0.000164	0.002	0.002072	0.032329	0.001307	0	0.000179	0.008288	0.09237	932.2834	0	37.52663	0.001497	0	0.032416	0.004454	0	0.04913	0.004138	0	0.115554	0.024606	0.097267	0.356985	0.006038	0	0.126517	0.024606	0.097267	0.356985	0.045	0.559001	0	5.953718	0.009217	0	0.000371
San Mateo	2030	UBUS	Aggregate	Aggregate	Diesel	238.4518	18140.33	18140.33	0	953.8071	0	0.376197	0	0	0.006839	0	0	0.008	0.008109	0.0385	0.007148	0	0	0.032436	0.11	1228.547	0	0	0.003149	0	0	0.193558	0	0	0.067807	0	0	0	0	0	0.077193	0	0	0	0	0	0.22	0.077324	0	0	0.011641	0	0
San Mateo	2030	UBUS	Aggregate	Aggregate	Electricity	72.67394	6853.165	0	6853.165	290.6957	11946.74	0	0	0	0	0	0	0.007651	0.01925	0	0	0	0.030604	0.055	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
San Mateo	2030	UBUS	Aggregate	Aggregate	Natural Ga	75.54888	5381.015	5381.015	0	302.1955	0	0.055771	0	0	0.000273	0	0	0.007786	0.0385	0.000286	0	0	0.031145	0.11	1266.418	0	0	4.115508	0	0	0.258168	0	0	0.058802	0	0	0	0	0	4.200177	0	0	0	0	0	0.97	46.76788	0	0	0	0	0

CalEEMod EMFAC2021 Emission Factors Input

Season	EmissionType	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
A	CH4_IDLEX	0	0	0	0	0.0041	0.002311	0.015963	0.229026242	0.006914	0	0	0.110559	0
A	CH4_RUNEX	0.001091	0.002215	0.001451	0.001466	0.00289	0.003582	0.009624	0.18305022	0.010248	0.641431362	0.129549	0.072674	0.004817
A	CH4_STREX	0.043749	0.056722	0.051039	0.052888	0.014423	0.007552	0.009135	3.05733E-07	0.008239	0.004511552	0.143907	0.008986	0.021494
A	CO_IDLEX	0	0	0	0	0.183464	0.137123	0.628743	4.574443284	0.49944	0	0	2.802822	0
A	CO_RUNEX	0.428969	0.660194	0.521738	0.516941	0.468992	0.321574	0.163527	1.442396346	0.162707	7.377393404	9.714966	0.912101	0.258927
A	CO_STREX	2.12334	2.838305	2.46486	2.462348	2.160461	1.186135	0.977377	0.016590448	0.832894	0.828623357	7.581403	1.218105	1.853708
A	CO2_NBIO_IDLEX	0	0	0	0	7.483418	12.87527	130.0816	692.3906648	88.86546	0	0	200.5332	0
A	CO2_NBIO_RUNEX	218.1367	285.5306	296.1322	352.6558	647.7805	684.09	1103.524	1514.609777	1192.98	954.9035774	185.2558	857.525	1657.153
A	CO2_NBIO_STREX	56.37559	72.5759	74.14137	87.76861	16.36469	8.635527	9.478708	0.198459779	7.623425	5.222861474	39.68002	6.586443	19.91475
A	NOX_IDLEX	0	0	0	0	0.027637	0.059703	0.658867	3.566245811	0.336592	0	0	1.035723	0
A	NOX_RUNEX	0.021508	0.04649	0.029936	0.03068	0.181449	0.284207	0.558221	1.874181967	0.646065	0.210138516	0.471636	1.45062	0.995886
A	NOX_STREX	0.176589	0.231426	0.213197	0.224713	0.2977	0.159643	1.115695	2.649753409	1.022028	0.043221096	0.087961	0.50246	0.254132
A	PM10_IDLEX	0	0	0	0	0.000617	0.001429	0.000636	0.00208163	0.000207	0	0	0.000758	0
A	PM10_PMBW	0.006346	0.007963	0.007767	0.007787	0.074001	0.086134	0.043306	0.093281284	0.048975	0.156110891	0.012	0.043175	0.04494
A	PM10_PMTW	0.008	0.008	0.008	0.008	0.009264	0.01047	0.012	0.034539384	0.012	0.061827696	0.004	0.009879	0.013342
A	PM10_RUNEX	0.0008	0.001038	0.000883	0.000858	0.006648	0.01245	0.005391	0.020667549	0.00762	0.003949707	0.002069	0.007092	0.011597
A	PM10_STREX	0.001471	0.001765	0.001499	0.001469	0.000104	4.97E-05	0.000118	1.82388E-06	8.4E-05	2.48573E-05	0.003639	9.36E-05	0.000248
A	PM25_IDLEX	0	0	0	0	0.00059	0.001367	0.000608	0.001985313	0.000198	0	0	0.000723	0
A	PM25_PMBW	0.002221	0.002787	0.002718	0.002725	0.0259	0.030147	0.015157	0.032648449	0.017141	0.054638812	0.0042	0.015111	0.015729
A	PM25_PMTW	0.002	0.002	0.002	0.002	0.002316	0.002617	0.003	0.008634846	0.003	0.015456924	0.001	0.00247	0.003336
A	PM25_RUNEX	0.000736	0.000955	0.000812	0.00079	0.006331	0.011898	0.005147	0.019767546	0.007285	0.003772866	0.00193	0.006762	0.011058
A	PM25_STREX	0.001353	0.001623	0.001378	0.001351	9.57E-05	4.57E-05	0.000109	1.67699E-06	7.72E-05	2.28554E-05	0.003402	8.61E-05	0.000228
A	ROG_DIURN	0.208006	0.310821	0.155511	0.165232	0.056781	0.034294	0.016264	0.000235524	0.029304	0.012421079	2.694632	0.052216	10.81642
A	ROG_HTSK	0.057819	0.083701	0.043823	0.045503	0.014537	0.008339	0.00391	6.49199E-05	0.00656	0.003424597	3.535952	0.011692	2.824213
A	ROG_IDLEX	0	0	0	0	0.016598	0.012899	0.023221	0.271787437	0.032176	0	0	0.326882	0
A	ROG_RESTL	0	0	0	0	0	0	0	0	0	0	0	0	0
A	ROG_RUNEX	0.003852	0.009047	0.005145	0.005303	0.037462	0.06705	0.015705	0.022524009	0.017791	0.045171786	0.790266	0.045956	0.038893
A	ROG_RUNLS	0.160749	0.241641	0.119083	0.126689	0.083346	0.048385	0.033035	0.000391321	0.033896	0.013537374	3.670486	0.037896	0.068402
A	ROG_STREX	0.197071	0.267146	0.223211	0.238678	0.067869	0.035586	0.046415	1.65627E-06	0.04121	0.01608249	1.025021	0.051728	0.081937
A	SO2_IDLEX	0	0	0	0	7.29E-05	0.000123	0.001195	0.005616953	0.000834	0	0	0.001828	0
A	SO2_RUNEX	0.002156	0.002823	0.002927	0.003485	0.006325	0.006582	0.010485	0.013042303	0.011283	0.007230239	0.001831	0.008027	0.016233
A	SO2_STREX	0.000557	0.000717	0.000733	0.000868	0.000162	8.54E-05	9.37E-05	1.96198E-06	7.54E-05	5.16333E-05	0.000392	6.51E-05	0.000197
A	TOG_DIURN	0.208006	0.310821	0.155511	0.165232	0.056781	0.034294	0.016264	0.000235524	0.029304	0.012421079	0.066855	0.052216	10.81642
A	TOG_HTSK	0.057819	0.083701	0.043823	0.045503	0.014537	0.008339	0.00391	6.49199E-05	0.00656	0.003424597	3.535952	0.011692	2.824213
A	TOG_IDLEX	0	0	0	0	0.023432	0.017024	0.04258	0.526899253	0.043038	0	0	0.511291	0
A	TOG_RESTL	0	0	0	0	0	0	0	0	0	0	0	0	0
A	TOG_RUNEX	0.005617	0.013201	0.007494	0.007717	0.044644	0.077093	0.027406	0.208786723	0.030062	0.693940204	0.977152	0.127141	0.047979
A	TOG_RUNLS	0.160749	0.241641	0.119083	0.126689	0.083346	0.048385	0.033035	0.000391321	0.033896	0.013537374	3.670486	0.037896	0.068402
A	TOG_STREX	0.215768	0.292491	0.244388	0.261323	0.074308	0.038963	0.050819	1.8134E-06	0.04512	0.017608302	1.115488	0.056636	0.08971
A	N2O_IDLEX	0	0	0	0	0.000532	0.001598	0.019855	0.113681015	0.013363	0	0	0.02289	0
A	N2O_RUNEX	0.002889	0.0045	0.003674	0.00417	0.032136	0.070442	0.126706	0.244505965	0.159364	0.142077729	0.035104	0.090896	0.066786
A	N2O_STREX	0.023753	0.02846	0.028293	0.028531	0.02612	0.013606	0.006893	1.7284E-07	0.007527	0.006837798	0.005584	0.006286	0.029442

CalEEMod EMFAC2021 Fleet Mix Input

FleetMixLandUseSubType	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
	0.392609	0.040642	0.308969	0.177896	0.031644	0.007414	0.008262	0.002362	0.002204	0.000645	0.024811	0.000394	0.002146

Attachment 4: Project Construction Emissions and Health Risk Calculations

580 Dubuque Ave, South San Francisco, CA

DPM Emissions and Modeling Emission Rates - Unmitigated

Construction Year	Activity	DPM (ton/year)	Area Source	DPM Emissions (lb/yr)	DPM Emissions (lb/hr)	DPM Emissions (g/s)	Modeled Area (m^2)	DPM Emission Rate ($g/s/m^2$)
2022	Construction	0.1130	CON_DPM	226.0	0.07285	9.18E-03	7,647	1.20E-06
2023	Construction	0.0627	CON_DPM	125.5	0.04045	5.10E-03	7,647	6.66E-07
2024	Construction	0.0057	CON_DPM	11.3	0.00366	4.61E-04	7,647	6.03E-08
Total		***0.1814***		***362.8***	***0.1170***	***0.0147***		

Construction Hours

hr/day =	8.5	(7am - 3:30pm)
days/yr =	365	
hours/year =	3102.5	

580 Dubuque Ave, South San Francisco, CA

PM2.5 Fugitive Dust Emissions for Modeling - Unmitigated

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)	PM2.5 Emission Rate $g/s/m^2$
2022	Construction	CON_FUG	0.0920	184.1	0.05933	7.48E-03	7,647	9.78E-07
2023	Construction	CON_FUG	0.0018	3.7	0.00118	1.49E-04	7,647	1.95E-08
2024	Construction	CON_FUG	0.0006	1.2	0.00040	5.07E-05	7,647	6.63E-09
Total			***0.0945***	***189.0***	***0.0609***	***0.0077***		

Construction Hours

hr/day =	8.5	(7am - 3:30pm)
days/yr =	365	
hours/year =	3102.5	

580 Dubuque Ave, South San Francisco, CA
Construction Health Impact Summary

Maximum Impacts at MEI 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	0.0311	0.0256	5.53	0.09	0.01	0.06
2023	0.0173	0.0005	2.84	0.05	0.00	0.02
2024	0.0016	0.0002	0.04	0.00	0.00	0.00
Total	-	-	**8.41**	**0.14**		-
Maximum	0.0311	0.0256	**-**	**-**	**0.01**	**0.06**

