INITIAL STUDY
AND MITIGATED NEGATIVE DECLARATION

800 DUBUQUE AVENUE PROJECT

Lead Agency:

City of South San Francisco
Economic & Community Development Department
315 Maple Avenue
South San Francisco, CA 94083-0711

MARCH 2023

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INTRODUCTION TO THIS DOCUMENT

This document serves as the Initial Study and Mitigated Negative Declaration for the 800 Dubuque Avenue project, prepared in accordance with the California Environmental Quality Act (CEQA; Public Resources Code Sections 15000 et seq.).

Per CEQA Guidelines (Section 15070), a Mitigated Negative Declaration can be prepared to meet the requirements of CEQA review when the Initial Study identifies potentially significant environmental effects, but revisions in the project and/or incorporation of mitigation measures agreed to by the applicant would avoid the effects or mitigate the effects to a point where clearly no significant effects would occur and there is no substantial evidence in light of the whole record that the project as revised may have significant effect on the environment.

This document is organized in three sections as follows:

- **Introduction and Project Information.** This section introduces the document and presents the project description including location, setting, and specifics of the lead agency and contacts.
- **Mitigated Negative Declaration.** This section lists the impacts and mitigation measures identified in the Initial Study and proposes findings that would allow adoption of this document as the CEQA review document for the proposed project.
- **Initial Study Checklist.** This section discusses the CEQA environmental topics and checklist questions and identifies the potential for impacts and proposed mitigation measures to avoid these impacts.

Full project materials are available for review upon request from the Planning Department at City of South San Francisco (see contact info below).

PUBLIC REVIEW

This Initial Study will be circulated for a 30-day public review period. Comments may be submitted in writing by email or regular mail to the following address:

Christopher Espiritu, Senior Planner
City of South San Francisco
Economic & Community Development Department
315 Maple Avenue
South San Francisco, CA 94083-0711
Phone: 650-877-8535
Email: Christopher.Espiritu@ssf.net

PROJECT INFORMATION

All figures for the project information are included together on pages 6 through 12.

PROJECT ENTITLEMENTS

Development of the project would require the following approvals from the City of South San Francisco: Conditional Use Permit, based on a Community Benefits Agreement, to exceed the FAR that would be allowed by right, Design Review, and a Transportation Demand Management Program.

The project is required to comply with Municipal Regional Permit requirements related to stormwater pollution prevention.

LEAD AGENCY

City of South San Francisco
Economic & Community Development Department
315 Maple Avenue
South San Francisco, CA 94083-0711

CONTACT PERSON

Christopher Espiritu, Senior Planner
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PROJECT SPONSOR

Dubuque Center, L.P.
Contact: Justine Nielsen, SVP of Development, IQHQ
674 Via De La Valle Suite 206
Solana Beach, CA 92075
Phone: 858-779-1111

PROJECT LOCATION AND EXISTING USES

The 5.89-acre project site (Assessor's Parcel Number 015-021-030) is located in the City of South San Francisco, California at 800 – 890 Dubuque Avenue. It is bordered by Dubuque Avenue and the U.S. 101 highway on the west and the Caltrain right-of-way to the east. The adjacent property to the north is currently occupied by a Costco. The property immediately to the south supports PG&E transmission lines and surface parking, and further to the south is a now-vacant former Lowe's Home Improvement store, currently used as a construction staging site. **Figure 1** shows the project location. **Figure 2** shows the existing conditions.

The project site is currently developed with two one-story buildings and one two-story building, totaling 113,595 square feet of office/R&D (life science) use and associated surface parking.

The project site is within ½ mile of the South San Francisco Caltrain station. SamTrans provides bus service primarily on the west side of U.S. 101, with some service on Oyster Point Boulevard to the north, and commute.org provides shuttle service from the Caltrain station to/from the BART and WETA ferry station.

The site is relatively level, with varying elevations above mean sea level of approximately 19.4 to 25.6 feet. The depth to groundwater is approximately 8.5 feet below ground surface and the groundwater flow direction is to the southeast, generally toward the San Francisco Bay.

The project site does not appear on any regulatory lists for contaminated sites and there is no indication of migration of contamination from nearby contaminated sites or warrant for regulatory requirements at this site.