580 Dubuque Ave, South San Francisco, CA - Construction Impacts - Without Mitigation
Maximum DPM Cancer Risk and PM2.5 Calculations From Construction
Impacts at Off-Site MEI Location - 7.6 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						
						Infant/Child		Modeled		Adult	Maximum		
Exposure	Exposure Duration		DPM Conc (ug/m3)		Age Sensitivity	Cancer Risk	DPM Conc (ug/m3)		Age Sensitivity	Cancer Risk	Hazard	Fugitive	Total
Year	(years)	Age	Year	Annual	Factor	(per million)	Year	Annual	Factor	(per million)	Index	PM2.5	PM2.5
0	0.25	-0.25 - 0*	2022	0.0311	10	0.42	2022	0.0311	-	-			
1	1	0 - 1	2022	0.0311	10	5.11	2022	0.0311	1	0.09	0.006	0.026	0.06
2	1	1 - 2	2023	0.0173	10	2.84	2023	0.0173	1	0.05	0.003	0.001	0.02
3	1	2 - 3	2024	0.0016	3	0.04	2024	0.0016	1	0.00	0.000	0.000	0.00
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						**8.41**				**0.14**			

* Third trimester of pregnancy

580 Dubuque Ave, South San Francisco, CA - Construction Impacts - Without Mitigation
Maximum DPM Cancer Risk and PM2.5 Calculations From Construction
Impacts at Off-Site MEI Location - 4.5 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						
						Infant/Child		Modeled		Adult	Adult	Maximum		
Exposure	Exposure Duration		DPM Conc (ug/m3)		Age Sensitivity	Cancer Risk	DPM Conc (ug/m3)		Age Sensitivity	Cancer Risk	Hazard	Fugitive	Total
Year	(years)	Age	Year	Annual	Factor	(per million)	Year	Annual	Factor	(per million)	Index	PM2.5	PM2.5
0	0.25	-0.25 - 0*	2022	0.0219	10	0.30	2022	0.0219	-	-			
1	1	0 - 1	2022	0.0219	10	3.60	2022	0.0219	1	0.06	0.004	0.020	0.04
2	1	1 - 2	2023	0.0122	10	2.00	2023	0.0122	1	0.03	0.002	0.000	0.01
3	1	2 - 3	2024	0.0011	3	0.03	2024	0.0011	1	0.00	0.000	0.000	0.00
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						**5.93**				**0.10**			

* Third trimester of pregnancy

580 Dubuque Ave, South San Francisco, 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						
						Infant/Child		Modeled		Adult	Adult	Maximum		
Exposure	Exposure Duration		DPM Conc (ug/m3)		Age Sensitivity	Cancer Risk	DPM Conc (ug/m3)		Age Sensitivity	Cancer Risk	Hazard	Fugitive	Total
Year	(years)	Age	Year	Annual	Factor	(per million)	Year	Annual	Factor	(per million)	Index	PM2.5	PM2.5
0	0.25	-0.25 - 0*	2022	0.0266	10	0.36	2022	0.0266	-	-			
1	1	0 - 1	2022	0.0266	10	4.37	2022	0.0266	1	0.08	0.01	0.025	0.05
2	1	1 - 2	2023	0.0148	10	2.42	2023	0.0148	1	0.04	0.00	0.000	0.02
3	1	2 - 3	2024	0.0013	3	0.03	2024	0.0013	1	0.00	0.00	0.000	0.00
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						**7.18**				**0.12**			

* Third trimester of pregnancy

Attachment 5: Community Risk Modeling Information and Calculations

580 Dubuque Ave, South San Francisco, CA

Standby Emergency Generator Impacts

Off-site Sensitive Receptors

MEI Location = 7.6 meter receptor height

DPM Emission Rates			
	DPM Emissions per Generator		
	Max Daily	Annual	
Source Type	(lb/day)	(lb/year)	
2,800-kW, 3,750-hp Generator	0.124	45.40	
CalEEMod DPM Emissions	2.27E-02	tons/year	

Modeling Information	
Model	AERMOD
Source	Diesel Generator Engine
Source Type	Point
Meteorological Data	2013-2017 San Francisco International Airport
Point Source Stack Parameters	
Generator Engine Size (hp)	3750
Stack Height (ft)	10.00
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)	0.005183

* AERMOD default

**BAAQMD default generator parameters

580 Dubuque Ave, South San Francisco, CA - Cancer Risks from Project Operation
Project Emergency Generator
Impacts at Off-Site Receptors- 7.6m 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 =	1.00	1.00	1.00	0.73

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

Construction Cancer Risk by Year - Maximum Impact Receptor Location

Exposure Year	Exposure Duration (years)	Age	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	0.0000	10	0.000				
1	1	0 - 1	2022	0.0000	10	0.000				
2	1	1 - 2	2023	0.0000	10	0.000				
3	1	2 - 3	2024	0.0000	3	0.000				
4	1	3 - 4	2025	0.0011	3	0.029		0.00023	0.0001	0.0012
5	1	4 - 5	2026	0.0011	3	0.029		0.00023	0.0001	0.0012
6	1	5 - 6	2027	0.0011	3	0.029		0.00023	0.0001	0.0012
7	1	6 - 7	2028	0.0011	3	0.029		0.00023	0.0001	0.0012
8	1	7 - 8	2029	0.0011	3	0.029		0.00023	0.0001	0.0012
9	1	8 - 9	2030	0.0011	3	0.029		0.00023	0.0001	0.0012
10	1	9 - 10	2031	0.0011	3	0.029		0.00023	0.0001	0.0012
11	1	10 - 11	2032	0.0011	3	0.029		0.00023	0.0001	0.0012
12	1	11 - 12	2033	0.0011	3	0.029		0.00023	0.0001	0.0012
13	1	12 - 13	2034	0.0011	3	0.029		0.00023	0.0001	0.0012
14	1	13 - 14	2035	0.0011	3	0.029		0.00023	0.0001	0.0012
15	1	14 - 15	2036	0.0011	3	0.029		0.00023	0.0001	0.0012
16	1	15 - 16	2037	0.0011	3	0.029		0.00023	0.0001	0.0012
17	1	16-17	2038	0.0011	1	0.003		0.00023	0.0001	0.0012
18	1	17-18	2039	0.0011	1	0.003		0.00023	0.0001	0.0012
19	1	18-19	2040	0.0011	1	0.003		0.00023	0.0001	0.0012
20	1	19-20	2041	0.0011	1	0.003		0.00023	0.0001	0.0012
21	1	20-21	2042	0.0011	1	0.003		0.00023	0.0001	0.0012
22	1	21-22	2043	0.0011	1	0.003		0.00023	0.0001	0.0012
23	1	22-23	2044	0.0011	1	0.003		0.00023	0.0001	0.0012
24	1	23-24	2045	0.0011	1	0.003		0.00023	0.0001	0.0012
25	1	24-25	2046	0.0011	1	0.003		0.00023	0.0001	0.0012
26	1	25-26	2047	0.0011	1	0.003		0.00023	0.0001	0.0012
27	1	26-27	2048	0.0011	1	0.003		0.00023	0.0001	0.0012
28	1	27-28	2049	0.0011	1	0.003		0.00023	0.0001	0.0012
29	1	28-29	2050	0.0011	1	0.003		0.00023	0.0001	0.0012
30	1	29-30	2051	0.0011	1	0.003		0.00023	0.0001	0.0012
Total Increased Cancer Risk						**0.43**	**Max**	**0.00023**	**0.0001**	**0.0012**

* Third trimester of pregnancy

CT-EMFAC2017 Emissions Factors

```
          File Name:   Grand Avenue & Airport Blvd.EF
CT-EMFAC2017 Version:   1.0.2.27401
           Run Date:   11/3/2021 1:52:50 PM
               Area:   San Mateo (SF)
      Analysis Year:   2022
             Season:   Annual

======================================================================

Vehicle Category        VMT Fraction            Diesel VMT Fraction     Gas VMT Fraction
                        Across Category         Within Category         Within Category
        Truck 1              0.017                 0.472                    0.528
        Truck 2              0.014                 0.870                    0.114
      Non-Truck              0.969                 0.017                    0.964

======================================================================

              Road Type:       Major/Collector
     Silt Loading Factor:                  CARB         0.032 g/m2
Precipitation Correction:                  CARB         P = 60 days     N = 365 days

======================================================================

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

       Pollutant Name        35 mph
                PM2.5      0.001702
                  TOG      0.038307
           Diesel PM       0.000503

======================================================================

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

       Pollutant Name   Emission Factor
                  TOG          1.245454

======================================================================

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

       Pollutant Name   Emission Factor
                PM2.5          0.002046

======================================================================

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

       Pollutant Name   Emission Factor
                PM2.5          0.016802

======================================================================

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

       Pollutant Name   Emission Factor
                PM2.5          0.014819

============================END=======================================
```

```
          File Name:   Project Trips DBQ Ave.EF
CT-EMFAC2017 Version:   1.0.2.27401
            Run Date:   11/18/2021 12:11:21 PM
                Area:   San Mateo (SF)
       Analysis Year:   2025
              Season:   Annual

======================================================================

Vehicle Category        VMT Fraction            Diesel VMT Fraction     Gas VMT Fraction
                        Across Category         Within Category         Within Category
         Truck 1             0.017                   0.498                   0.502
         Truck 2             0.014                   0.870                   0.112
       Non-Truck             0.969                   0.017                   0.953

======================================================================

              Road Type:       Major/Collector
     Silt Loading Factor:                 CARB         0.032 g/m2
Precipitation Correction:                 CARB         P = 60 days     N = 365 days

======================================================================

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

       Pollutant Name        30 mph
                PM2.5      0.001533
                  TOG      0.041378
           Diesel PM       0.000239

======================================================================

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

       Pollutant Name   Emission Factor
                  TOG          1.112044

======================================================================

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

       Pollutant Name   Emission Factor
                PM2.5          0.002045

======================================================================

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

       Pollutant Name   Emission Factor
                PM2.5          0.016812

======================================================================

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

       Pollutant Name   Emission Factor
                PM2.5          0.014960

============================END=======================================
```

Traffic Emissions and Health Risk Calculations

580 Dubuque Ave, South San Francisco, CA - Off-Site Residential
Cumulative Operation - Airport Blvd
DPM Modeling - Roadway Links, Traffic Volumes, and DPM 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
DPM_NB_AIR	Airport Blvd Northbound	NB	2	705.7	0.44	13.3	43.7	3.4	35	13,546
DPM_SB_AIR	Airport Blvd Southbound	SB	2	700.1	0.44	13.3	43.7	3.4	35	13,546
									Total	27,092

Emission Factors

Speed Category	1	2	3	4
Travel Speed (mph)	35			
Emissions per Vehicle (g/VMT)	0.00050			

Emisson Factors from CT-EMFAC2017

2022 Hourly Traffic Volumes and DPM Emissions - DPM_NB_AIR

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	3.85%	522	3.20E-05	9	6.74%	913	5.59E-05	17	6.40%	868	5.32E-05
2	3.18%	431	2.64E-05	10	8.25%	1117	6.84E-05	18	4.10%	555	3.40E-05
3	2.35%	318	1.95E-05	11	6.24%	845	5.18E-05	19	2.38%	323	1.98E-05
4	1.01%	136	8.34E-06	12	7.41%	1004	6.15E-05	20	1.21%	164	1.01E-05
5	1.01%	136	8.34E-06	13	6.74%	913	5.59E-05	21	3.05%	414	2.54E-05
6	2.18%	295	1.81E-05	14	6.57%	890	5.45E-05	22	5.06%	686	4.20E-05
7	4.73%	641	3.93E-05	15	5.90%	799	4.90E-05	23	3.35%	454	2.78E-05
8	3.39%	459	2.81E-05	16	4.23%	573	3.51E-05	24	0.67%	91	5.56E-06
								Total		13,546	

2022 Hourly Traffic Volumes Per Direction and DPM Emissions - DPM_SB_AIR

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	3.85%	522	3.17E-05	9	6.74%	913	5.55E-05	17	6.40%	868	5.27E-05
2	3.18%	431	2.62E-05	10	8.25%	1117	6.79E-05	18	4.10%	555	3.37E-05
3	2.35%	318	1.93E-05	11	6.24%	845	5.14E-05	19	2.38%	323	1.96E-05
4	1.01%	136	8.27E-06	12	7.41%	1004	6.10E-05	20	1.21%	164	9.98E-06
5	1.01%	136	8.27E-06	13	6.74%	913	5.55E-05	21	3.05%	414	2.51E-05
6	2.18%	295	1.79E-05	14	6.57%	890	5.41E-05	22	5.06%	686	4.17E-05
7	4.73%	641	3.89E-05	15	5.90%	799	4.86E-05	23	3.35%	454	2.76E-05
8	3.39%	459	2.79E-05	16	4.23%	573	3.48E-05	24	0.67%	91	5.52E-06
								Total		13,546	

580 Dubuque Ave, South San Francisco, CA - Off-Site Residential
Cumulative Operation - Airport Blvd
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
PM2.5_NB_AIR	Airport Blvd Northbound	NB	2	705.7	0.44	13.3	44	1.3	35	13,546
PM2.5_SB_AIR	Airport Blvd Southbound	SB	2	700.1	0.44	13.3	44	1.3	35	13,546
									Total	27,092

Emission Factors - PM2.5

Speed Category	1	2	3	4
Travel Speed (mph)	35			
Emissions per Vehicle (g/VMT)	0.001702			

Emisson Factors from CT-EMFAC2017

2022 Hourly Traffic Volumes and PM2.5 Emissions - PM2.5_NB_AIR

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	1.12%	151	3.14E-05	9	7.12%	964	2.00E-04	17	7.43%	1006	2.09E-04
2	0.41%	56	1.16E-05	10	4.38%	593	1.23E-04	18	8.24%	1116	2.31E-04
3	0.38%	51	1.05E-05	11	4.65%	629	1.30E-04	19	5.72%	775	1.61E-04
4	0.17%	23	4.85E-06	12	5.89%	798	1.65E-04	20	4.30%	583	1.21E-04
5	0.45%	61	1.27E-05	13	6.17%	836	1.73E-04	21	3.26%	441	9.14E-05
6	0.85%	115	2.39E-05	14	6.05%	819	1.70E-04	22	3.31%	449	9.30E-05
7	3.73%	506	1.05E-04	15	7.05%	956	1.98E-04	23	2.49%	337	6.98E-05
8	7.77%	1052	2.18E-04	16	7.19%	974	2.02E-04	24	1.87%	254	5.26E-05
								Total		13,546	

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

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.12%	151	3.12E-05	9	7.12%	964	1.98E-04	17	7.43%	1006	2.07E-04
2	0.41%	56	1.15E-05	10	4.38%	593	1.22E-04	18	8.24%	1116	2.29E-04
3	0.38%	51	1.05E-05	11	4.65%	629	1.29E-04	19	5.72%	775	1.59E-04
4	0.17%	23	4.81E-06	12	5.89%	798	1.64E-04	20	4.30%	583	1.20E-04
5	0.45%	61	1.26E-05	13	6.17%	836	1.72E-04	21	3.26%	441	9.07E-05
6	0.85%	115	2.37E-05	14	6.05%	819	1.69E-04	22	3.31%	449	9.22E-05
7	3.73%	506	1.04E-04	15	7.05%	956	1.97E-04	23	2.49%	337	6.93E-05
8	7.77%	1052	2.16E-04	16	7.19%	974	2.00E-04	24	1.87%	254	5.22E-05
								Total		13,546	

580 Dubuque Ave, South San Francisco, CA - Off-Site Residential
Cumulative Operation - Airport Blvd
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_NB_AIR	Airport Blvd Northbound	NB	2	705.7	0.44	13.3	44	1.3	35	13,546
TEXH_SB_AIR	Airport Blvd Southbound	SB	2	700.1	0.44	13.3	44	1.3	35	13,546
									Total	27,092

Emission Factors - TOG Exhaust

Speed Category	1	2	3	4
Travel Speed (mph)	35			
Emissions per Vehicle (g/VMT)	0.03831			

Emisson Factors from CT-EMFAC2017

2022 Hourly Traffic Volumes and TOG Exhaust Emissions - TEXH_NB_AIR

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	1.12%	151	7.07E-04	9	7.12%	964	4.50E-03	17	7.43%	1006	4.70E-03
2	0.41%	56	2.62E-04	10	4.38%	593	2.77E-03	18	8.24%	1116	5.21E-03
3	0.38%	51	2.37E-04	11	4.65%	629	2.94E-03	19	5.72%	775	3.62E-03
4	0.17%	23	1.09E-04	12	5.89%	798	3.72E-03	20	4.30%	583	2.72E-03
5	0.45%	61	2.87E-04	13	6.17%	836	3.90E-03	21	3.26%	441	2.06E-03
6	0.85%	115	5.38E-04	14	6.05%	819	3.82E-03	22	3.31%	449	2.09E-03
7	3.73%	506	2.36E-03	15	7.05%	956	4.46E-03	23	2.49%	337	1.57E-03
8	7.77%	1052	4.91E-03	16	7.19%	974	4.54E-03	24	1.87%	254	1.18E-03
								Total		13,546	

2022 Hourly Traffic Volumes Per Direction and TOG Exhaust Emissions - TEXH_SB_AIR

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.12%	151	7.01E-04	9	7.12%	964	4.46E-03	17	7.43%	1006	4.66E-03
2	0.41%	56	2.60E-04	10	4.38%	593	2.74E-03	18	8.24%	1116	5.16E-03
3	0.38%	51	2.36E-04	11	4.65%	629	2.91E-03	19	5.72%	775	3.59E-03
4	0.17%	23	1.08E-04	12	5.89%	798	3.69E-03	20	4.30%	583	2.70E-03
5	0.45%	61	2.84E-04	13	6.17%	836	3.87E-03	21	3.26%	441	2.04E-03
6	0.85%	115	5.33E-04	14	6.05%	819	3.79E-03	22	3.31%	449	2.08E-03
7	3.73%	506	2.34E-03	15	7.05%	956	4.42E-03	23	2.49%	337	1.56E-03
8	7.77%	1052	4.87E-03	16	7.19%	974	4.51E-03	24	1.87%	254	1.17E-03
								Total		13,546	

580 Dubuque Ave, South San Francisco, CA - Off-Site Residential
Cumulative Operation - Airport Blvd
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_NB_AIR	Airport Blvd Northbound	NB	2	705.7	0.44	13.3	44	1.3	35	13,546
TEVAP_SB_AIR	Airport Blvd Southbound	SB	2	700.1	0.44	13.3	44	1.3	35	13,546
									Total	27,092

Emission Factors - PM2.5 - Evaporative TOG

Speed Category	1	2	3	4
Travel Speed (mph)	35			
Emissions per Vehicle per Hour (g/hour)	1.24545			
Emissions per Vehicle per Mile (g/VMT)	0.03558			

Emisson Factors from CT-EMFAC2017

2022 Hourly Traffic Volumes and TOG Evaporative Emissions - TEVAP_NB_AIR

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	1.12%	151	6.56E-04	9	7.12%	964	4.18E-03	17	7.43%	1006	4.36E-03
2	0.41%	56	2.43E-04	10	4.38%	593	2.57E-03	18	8.24%	1116	4.84E-03
3	0.38%	51	2.21E-04	11	4.65%	629	2.73E-03	19	5.72%	775	3.36E-03
4	0.17%	23	1.01E-04	12	5.89%	798	3.46E-03	20	4.30%	583	2.53E-03
5	0.45%	61	2.66E-04	13	6.17%	836	3.62E-03	21	3.26%	441	1.91E-03
6	0.85%	115	4.99E-04	14	6.05%	819	3.55E-03	22	3.31%	449	1.94E-03
7	3.73%	506	2.19E-03	15	7.05%	956	4.14E-03	23	2.49%	337	1.46E-03
8	7.77%	1052	4.56E-03	16	7.19%	974	4.22E-03	24	1.87%	254	1.10E-03
								Total		13,546	

2022 Hourly Traffic Volumes Per Direction and TOG Evaporative Emissions - TEVAP_SB_AIR

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.12%	151	6.51E-04	9	7.12%	964	4.15E-03	17	7.43%	1006	4.33E-03
2	0.41%	56	2.41E-04	10	4.38%	593	2.55E-03	18	8.24%	1116	4.80E-03
3	0.38%	51	2.19E-04	11	4.65%	629	2.71E-03	19	5.72%	775	3.33E-03
4	0.17%	23	1.01E-04	12	5.89%	798	3.43E-03	20	4.30%	583	2.51E-03
5	0.45%	61	2.64E-04	13	6.17%	836	3.60E-03	21	3.26%	441	1.90E-03
6	0.85%	115	4.95E-04	14	6.05%	819	3.52E-03	22	3.31%	449	1.93E-03
7	3.73%	506	2.18E-03	15	7.05%	956	4.11E-03	23	2.49%	337	1.45E-03
8	7.77%	1052	4.52E-03	16	7.19%	974	4.19E-03	24	1.87%	254	1.09E-03
								Total		13,546	

580 Dubuque Ave, South San Francisco, CA - Off-Site Residential
Cumulative Operation - Airport Blvd
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_NB_AIR	Airport Blvd Northbound	NB	2	705.7	0.44	13.3	44	1.3	35	13,546
FUG_SB_AIR	Airport Blvd Southbound	SB	2	700.1	0.44	13.3	44	1.3	35	13,546
									Total	27,092

Emission Factors - Fugitive PM2.5

Speed Category	1	2	3	4
Travel Speed (mph)	35			
Tire Wear - Emissions per Vehicle (g/VMT)	0.00205			
Brake Wear - Emissions per Vehicle (g/VMT)	0.01680			
Road Dust - Emissions per Vehicle (g/VMT)	0.01482			
otal Fugitive PM2.5 - Emissions per Vehicle (g/VMT)	0.03367			

Emisson Factors from CT-EMFAC2017

2022 Hourly Traffic Volumes and Fugitive PM2.5 Emissions - FUG_NB_AIR

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	1.12%	151	6.21E-04	9	7.12%	964	3.95E-03	17	7.43%	1006	4.13E-03
2	0.41%	56	2.30E-04	10	4.38%	593	2.43E-03	18	8.24%	1116	4.58E-03
3	0.38%	51	2.09E-04	11	4.65%	629	2.58E-03	19	5.72%	775	3.18E-03
4	0.17%	23	9.59E-05	12	5.89%	798	3.27E-03	20	4.30%	583	2.39E-03
5	0.45%	61	2.52E-04	13	6.17%	836	3.43E-03	21	3.26%	441	1.81E-03
6	0.85%	115	4.72E-04	14	6.05%	819	3.36E-03	22	3.31%	449	1.84E-03
7	3.73%	506	2.07E-03	15	7.05%	956	3.92E-03	23	2.49%	337	1.38E-03
8	7.77%	1052	4.31E-03	16	7.19%	974	3.99E-03	24	1.87%	254	1.04E-03
								Total		13,546	

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

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.12%	151	6.16E-04	9	7.12%	964	3.92E-03	17	7.43%	1006	4.09E-03
2	0.41%	56	2.28E-04	10	4.38%	593	2.41E-03	18	8.24%	1116	4.54E-03
3	0.38%	51	2.07E-04	11	4.65%	629	2.56E-03	19	5.72%	775	3.15E-03
4	0.17%	23	9.52E-05	12	5.89%	798	3.25E-03	20	4.30%	583	2.37E-03
5	0.45%	61	2.50E-04	13	6.17%	836	3.40E-03	21	3.26%	441	1.79E-03
6	0.85%	115	4.69E-04	14	6.05%	819	3.33E-03	22	3.31%	449	1.82E-03
7	3.73%	506	2.06E-03	15	7.05%	956	3.89E-03	23	2.49%	337	1.37E-03
8	7.77%	1052	4.28E-03	16	7.19%	974	3.96E-03	24	1.87%	254	1.03E-03
								Total		13,546	

580 Dubuque Ave, South San Francisco, CA - Off-Site Residential
Cumulative Operation - Grand Avenue
DPM Modeling - Roadway Links, Traffic Volumes, and DPM 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
DPM_EB_GND	Grand Avenue Eastbound	EB	3	656.7	0.41	17.0	55.7	3.4	35	17,067
DPM_WB_GND	Grand Avenue Westbound	WB	3	665.5	0.41	17.0	55.7	3.4	35	17,067
									Total	34,134

Emission Factors

Speed Category	1	2	3	4
Travel Speed (mph)	35			
Emissions per Vehicle (g/VMT)	0.00050			

Emisson Factors from CT-EMFAC2017

2022 Hourly Traffic Volumes and DPM Emissions - DPM_EB_GND

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	3.85%	658	3.75E-05	9	6.74%	1150	6.56E-05	17	6.40%	1093	6.23E-05
2	3.18%	543	3.10E-05	10	8.25%	1408	8.02E-05	18	4.10%	700	3.99E-05
3	2.35%	400	2.28E-05	11	6.24%	1064	6.07E-05	19	2.38%	407	2.32E-05
4	1.01%	172	9.78E-06	12	7.41%	1265	7.21E-05	20	1.21%	207	1.18E-05
5	1.01%	172	9.78E-06	13	6.74%	1150	6.56E-05	21	3.05%	521	2.97E-05
6	2.18%	372	2.12E-05	14	6.57%	1122	6.40E-05	22	5.06%	864	4.93E-05
7	4.73%	807	4.60E-05	15	5.90%	1007	5.74E-05	23	3.35%	572	3.26E-05
8	3.39%	578	3.30E-05	16	4.23%	721	4.11E-05	24	0.67%	114	6.52E-06
								Total		17,067	

2022 Hourly Traffic Volumes Per Direction and DPM Emissions - DPM_WB_GND

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	3.85%	658	3.80E-05	9	6.74%	1150	6.65E-05	17	6.40%	1093	6.32E-05
2	3.18%	543	3.14E-05	10	8.25%	1408	8.13E-05	18	4.10%	700	4.04E-05
3	2.35%	400	2.31E-05	11	6.24%	1064	6.15E-05	19	2.38%	407	2.35E-05
4	1.01%	172	9.91E-06	12	7.41%	1265	7.31E-05	20	1.21%	207	1.20E-05
5	1.01%	172	9.91E-06	13	6.74%	1150	6.65E-05	21	3.05%	521	3.01E-05
6	2.18%	372	2.15E-05	14	6.57%	1122	6.48E-05	22	5.06%	864	4.99E-05
7	4.73%	807	4.66E-05	15	5.90%	1007	5.82E-05	23	3.35%	572	3.30E-05
8	3.39%	578	3.34E-05	16	4.23%	721	4.17E-05	24	0.67%	114	6.61E-06
								Total		17,067	

580 Dubuque Ave, South San Francisco, CA - Off-Site Residential
Cumulative Operation - Grand Avenue
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
PM2.5_EB_GND	Grand Avenue Eastbound	EB	3	656.7	0.41	17.0	56	1.3	35	17,067
PM2.5_WB_GND	Grand Avenue Westbound	WB	3	665.5	0.41	17.0	56	1.3	35	17,067
									Total	34,134

Emission Factors - PM2.5

Speed Category	1	2	3	4
Travel Speed (mph)	35			
Emissions per Vehicle (g/VMT)	0.001702			

Emisson Factors from CT-EMFAC2017

2022 Hourly Traffic Volumes and PM2.5 Emissions - PM2.5_EB_GND

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	1.12%	191	3.68E-05	9	7.12%	1215	2.34E-04	17	7.43%	1268	2.45E-04
2	0.41%	71	1.36E-05	10	4.38%	747	1.44E-04	18	8.24%	1406	2.71E-04
3	0.38%	64	1.24E-05	11	4.65%	793	1.53E-04	19	5.72%	977	1.88E-04
4	0.17%	29	5.69E-06	12	5.89%	1005	1.94E-04	20	4.30%	735	1.42E-04
5	0.45%	77	1.49E-05	13	6.17%	1054	2.03E-04	21	3.26%	556	1.07E-04
6	0.85%	145	2.80E-05	14	6.05%	1032	1.99E-04	22	3.31%	565	1.09E-04
7	3.73%	637	1.23E-04	15	7.05%	1204	2.32E-04	23	2.49%	424	8.19E-05
8	7.77%	1325	2.56E-04	16	7.19%	1227	2.37E-04	24	1.87%	320	6.17E-05
								Total		17,067	

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

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.12%	191	3.73E-05	9	7.12%	1215	2.38E-04	17	7.43%	1268	2.48E-04
2	0.41%	71	1.38E-05	10	4.38%	747	1.46E-04	18	8.24%	1406	2.75E-04
3	0.38%	64	1.25E-05	11	4.65%	793	1.55E-04	19	5.72%	977	1.91E-04
4	0.17%	29	5.76E-06	12	5.89%	1005	1.96E-04	20	4.30%	735	1.44E-04
5	0.45%	77	1.51E-05	13	6.17%	1054	2.06E-04	21	3.26%	556	1.09E-04
6	0.85%	145	2.84E-05	14	6.05%	1032	2.02E-04	22	3.31%	565	1.10E-04
7	3.73%	637	1.25E-04	15	7.05%	1204	2.35E-04	23	2.49%	424	8.30E-05
8	7.77%	1325	2.59E-04	16	7.19%	1227	2.40E-04	24	1.87%	320	6.25E-05
								Total		17,067	

580 Dubuque Ave, South San Francisco, CA - Off-Site Residential
Cumulative Operation - Grand Avenue
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_EB_GND	Grand Avenue Eastbound	EB	3	656.7	0.41	17.0	56	1.3	35	17,067
TEXH_WB_GND	Grand Avenue Westbound	WB	3	665.5	0.41	17.0	56	1.3	35	17,067
									Total	34,134

Emission Factors - TOG Exhaust

Speed Category	1	2	3	4
Travel Speed (mph)	35			
Emissions per Vehicle (g/VMT)	0.03831			

Emisson Factors from CT-EMFAC2017

2022 Hourly Traffic Volumes and TOG Exhaust Emissions - TEXH_EB_GND

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	1.12%	191	8.29E-04	9	7.12%	1215	5.28E-03	17	7.43%	1268	5.51E-03
2	0.41%	71	3.07E-04	10	4.38%	747	3.24E-03	18	8.24%	1406	6.10E-03
3	0.38%	64	2.78E-04	11	4.65%	793	3.44E-03	19	5.72%	977	4.24E-03
4	0.17%	29	1.28E-04	12	5.89%	1005	4.36E-03	20	4.30%	735	3.19E-03
5	0.45%	77	3.36E-04	13	6.17%	1054	4.57E-03	21	3.26%	556	2.41E-03
6	0.85%	145	6.30E-04	14	6.05%	1032	4.48E-03	22	3.31%	565	2.45E-03
7	3.73%	637	2.77E-03	15	7.05%	1204	5.23E-03	23	2.49%	424	1.84E-03
8	7.77%	1325	5.76E-03	16	7.19%	1227	5.33E-03	24	1.87%	320	1.39E-03
								Total		17,067	

2022 Hourly Traffic Volumes Per Direction and TOG Exhaust Emissions - TEXH_WB_GND

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.12%	191	8.40E-04	9	7.12%	1215	5.35E-03	17	7.43%	1268	5.58E-03
2	0.41%	71	3.11E-04	10	4.38%	747	3.29E-03	18	8.24%	1406	6.19E-03
3	0.38%	64	2.82E-04	11	4.65%	793	3.49E-03	19	5.72%	977	4.30E-03
4	0.17%	29	1.30E-04	12	5.89%	1005	4.42E-03	20	4.30%	735	3.23E-03
5	0.45%	77	3.40E-04	13	6.17%	1054	4.64E-03	21	3.26%	556	2.44E-03
6	0.85%	145	6.39E-04	14	6.05%	1032	4.54E-03	22	3.31%	565	2.49E-03
7	3.73%	637	2.80E-03	15	7.05%	1204	5.30E-03	23	2.49%	424	1.87E-03
8	7.77%	1325	5.83E-03	16	7.19%	1227	5.40E-03	24	1.87%	320	1.41E-03
								Total		17,067	

580 Dubuque Ave, South San Francisco, CA - Off-Site Residential
Cumulative Operation - Grand Avenue
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_EB_GND	Grand Avenue Eastbound	EB	3	656.7	0.41	17.0	56	1.3	35	17,067
TEVAP_WB_GND	Grand Avenue Westbound	WB	3	665.5	0.41	17.0	56	1.3	35	17,067
									Total	34,134

Emission Factors - PM2.5 - Evaporative TOG

Speed Category	1	2	3	4
Travel Speed (mph)	35			
Emissions per Vehicle per Hour (g/hour)	1.24545			
Emissions per Vehicle per Mile (g/VMT)	0.03558			

Emisson Factors from CT-EMFAC2017

2022 Hourly Traffic Volumes and TOG Evaporative Emissions - TEVAP_EB_GND

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	1.12%	191	7.70E-04	9	7.12%	1215	4.90E-03	17	7.43%	1268	5.11E-03
2	0.41%	71	2.85E-04	10	4.38%	747	3.01E-03	18	8.24%	1406	5.67E-03
3	0.38%	64	2.59E-04	11	4.65%	793	3.20E-03	19	5.72%	977	3.94E-03
4	0.17%	29	1.19E-04	12	5.89%	1005	4.05E-03	20	4.30%	735	2.96E-03
5	0.45%	77	3.12E-04	13	6.17%	1054	4.25E-03	21	3.26%	556	2.24E-03
6	0.85%	145	5.85E-04	14	6.05%	1032	4.16E-03	22	3.31%	565	2.28E-03
7	3.73%	637	2.57E-03	15	7.05%	1204	4.86E-03	23	2.49%	424	1.71E-03
8	7.77%	1325	5.35E-03	16	7.19%	1227	4.95E-03	24	1.87%	320	1.29E-03
								Total		17,067	

2022 Hourly Traffic Volumes Per Direction and TOG Evaporative Emissions - TEVAP_WB_GND

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.12%	191	7.80E-04	9	7.12%	1215	4.97E-03	17	7.43%	1268	5.18E-03
2	0.41%	71	2.89E-04	10	4.38%	747	3.05E-03	18	8.24%	1406	5.75E-03
3	0.38%	64	2.62E-04	11	4.65%	793	3.24E-03	19	5.72%	977	3.99E-03
4	0.17%	29	1.20E-04	12	5.89%	1005	4.11E-03	20	4.30%	735	3.00E-03
5	0.45%	77	3.16E-04	13	6.17%	1054	4.31E-03	21	3.26%	556	2.27E-03
6	0.85%	145	5.93E-04	14	6.05%	1032	4.22E-03	22	3.31%	565	2.31E-03
7	3.73%	637	2.61E-03	15	7.05%	1204	4.92E-03	23	2.49%	424	1.73E-03
8	7.77%	1325	5.42E-03	16	7.19%	1227	5.01E-03	24	1.87%	320	1.31E-03
								Total		17,067	

580 Dubuque Ave, South San Francisco, CA - Off-Site Residential
Cumulative Operation - Grand Avenue
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_EB_GND	Grand Avenue Eastbound	EB	3	656.7	0.41	17.0	56	1.3	35	17,067
FUG_WB_GND	Grand Avenue Westbound	WB	3	665.5	0.41	17.0	56	1.3	35	17,067
									Total	34,134

Emission Factors - Fugitive PM2.5

Speed Category	1	2	3	4
Travel Speed (mph)	35			
Tire Wear - Emissions per Vehicle (g/VMT)	0.00205			
Brake Wear - Emissions per Vehicle (g/VMT)	0.01680			
Road Dust - Emissions per Vehicle (g/VMT)	0.01482			
otal Fugitive PM2.5 - Emissions per Vehicle (g/VMT)	0.03367			

Emisson Factors from CT-EMFAC2017

2022 Hourly Traffic Volumes and Fugitive PM2.5 Emissions - FUG_EB_GND

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	1.12%	191	7.28E-04	9	7.12%	1215	4.64E-03	17	7.43%	1268	4.84E-03
2	0.41%	71	2.70E-04	10	4.38%	747	2.85E-03	18	8.24%	1406	5.36E-03
3	0.38%	64	2.45E-04	11	4.65%	793	3.03E-03	19	5.72%	977	3.73E-03
4	0.17%	29	1.12E-04	12	5.89%	1005	3.84E-03	20	4.30%	735	2.80E-03
5	0.45%	77	2.95E-04	13	6.17%	1054	4.02E-03	21	3.26%	556	2.12E-03
6	0.85%	145	5.54E-04	14	6.05%	1032	3.94E-03	22	3.31%	565	2.16E-03
7	3.73%	637	2.43E-03	15	7.05%	1204	4.59E-03	23	2.49%	424	1.62E-03
8	7.77%	1325	5.06E-03	16	7.19%	1227	4.68E-03	24	1.87%	320	1.22E-03
								Total		17,067	

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

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.12%	191	7.38E-04	9	7.12%	1215	4.70E-03	17	7.43%	1268	4.90E-03
2	0.41%	71	2.74E-04	10	4.38%	747	2.89E-03	18	8.24%	1406	5.44E-03
3	0.38%	64	2.48E-04	11	4.65%	793	3.07E-03	19	5.72%	977	3.78E-03
4	0.17%	29	1.14E-04	12	5.89%	1005	3.89E-03	20	4.30%	735	2.84E-03
5	0.45%	77	2.99E-04	13	6.17%	1054	4.07E-03	21	3.26%	556	2.15E-03
6	0.85%	145	5.61E-04	14	6.05%	1032	3.99E-03	22	3.31%	565	2.19E-03
7	3.73%	637	2.46E-03	15	7.05%	1204	4.66E-03	23	2.49%	424	1.64E-03
8	7.77%	1325	5.13E-03	16	7.19%	1227	4.74E-03	24	1.87%	320	1.24E-03
								Total		17,067	

580 Dubuque Ave, South San Francisco, CA - Airport Blvd Traffic - TACs & PM2.5
AERMOD Risk Modeling Parameters and Maximum Concentrations
at Construction Residential MEI Receptors (1 Location - 7.6 meter receptor height)

Emission Year	2022
Receptor Information	Construction Residential MEI receptor
Number of Receptors	1
Receptor Height	7.6 Meters
Receptor Distances	At Construction Residential MEI locations

Meteorological Conditions

BAAQMD San Francisco International Airport M	2013-2017
Land Use Classification	Urban
Wind Speed	Variable
Wind Direction	Variable

Construction Residential MEI Cancer Risk Maximum Concentrations

Meteorological Data Years	Concentration (µg/m3)*		
	DPM	Exhaust TOG	Evaporative TOG
2013-2017	0.0017	0.0917	0.0854

Construction Residential MEI PM2.5 Maximum Concentrations

Meteorological Data Years	PM2.5 Concentration (µg/m3)*		
	Total PM2.5	Fugitive PM2.5	Vehicle PM2.5
2013-2017	0.0847	0.0806	0.0041

580 Dubuque Ave, South San Francisco, CA - Grand Avenue Traffic - TACs & PM2.5
AERMOD Risk Modeling Parameters and Maximum Concentrations
at Construction Residential MEI Receptors (1 Location - 7.6 meter receptor height)

Emission Year	2022
Receptor Information	Construction Residential MEI receptor
Number of Receptors	1
Receptor Height	7.6 Meters
Receptor Distances	At Construction Residential MEI locations

Meteorological Conditions

BAAQMD San Francisco International Airport M	2013-2017
Land Use Classification	Urban
Wind Speed	Variable
Wind Direction	Variable

Construction Residential MEI Cancer Risk Maximum Concentrations

Meteorological Data Years	Concentration (µg/m3)*		
	DPM	Exhaust TOG	Evaporative TOG
2013-2017	0.0006	0.0429	0.0399

Construction Residential MEI PM2.5 Maximum Concentrations

Meteorological Data Years	PM2.5 Concentration (µg/m3)*		
	Total PM2.5	Fugitive PM2.5	Vehicle PM2.5
2013-2017	0.0396	0.0377	0.0019

580 Dubuque Ave, South San Francisco, CA - Airport Blvd Traffic Cancer Risk
Impacts at Construction Residential MEI - 7.6 meter receptor height
30 Year Residential Exposure

Cancer Risk Calculation Method

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

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

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

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

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

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

Values

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

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	0.0017	0.0917	0.0854	0.023	0.007	0.0004	0.03
1	1	0 - 1	2022	10	0.0017	0.0917	0.0854	0.274	0.086	0.0047	0.36
2	1	1 - 2	2023	10	0.0017	0.0917	0.0854	0.274	0.086	0.0047	0.36
3	1	2 - 3	2024	3	0.0017	0.0917	0.0854	0.043	0.014	0.0007	0.06
4	1	3 - 4	2025	3	0.0017	0.0917	0.0854	0.043	0.014	0.0007	0.06
5	1	4 - 5	2026	3	0.0017	0.0917	0.0854	0.043	0.014	0.0007	0.06
6	1	5 - 6	2027	3	0.0017	0.0917	0.0854	0.043	0.014	0.0007	0.06
7	1	6 - 7	2028	3	0.0017	0.0917	0.0854	0.043	0.014	0.0007	0.06
8	1	7 - 8	2029	3	0.0017	0.0917	0.0854	0.043	0.014	0.0007	0.06
9	1	8 - 9	2030	3	0.0017	0.0917	0.0854	0.043	0.014	0.0007	0.06
10	1	9 - 10	2031	3	0.0017	0.0917	0.0854	0.043	0.014	0.0007	0.06
11	1	10 - 11	2032	3	0.0017	0.0917	0.0854	0.043	0.014	0.0007	0.06
12	1	11 - 12	2033	3	0.0017	0.0917	0.0854	0.043	0.014	0.0007	0.06
13	1	12 - 13	2034	3	0.0017	0.0917	0.0854	0.043	0.014	0.0007	0.06
14	1	13 - 14	2035	3	0.0017	0.0917	0.0854	0.043	0.014	0.0007	0.06
15	1	14 - 15	2036	3	0.0017	0.0917	0.0854	0.043	0.014	0.0007	0.06
16	1	15 - 16	2037	3	0.0017	0.0917	0.0854	0.043	0.014	0.0007	0.06
17	1	16-17	2038	1	0.0017	0.0917	0.0854	0.005	0.002	0.0001	0.01
18	1	17-18	2039	1	0.0017	0.0917	0.0854	0.005	0.002	0.0001	0.01
19	1	18-19	2040	1	0.0017	0.0917	0.0854	0.005	0.002	0.0001	0.01
20	1	19-20	2041	1	0.0017	0.0917	0.0854	0.005	0.002	0.0001	0.01
21	1	20-21	2042	1	0.0017	0.0917	0.0854	0.005	0.002	0.0001	0.01
22	1	21-22	2043	1	0.0017	0.0917	0.0854	0.005	0.002	0.0001	0.01
23	1	22-23	2044	1	0.0017	0.0917	0.0854	0.005	0.002	0.0001	0.01
24	1	23-24	2045	1	0.0017	0.0917	0.0854	0.005	0.002	0.0001	0.01
25	1	24-25	2046	1	0.0017	0.0917	0.0854	0.005	0.002	0.0001	0.01
26	1	25-26	2047	1	0.0017	0.0917	0.0854	0.005	0.002	0.0001	0.01
27	1	26-27	2048	1	0.0017	0.0917	0.0854	0.005	0.002	0.0001	0.01
28	1	27-28	2049	1	0.0017	0.0917	0.0854	0.005	0.002	0.0001	0.01
29	1	28-29	2050	1	0.0017	0.0917	0.0854	0.005	0.002	0.0001	0.01
30	1	29-30	2051	1	0.0017	0.0917	0.0854	0.005	0.002	0.0001	0.01
Total Increased Cancer Risk								1.24	0.389	0.021	**1.65**

Maximum Hazard Index	Maximum Fugitive PM2.5	Total PM2.5
0.0003	0.08	0.08

* Third trimester of pregnancy

580 Dubuque Ave, South San Francisco, CA - Grand Avenue Traffic Cancer Risk
Impacts at Construction Residential MEI - 7.6 meter receptor height
30 Year Residential Exposure

Cancer Risk Calculation Method

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

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

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

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

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

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

Values

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

Maximum - Exposure Information					Concentration (ug/m3)			Cancer Risk (per million)			TOTAL
Exposure Year	Exposure Duration (years)	Age	Year	Age Sensitivity Factor	DPM	Exhaust TOG	Evaporative TOG	DPM	Exhaust TOG	Evaporative TOG	
0	0.25	-0.25 - 0*	2022	10	0.0006	0.0429	0.0399	0.008	0.003	0.0002	0.01
1	1	0 - 1	2022	10	0.0006	0.0429	0.0399	0.095	0.040	0.0022	0.14
2	1	1 - 2	2023	10	0.0006	0.0429	0.0399	0.095	0.040	0.0022	0.14
3	1	2 - 3	2024	3	0.0006	0.0429	0.0399	0.015	0.006	0.0003	0.02
4	1	3 - 4	2025	3	0.0006	0.0429	0.0399	0.015	0.006	0.0003	0.02
5	1	4 - 5	2026	3	0.0006	0.0429	0.0399	0.015	0.006	0.0003	0.02
6	1	5 - 6	2027	3	0.0006	0.0429	0.0399	0.015	0.006	0.0003	0.02
7	1	6 - 7	2028	3	0.0006	0.0429	0.0399	0.015	0.006	0.0003	0.02
8	1	7 - 8	2029	3	0.0006	0.0429	0.0399	0.015	0.006	0.0003	0.02
9	1	8 - 9	2030	3	0.0006	0.0429	0.0399	0.015	0.006	0.0003	0.02
10	1	9 - 10	2031	3	0.0006	0.0429	0.0399	0.015	0.006	0.0003	0.02
11	1	10 - 11	2032	3	0.0006	0.0429	0.0399	0.015	0.006	0.0003	0.02
12	1	11 - 12	2033	3	0.0006	0.0429	0.0399	0.015	0.006	0.0003	0.02
13	1	12 - 13	2034	3	0.0006	0.0429	0.0399	0.015	0.006	0.0003	0.02
14	1	13 - 14	2035	3	0.0006	0.0429	0.0399	0.015	0.006	0.0003	0.02
15	1	14 - 15	2036	3	0.0006	0.0429	0.0399	0.015	0.006	0.0003	0.02
16	1	15 - 16	2037	3	0.0006	0.0429	0.0399	0.015	0.006	0.0003	0.02
17	1	16-17	2038	1	0.0006	0.0429	0.0399	0.002	0.001	0.0000	0.00
18	1	17-18	2039	1	0.0006	0.0429	0.0399	0.002	0.001	0.0000	0.00
19	1	18-19	2040	1	0.0006	0.0429	0.0399	0.002	0.001	0.0000	0.00
20	1	19-20	2041	1	0.0006	0.0429	0.0399	0.002	0.001	0.0000	0.00
21	1	20-21	2042	1	0.0006	0.0429	0.0399	0.002	0.001	0.0000	0.00
22	1	21-22	2043	1	0.0006	0.0429	0.0399	0.002	0.001	0.0000	0.00
23	1	22-23	2044	1	0.0006	0.0429	0.0399	0.002	0.001	0.0000	0.00
24	1	23-24	2045	1	0.0006	0.0429	0.0399	0.002	0.001	0.0000	0.00
25	1	24-25	2046	1	0.0006	0.0429	0.0399	0.002	0.001	0.0000	0.00
26	1	25-26	2047	1	0.0006	0.0429	0.0399	0.002	0.001	0.0000	0.00
27	1	26-27	2048	1	0.0006	0.0429	0.0399	0.002	0.001	0.0000	0.00
28	1	27-28	2049	1	0.0006	0.0429	0.0399	0.002	0.001	0.0000	0.00
29	1	28-29	2050	1	0.0006	0.0429	0.0399	0.002	0.001	0.0000	0.00
30	1	29-30	2051	1	0.0006	0.0429	0.0399	0.002	0.001	0.0000	0.00
Total Increased Cancer Risk								0.43	0.182	0.010	**0.62**

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

* Third trimester of pregnancy

580 Dubuque Ave, South San Francisco, CA - Off-Site Residential
Project Trips - Dubuque Ave
DPM Modeling - Roadway Links, Traffic Volumes, and DPM Emissions
Year = **2025**

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_NB_DBQ	Dubuque Avenue Northbound	NB	1	207.7	0.13	9.7	31.7	3.4	30	2,159
DPM_SB_DBQ	Dubuque Avenue Southbound	SB	1	216.5	0.13	9.7	31.7	3.4	30	2,159
									Total	4,318

Emission Factors

Speed Category	1	2	3	4
Travel Speed (mph)	30			
Emissions per Vehicle (g/VMT)	0.00024			

Emisson Factors from CT-EMFAC2017

2025 Hourly Traffic Volumes and DPM Emissions - DPM_NB_DBQ

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	3.85%	83	7.13E-07	9	6.74%	146	1.25E-06	17	6.40%	138	1.18E-06
2	3.18%	69	5.89E-07	10	8.25%	178	1.53E-06	18	4.10%	88	7.58E-07
3	2.35%	51	4.34E-07	11	6.24%	135	1.15E-06	19	2.38%	51	4.41E-07
4	1.01%	22	1.86E-07	12	7.41%	160	1.37E-06	20	1.21%	26	2.24E-07
5	1.01%	22	1.86E-07	13	6.74%	146	1.25E-06	21	3.05%	66	5.65E-07
6	2.18%	47	4.03E-07	14	6.57%	142	1.22E-06	22	5.06%	109	9.37E-07
7	4.73%	102	8.75E-07	15	5.90%	127	1.09E-06	23	3.35%	72	6.20E-07
8	3.39%	73	6.27E-07	16	4.23%	91	7.82E-07	24	0.67%	14	1.24E-07
								Total		2,159	

2025 Hourly Traffic Volumes Per Direction and DPM Emissions - DPM_SB_DBQ

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	3.85%	83	7.43E-07	9	6.74%	146	1.30E-06	17	6.40%	138	1.23E-06
2	3.18%	69	6.14E-07	10	8.25%	178	1.59E-06	18	4.10%	88	7.90E-07
3	2.35%	51	4.52E-07	11	6.24%	135	1.20E-06	19	2.38%	51	4.60E-07
4	1.01%	22	1.94E-07	12	7.41%	160	1.43E-06	20	1.21%	26	2.34E-07
5	1.01%	22	1.94E-07	13	6.74%	146	1.30E-06	21	3.05%	66	5.89E-07
6	2.18%	47	4.20E-07	14	6.57%	142	1.27E-06	22	5.06%	109	9.77E-07
7	4.73%	102	9.12E-07	15	5.90%	127	1.14E-06	23	3.35%	72	6.46E-07
8	3.39%	73	6.54E-07	16	4.23%	91	8.15E-07	24	0.67%	14	1.29E-07
								Total		2,159	

580 Dubuque Ave, South San Francisco, CA - Off-Site Residential
Project Trips - Dubuque Ave
PM2.5 Modeling - Roadway Links, Traffic Volumes, and PM2.5 Emissions
Year = 2025

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
PM2.5_NB_DBQ	Dubuque Avenue Northbound	NB	1	207.7	0.13	9.7	32	1.3	30	2,159
PM2.5_SB_DBQ	Dubuque Avenue Southbound	SB	1	216.5	0.13	9.7	32	1.3	30	2,159
									Total	4,318

Emission Factors - PM2.5

Speed Category	1	2	3	4
Travel Speed (mph)	30			
Emissions per Vehicle (g/VMT)	0.001533			

Emisson Factors from CT-EMFAC2017

2025 Hourly Traffic Volumes and PM2.5 Emissions - PM2.5_NB_DBQ

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	1.12%	24	1.33E-06	9	7.12%	154	8.45E-06	17	7.43%	160	8.82E-06
2	0.41%	9	4.92E-07	10	4.38%	95	5.19E-06	18	8.24%	178	9.77E-06
3	0.38%	8	4.46E-07	11	4.65%	100	5.51E-06	19	5.72%	124	6.79E-06
4	0.17%	4	2.05E-07	12	5.89%	127	6.99E-06	20	4.30%	93	5.11E-06
5	0.45%	10	5.38E-07	13	6.17%	133	7.32E-06	21	3.26%	70	3.86E-06
6	0.85%	18	1.01E-06	14	6.05%	131	7.18E-06	22	3.31%	71	3.93E-06
7	3.73%	81	4.43E-06	15	7.05%	152	8.37E-06	23	2.49%	54	2.95E-06
8	7.77%	168	9.22E-06	16	7.19%	155	8.53E-06	24	1.87%	40	2.22E-06
								Total		2,159	

2025 Hourly Traffic Volumes Per Direction and PM2.5 Emissions - PM2.5_SB_DBQ

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.12%	24	1.38E-06	9	7.12%	154	8.80E-06	17	7.43%	160	9.19E-06
2	0.41%	9	5.13E-07	10	4.38%	95	5.41E-06	18	8.24%	178	1.02E-05
3	0.38%	8	4.65E-07	11	4.65%	100	5.75E-06	19	5.72%	124	7.08E-06
4	0.17%	4	2.14E-07	12	5.89%	127	7.28E-06	20	4.30%	93	5.32E-06
5	0.45%	10	5.61E-07	13	6.17%	133	7.64E-06	21	3.26%	70	4.03E-06
6	0.85%	18	1.05E-06	14	6.05%	131	7.48E-06	22	3.31%	71	4.10E-06
7	3.73%	81	4.62E-06	15	7.05%	152	8.72E-06	23	2.49%	54	3.08E-06
8	7.77%	168	9.61E-06	16	7.19%	155	8.89E-06	24	1.87%	40	2.32E-06
								Total		2,159	

580 Dubuque Ave, South San Francisco, CA - Off-Site Residential
Project Trips - Dubuque Ave
TOG Exhaust Modeling - Roadway Links, Traffic Volumes, and TOG Exhaust Emissions
Year = 2025

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_NB_DBQ	Dubuque Avenue Northbound	NB	1	207.7	0.13	9.7	32	1.3	30	2,159
TEXH_SB_DBQ	Dubuque Avenue Southbound	SB	1	216.5	0.13	9.7	32	1.3	30	2,159
									Total	4,318

Emission Factors - TOG Exhaust

Speed Category	1	2	3	4
Travel Speed (mph)	30			
Emissions per Vehicle (g/VMT)	0.04138			

Emisson Factors from CT-EMFAC2017

2025 Hourly Traffic Volumes and TOG Exhaust Emissions - TEXH_NB_DBQ

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	1.12%	24	3.58E-05	9	7.12%	154	2.28E-04	17	7.43%	160	2.38E-04
2	0.41%	9	1.33E-05	10	4.38%	95	1.40E-04	18	8.24%	178	2.64E-04
3	0.38%	8	1.20E-05	11	4.65%	100	1.49E-04	19	5.72%	124	1.83E-04
4	0.17%	4	5.53E-06	12	5.89%	127	1.89E-04	20	4.30%	93	1.38E-04
5	0.45%	10	1.45E-05	13	6.17%	133	1.98E-04	21	3.26%	70	1.04E-04
6	0.85%	18	2.72E-05	14	6.05%	131	1.94E-04	22	3.31%	71	1.06E-04
7	3.73%	81	1.20E-04	15	7.05%	152	2.26E-04	23	2.49%	54	7.96E-05
8	7.77%	168	2.49E-04	16	7.19%	155	2.30E-04	24	1.87%	40	6.00E-05
								Total		2,159	

2025 Hourly Traffic Volumes Per Direction and TOG Exhaust Emissions - TEXH_SB_DBQ

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.12%	24	3.73E-05	9	7.12%	154	2.38E-04	17	7.43%	160	2.48E-04
2	0.41%	9	1.38E-05	10	4.38%	95	1.46E-04	18	8.24%	178	2.75E-04
3	0.38%	8	1.25E-05	11	4.65%	100	1.55E-04	19	5.72%	124	1.91E-04
4	0.17%	4	5.76E-06	12	5.89%	127	1.97E-04	20	4.30%	93	1.44E-04
5	0.45%	10	1.51E-05	13	6.17%	133	2.06E-04	21	3.26%	70	1.09E-04
6	0.85%	18	2.84E-05	14	6.05%	131	2.02E-04	22	3.31%	71	1.11E-04
7	3.73%	81	1.25E-04	15	7.05%	152	2.35E-04	23	2.49%	54	8.30E-05
8	7.77%	168	2.59E-04	16	7.19%	155	2.40E-04	24	1.87%	40	6.25E-05
								Total		2,159	

580 Dubuque Ave, South San Francisco, CA - Off-Site Residential
Project Trips - Dubuque Ave
TOG Evaporative Emissions Modeling - Roadway Links, Traffic Volumes, and TOG Evaporative Emissions
Year = 2025

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_NB_DBQ	Dubuque Avenue Northbound	NB	1	207.7	0.13	9.7	32	1.3	30	2,159
TEVAP_SB_DBQ	Dubuque Avenue Southbound	SB	1	216.5	0.13	9.7	32	1.3	30	2,159
									Total	4,318

Emission Factors - PM2.5 - Evaporative TOG

Speed Category	1	2	3	4
Travel Speed (mph)	30			
Emissions per Vehicle per Hour (g/hour)	1.11204			
Emissions per Vehicle per Mile (g/VMT)	0.03707			

Emisson Factors from CT-EMFAC2017

2025 Hourly Traffic Volumes and TOG Evaporative Emissions - TEVAP_NB_DBQ

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	1.12%	24	3.21E-05	9	7.12%	154	2.04E-04	17	7.43%	160	2.13E-04
2	0.41%	9	1.19E-05	10	4.38%	95	1.26E-04	18	8.24%	178	2.36E-04
3	0.38%	8	1.08E-05	11	4.65%	100	1.33E-04	19	5.72%	124	1.64E-04
4	0.17%	4	4.95E-06	12	5.89%	127	1.69E-04	20	4.30%	93	1.23E-04
5	0.45%	10	1.30E-05	13	6.17%	133	1.77E-04	21	3.26%	70	9.34E-05
6	0.85%	18	2.44E-05	14	6.05%	131	1.74E-04	22	3.31%	71	9.50E-05
7	3.73%	81	1.07E-04	15	7.05%	152	2.02E-04	23	2.49%	54	7.13E-05
8	7.77%	168	2.23E-04	16	7.19%	155	2.06E-04	24	1.87%	40	5.38E-05
								Total		2,159	

2025 Hourly Traffic Volumes Per Direction and TOG Evaporative Emissions - TEVAP_SB_DBQ

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.12%	24	3.34E-05	9	7.12%	154	2.13E-04	17	7.43%	160	2.22E-04
2	0.41%	9	1.24E-05	10	4.38%	95	1.31E-04	18	8.24%	178	2.46E-04
3	0.38%	8	1.12E-05	11	4.65%	100	1.39E-04	19	5.72%	124	1.71E-04
4	0.17%	4	5.16E-06	12	5.89%	127	1.76E-04	20	4.30%	93	1.29E-04
5	0.45%	10	1.36E-05	13	6.17%	133	1.85E-04	21	3.26%	70	9.73E-05
6	0.85%	18	2.54E-05	14	6.05%	131	1.81E-04	22	3.31%	71	9.90E-05
7	3.73%	81	1.12E-04	15	7.05%	152	2.11E-04	23	2.49%	54	7.44E-05
8	7.77%	168	2.32E-04	16	7.19%	155	2.15E-04	24	1.87%	40	5.60E-05
								Total		2,159	

580 Dubuque Ave, South San Francisco, CA - Off-Site Residential
Project Trips - Dubuque Ave
Fugitive Road PM2.5 Modeling - Roadway Links, Traffic Volumes, and Fugitive Road PM2.5 Emissions
Year = **2025**

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_NB_DBQ	Dubuque Avenue Northbound	NB	1	207.7	0.13	9.7	32	1.3	30	2,159
FUG_SB_DBQ	Dubuque Avenue Southbound	SB	1	216.5	0.13	9.7	32	1.3	30	2,159
									Total	4,318

Emission Factors - Fugitive PM2.5

Speed Category	1	2	3	4
Travel Speed (mph)	30			
Tire Wear - Emissions per Vehicle (g/VMT)	0.00205			
Brake Wear - Emissions per Vehicle (g/VMT)	0.01681			
Road Dust - Emissions per Vehicle (g/VMT)	0.01496			
otal Fugitive PM2.5 - Emissions per Vehicle (g/VMT)	0.03382			

Emisson Factors from CT-EMFAC2017

2025 Hourly Traffic Volumes and Fugitive PM2.5 Emissions - FUG_NB_DBQ

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	1.12%	24	2.93E-05	9	7.12%	154	1.86E-04	17	7.43%	160	1.94E-04
2	0.41%	9	1.08E-05	10	4.38%	95	1.15E-04	18	8.24%	178	2.16E-04
3	0.38%	8	9.83E-06	11	4.65%	100	1.22E-04	19	5.72%	124	1.50E-04
4	0.17%	4	4.52E-06	12	5.89%	127	1.54E-04	20	4.30%	93	1.13E-04
5	0.45%	10	1.19E-05	13	6.17%	133	1.62E-04	21	3.26%	70	8.52E-05
6	0.85%	18	2.23E-05	14	6.05%	131	1.58E-04	22	3.31%	71	8.67E-05
7	3.73%	81	9.77E-05	15	7.05%	152	1.85E-04	23	2.49%	54	6.51E-05
8	7.77%	168	2.03E-04	16	7.19%	155	1.88E-04	24	1.87%	40	4.90E-05
								Total		2,159	

2025 Hourly Traffic Volumes Per Direction and Fugitive PM2.5 Emissions - FUG_SB_DBQ

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.12%	24	3.05E-05	9	7.12%	154	1.94E-04	17	7.43%	160	2.03E-04
2	0.41%	9	1.13E-05	10	4.38%	95	1.19E-04	18	8.24%	178	2.25E-04
3	0.38%	8	1.02E-05	11	4.65%	100	1.27E-04	19	5.72%	124	1.56E-04
4	0.17%	4	4.71E-06	12	5.89%	127	1.61E-04	20	4.30%	93	1.17E-04
5	0.45%	10	1.24E-05	13	6.17%	133	1.68E-04	21	3.26%	70	8.88E-05
6	0.85%	18	2.32E-05	14	6.05%	131	1.65E-04	22	3.31%	71	9.03E-05
7	3.73%	81	1.02E-04	15	7.05%	152	1.92E-04	23	2.49%	54	6.78E-05
8	7.77%	168	2.12E-04	16	7.19%	155	1.96E-04	24	1.87%	40	5.11E-05
								Total		2,159	

580 Dubuque Ave, South San Francisco, CA - Dubuque Avenue Traffic - TACs & PM2.5 - Project Trips
AERMOD Risk Modeling Parameters and Maximum Concentrations
at Construction Residential MEI Receptors (1 Location - 7.6 meter receptor height)

Emission Year	2025
Receptor Information	Construction Residential MEI receptor
Number of Receptors	1
Receptor Height	7.6 Meters
Receptor Distances	At Construction Residential MEI locations

Meteorological Conditions

BAAQMD San Francisco International Airport M	2013-2017
Land Use Classification	Urban
Wind Speed	Variable
Wind Direction	Variable

Construction Residential MEI Cancer Risk Maximum Concentrations

Meteorological Data Years	Concentration (µg/m3)*		
	DPM	Exhaust TOG	Evaporative TOG
2013-2017	0.0000	0.0045	0.0041

Construction Residential MEI PM2.5 Maximum Concentrations

Meteorological Data Years	PM2.5 Concentration (µg/m3)*		
	Total PM2.5	Fugitive PM2.5	Vehicle PM2.5
2013-2017	0.0039	0.0037	0.0002

580 Dubuque Ave, South San Francisco, CA - Grand Avenue Traffic Cancer Risk - Project Trips
Impacts at Construction Residential MEI - 7.6 meter receptor height
30 Year Residential Exposure

Cancer Risk Calculation Method

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

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

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

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

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

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

Values

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

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*	2025	10	0.0000	0.0045	0.0041	0.000	0.000	0.0000	0.00
1	1	0 - 1	2025	10	0.0000	0.0045	0.0041	0.005	0.004	0.0002	0.01
2	1	1 - 2	2026	10	0.0000	0.0045	0.0041	0.005	0.004	0.0002	0.01
3	1	2 - 3	2027	3	0.0000	0.0045	0.0041	0.001	0.001	0.0000	0.00
4	1	3 - 4	2028	3	0.0000	0.0045	0.0041	0.001	0.001	0.0000	0.00
5	1	4 - 5	2029	3	0.0000	0.0045	0.0041	0.001	0.001	0.0000	0.00
6	1	5 - 6	2030	3	0.0000	0.0045	0.0041	0.001	0.001	0.0000	0.00
7	1	6 - 7	2031	3	0.0000	0.0045	0.0041	0.001	0.001	0.0000	0.00
8	1	7 - 8	2032	3	0.0000	0.0045	0.0041	0.001	0.001	0.0000	0.00
9	1	8 - 9	2033	3	0.0000	0.0045	0.0041	0.001	0.001	0.0000	0.00
10	1	9 - 10	2034	3	0.0000	0.0045	0.0041	0.001	0.001	0.0000	0.00
11	1	10 - 11	2035	3	0.0000	0.0045	0.0041	0.001	0.001	0.0000	0.00
12	1	11 - 12	2036	3	0.0000	0.0045	0.0041	0.001	0.001	0.0000	0.00
13	1	12 - 13	2037	3	0.0000	0.0045	0.0041	0.001	0.001	0.0000	0.00
14	1	13 - 14	2038	3	0.0000	0.0045	0.0041	0.001	0.001	0.0000	0.00
15	1	14 - 15	2039	3	0.0000	0.0045	0.0041	0.001	0.001	0.0000	0.00
16	1	15 - 16	2040	3	0.0000	0.0045	0.0041	0.001	0.001	0.0000	0.00
17	1	16-17	2041	1	0.0000	0.0045	0.0041	0.000	0.000	0.0000	0.00
18	1	17-18	2042	1	0.0000	0.0045	0.0041	0.000	0.000	0.0000	0.00
19	1	18-19	2043	1	0.0000	0.0045	0.0041	0.000	0.000	0.0000	0.00
20	1	19-20	2044	1	0.0000	0.0045	0.0041	0.000	0.000	0.0000	0.00
21	1	20-21	2045	1	0.0000	0.0045	0.0041	0.000	0.000	0.0000	0.00
22	1	21-22	2046	1	0.0000	0.0045	0.0041	0.000	0.000	0.0000	0.00
23	1	22-23	2047	1	0.0000	0.0045	0.0041	0.000	0.000	0.0000	0.00
24	1	23-24	2048	1	0.0000	0.0045	0.0041	0.000	0.000	0.0000	0.00
25	1	24-25	2049	1	0.0000	0.0045	0.0041	0.000	0.000	0.0000	0.00
26	1	25-26	2050	1	0.0000	0.0045	0.0041	0.000	0.000	0.0000	0.00
27	1	26-27	2051	1	0.0000	0.0045	0.0041	0.000	0.000	0.0000	0.00
28	1	27-28	2052	1	0.0000	0.0045	0.0041	0.000	0.000	0.0000	0.00
29	1	28-29	2053	1	0.0000	0.0045	0.0041	0.000	0.000	0.0000	0.00
30	1	29-30	2054	1	0.0000	0.0045	0.0041	0.000	0.000	0.0000	0.00
Total Increased Cancer Risk								0.02	0.019	0.001	**0.04**

Maximum Hazard Index	Maximum Fugitive PM2.5	Total PM2.5
0.0000	0.00	0.00

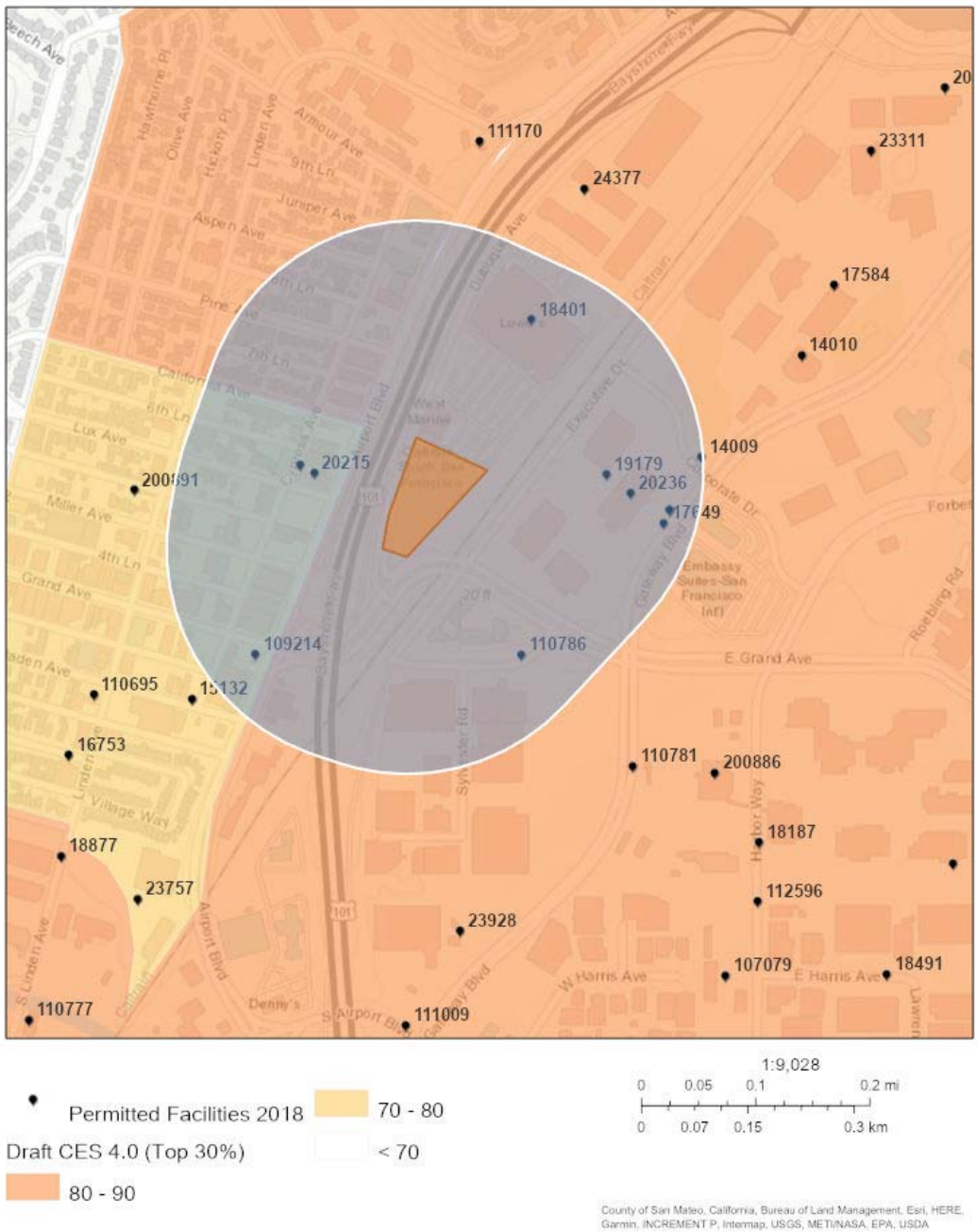
* Third trimester of pregnancy

Stationary Source Risk & Hazards Screening Report

Area of Interest (AOI) Information

Area : 4,829,628.73 ft²

Oct 27 2021 13:00:04 Eastern Daylight Time



Summary

Name	Count	Area(ft²)	Length(ft)
Permitted Facilities 2018	11	N/A	N/A

Permitted Facilities 2018

#	FACID	Name	Address	City	St
1	14009	Boston Properties	651 Gateway Boulevard	South San Francisco	CA
2	15916	Boston Properties	611 Gateway Boulevard	South San Francisco	CA
3	16024	Genentech, Inc	611 Gateway Boulevard	South San Francisco	CA
4	17649	Alexandria Real Estate Equities, Inc	Gateway Boulevard	South San Francisco	CA
5	18401	Lowe's HIW Inc	720 Dubuque Avenue	South San Francisco	CA
6	19179	MacroGenics West,Inc	One Corporate Drive	South San Francisco	CA
7	20215	NOD Auto Body Shop Inc	110 Lux Ave	South San Francisco	CA
8	20236	Biotech Gateway - HCP c/o CBRE	2 Corporate Drive	South San Francisco	CA
9	109214	Unocal #1020 --Grand Martco Inc	221 Airport Blvd	South San Francisco	CA
10	110786	Flyers #411	190 E Grand Ave	South San Francisco	CA
11	201062	A&K Supreme Auto	510 CYPRESS AVE # 512	S SAN FRAN	CA

#	Zip	County	Cancer	Hazard	PM_25	Type	Count
1	94080	San Mateo	20.250	0.030	0.330	Contact BAAQMD	1
2	94080	San Mateo	1.770	0.000	0.000	Contact BAAQMD	1
3	94080	San Mateo	2.730	0.010	0.000	Generators	1
4	94080	San Mateo	9.310	0.010	0.010	Generators	1
5	94080	San Mateo	9.470	0.000	0.010	Generators	1
6	94080	San Mateo	39.610	0.020	0.050	Generators	1
7	94080	San Mateo	0.000	0.000	0.000	Contact BAAQMD	1
8	94080	San Mateo	1.660	0.000	0.000	Generators	1
9	94080	San Mateo	24.520	0.110	0.000	Gas Dispensing Facility	1
10	94080	San Mateo	10.030	0.040	0.000	Gas Dispensing Facility	1
11	94080	Santa Clara	0.000	0.000	0.000	Contact BAAQMD	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.

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	**10/27/2021**
Contact Name	Zachary Palm
Affiliation	Illingworth & Rodkin, Inc.
Phone	707-794-0400 x117
Email	zpalm@illingworthrodkin.com
Project Name	580 Dubuque Ave
Address	580 Dubuque Ave
City	South San Francisco
County	San Mateo
Type (residential, commercial, mixed use, industrial, etc.)	Lab/Office
Project Size (# of units or building square feet)	274k sqft
Comments:	

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

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

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

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

4. Identify stationary sources within at least a 1000ft radius of project site. Verify that the location of the source on the map matches with the source's address in the Information Table, by using the Google E[illegible] 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 [illegible]lue section 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
1000+	24795	Boston Properties	651 Gateway Boulevard	20.246	0.0315	0.3314		Generators, Boilers		2018 Dataset	0.04	0.81	0.001	0.01
1000+	24795	Boston Properties	611 Gateway Boulevard	1.77	0.00	0.00		Generators, Boilers		2018 Dataset	0.04	0.07	0.000	0.00
1000+	16024	Genentech, Inc	611 Gateway Boulevard	2.73	0.01	0.00		Generators		2018 Dataset	0.04	0.11	0.000	0.00
1000+	17649	Alexandria Real Estate Equities, Inc	Gateway Boulevard	9.31	0.01	0.01		Generators		2018 Dataset	0.04	0.37	0.001	0.00
1000+	18401	Lowe's HIW Inc	720 Dubuque Avenue	9.47	0.00	0.01		Generators		2018 Dataset	0.04	0.38	0.000	0.00
1000+	19179	MacroGenics West,Inc	One Corporate Drive	39.61	0.02	0.05		Generators		2018 Dataset	0.04	1.58	0.001	0.00
100	20215	NOD Auto Body Shop Inc	110 Lux Ave		0.00			Auto Body Coating Operation		2018 Dataset	0.78	0.00	0.000	0.00
1000+	20236	Biotech Gateway - HCP c/o CBRE	2 Corporate Drive	1.66	0.00	0.00		Generators		2018 Dataset	0.04	0.07	0.000	0.00
730	109214	Unocal #1020 --Grand Martco Inc	221 Airport Blvd	24.52	0.11			Gas Dispensing Facility		2018 Dataset	0.03	0.61	0.003	0.00
1000+	110786	Flyers #411	190 E Grand Ave	10.03	0.04			Gas Dispensing Facility		2018 Dataset	0.02	0.15	0.001	0.00
200	201062	A&K Supreme Auto	510 CYPRESS AVE # 512		0.0048			Auto Body Coating Operation		2018 Dataset	0.64	0.00	0.003	0.00

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
    c. BAAQMD Reg 11 Rule 16 required that all co-residential (sharing a wall, floor, ceiling or is in the same building as a residential unit) dry cleaners cease use of perc on July 1, 2010. Therefore, there is no cancer risk, hazard or PM2.5 concentrations from co-residential dry cleaning businesses in the BAAQMD.
    d. Non co-residential dry cleaners must phase out use of perc by Jan. 1, 2023. Therefore, the risk from these dry cleaners does not need to be factored in over a 70-year period, but instead should
    e. Gas stations can be adjusted using BAAQMD's Gas Station Distance Mulitplier worksheet.
    f. Unless otherwise noted, exempt sources are considered insignificant. See BAAQMD Reg 2 Rule 1 for a list of exempt sources.
    g. This spray booth is considered to be insignificant.

Date last updated:
03/13/2018

Attachment 6: City of South San Francisco Climate Action Plan Checklist

APPENDIX - E: DEVELOPMENT REVIEW CHECKLIST

This appendix presents the items that City staff will monitor to track implementation of the Climate Action Plan. On a project-by-project basis, City staff will monitor these criteria using a separate development checklist that identifies departmental responsibility and project-level measures. The following tables identify the illustrative criteria necessary for tracking project-level contributions to the Climate Action Plan target. Yet the separate development checklist will clearly identify applicable measures by project type, providing a streamlined process for applicants and City staff using a simple checklist format. By maintaining the development checklist as a separate, stand-alone implementation item of the Climate Action Plan, the City will have flexibility to modify the checklist over time and adapt to the information that applicants can easily provide.

PROJECT INFORMATION FOR ADDITIONS, ALTERATIONS, AND TENANT IMPROVEMENTS

This list includes project-level criteria from the Climate Action Plan relevant to additions, alterations, and tenant improvements. City staff will use a separate development checklist to monitor project compliance with these key actions.

Climate Action Plan Measures for Additions, Alterations, and Tenant Improvements
Does the project provide bicycle facilities, bicycle lanes, or other facilities?
Will the project provide a bike share program for employees or residents?
Will there be a commute shuttle or public transit stop within 500 feet?
Is the project subject to a Transportation Demand Management (TDM) program?
Will the project provide incentives for commuters?
Is the project subject to a traffic impact fee?
How will the net number of parking spaces change on-site?
Is the project located within a specific plan area, station area, or Priority Development Area?
Will this project provide any alternative-fuel stations?
Will the project have any pre-wiring or conduits to accommodate renewable energy facilities or electric vehicle charging stations in the future?
Will project construction activities implement best management practices, such as the BAAQMD's recommended construction mitigations identified in the BAAQMD CEQA Guidelines?
Is the building more than 30 years old?
Will certification of the building be sought under LEED or another green building criteria?
Will the project be built to CALGreen Tier 1energy efficiency standards?

APPENDIX E

Climate Action Plan Measures for Additions, Alterations, and Tenant Improvements
Does the project include any energy-efficient improvements (e.g., double-paned windows, increased insulation, weatherization)?
Does the project include any upgrades of appliances to more energy efficient models?
Will mechanical equipment (e.g., HVAC equipment, boilers, water heaters) be upgraded to more energy efficient models?
Will roofs or surface paving be replaced with high-reflectivity ("cool") surfaces?
How will the net number of trees change on-site?
Will any renewable energy system be installed as part of this project?
Is the project a new conversion of unconditioned space 5,000 square feet or more?
Is there a plan for construction and demolition waste recycling?
Will there be composting on-site?
Will any water fixtures be replaced with more efficient fixtures?
Will there be any effort to educate occupants and tenants about water conservation?
Does the project incorporate low-impact development (LID) practices?
Will any xeriscaping be installed?
Will captured rainwater or graywater be used for irrigation?

PROJECT INFORMATION FOR NEW DEVELOPMENT

This list includes criteria from the Climate Action Plan that are applicable to new development. These measures should be included in the project design as feasible.

Climate Action Plan Measures for New Development
Does the project include bicycle facilities (e.g., bicycle lanes, parking, lockers)?
Will the project support bike sharing/rental programs?
Will there be a commute shuttle or public transit stop on-site or within 500 feet?
Is the project within ¼ mile of a Caltrain or BART stop?
Will the project include high-density housing and a diverse range of housing?
Will the project provide traffic calming treatments?
Is the project paying a traffic impact fee to fund bicycle and pedestrian improvements?

DEVELOPMENT REVIEW CHECKLIST

Climate Action Plan Measures for New Development
Will the project provide shared or reduced parking?
Will the project provide designated parking spaces for electric vehicles, carpool vehicles, or other low-emissions vehicles?
Will the project have any ground-level commercial space?
Does the project include any alternative-fuel stations?
Will the project have any pre-wiring or conduit construction to easily add electric vehicle charging stations or alternative energy facilities at a later date?
If this project is replacing an existing building, is the building being replaced more than 30 years old?
Will certification of the building be sought under LEED or other green building criteria?
Will the project include any high-reflectivity ("cool") roof or surface paving?
Will there be a net increase in the number of mature trees on-site once the project is completed?
Will any renewable energy system be installed as part of this project?
Is the project a new nonresidential conditioned space of 5,000 square feet or more?
Will this project use renewable energy generated off-site?
Will there be composting collection on-site?
Will any water fixtures exceed CALGreen standards?
Will the project incorporate low-impact development (LID) practices?
Will any xeriscaping be installed?
Will captured rainwater or graywater be used for irrigation?