GENERAL PLAN DESIGNATION / ZONING

General Plan Designation: East of 101 Transit Core

Zoning: East of 101 Transit Core (ETC)

SURROUNDING LAND USES

The project site is located between the Caltrain right-of-way to the east and U.S. 101 to the west. The northern adjacent property contains a Costco store, and the southern adjacent properties contain PG&E transmission lines with surface parking and a vacant large-format retail building (formerly Lowe's). The project site is at the western edge of the East of 101 area, which is a large employment area including industrial, office, research and development, and commercial uses. To the west, across Dubuque Avenue is U.S. 101, with commercial and multi-family residential uses fronting along Airport Boulevard on the other side of the highway and residential neighborhoods beyond.

PROJECT DESCRIPTION

Overview and Building Massing

The proposed project would involve demolition of the three existing buildings and construction of three new office / research and development (R&D) buildings. The project would be comprised of three buildings, the north, south, and west buildings, for a total of up to approximately 900,000 gross square feet. The north building would be the tallest at approximately 195 feet above grade, and the west and south buildings would be approximately 179 and 130 feet above grade, respectively (including the mechanical penthouses). The project would include an approximately 7,500 square foot event center, approximately 6,600 square feet of food/beverage uses, an approximately 3,300 square foot bike room, and an approximately 7,200 square foot fitness center. The buildings would be connected by a two-story terrace, featuring a central plaza and courtyard that would provide open space and gathering and rest areas. The project is intended to be a mix of R&D space and offices. Based on an average office/R&D project employment density of 300 gross square feet per employee, a maximum of approximately 3,000 employees would be anticipated.

Note that in parallel with this analysis, the project may undergo minor design revisions that would result in differences in building square footage and other minor details. This analysis presents the largest reasonable assumptions for development of the project such that the actual project will fall within this analysis.

The west building would be oriented along Dubuque Avenue, with the northwest side angled to draw pedestrians towards the courtyard. The north and south buildings would be oriented along the internal roadways. Ground floor facades would have clear glazing for transparent building entries. Building entries would be protected by recessed entry portals that provide shelter from the wind and rain.

The ShapeSSF General Plan 2040 designates the project site as East of 101 Transit Core with a maximum FAR of 1.0 by right, up to a maximum of 2.5 with the payment of a Community Benefits Fee, and up to 8.0 with a Community Benefits Agreement. The proposed project would have a FAR of approximately 3.33, which would require a Conditional Use Permit together with approval of a Community Benefits Agreement. The site is zoned East of 101 Transit Core, under which office and R&D uses are permitted.

Figure 3 shows the site plan. **Figure 4** shows a visual model of the project. **Figure 5** includes building cross sections. **Figures 6** and **7** show the proposed building elevations.

Access & Parking

The project site is accessible by automobile, train, and bus, and would include on-site facilities for pedestrians and bikes.

Rail: The project site is located less than ½ mile from the South San Francisco Caltrain Station, part of a regional rail corridor that provides connectivity between San Francisco and Gilroy. The project site is also located approximately 2.5 and 3.0 miles from the San Bruno and South San Francisco BART Stations respectively, which are served by BART's Red and Yellow Lines.

Bus: SamTrans services the area through its 130, 141, 292, and 397 lines which stop at Airport Blvd. and Linden Avenue.

Automobile/Truck: Vehicular access to the project site would remain from Dubuque Avenue. The main entrance to the project would be located on the northwestern corner of the site. A perimeter road would encircle the buildings leading to the below-grade parking areas. A secondary access point from Dubuque Avenue would be located on the southwestern portion of the site. The sidewalk on the east perimeter road would be maintained and the road would function as a shared space between vehicles, bicycles, and pedestrians.

Bicycle and Pedestrian Access: A sidewalk runs along the eastern side of Dubuque Avenue. Sidewalks would be provided along project roadway edges. Bicycle access would be from Dubuque Avenue to either access road.

Four levels of below grade parking would provide approximately 1,335 parking spaces, resulting in a ratio of approximately 1.5 spaces per 1,000 square feet of office/R&D floor area (1,285 spaces) plus visitor spaces representing approximately 20% of event center capacity (50 spaces for approximately 450 maximum attendees).

Utilities

Although the project will include a stubbed connection to the natural gas main to serve potential connections to commercial kitchens, the new buildings are designed to operate with 100% electric energy. The project would redevelop a site already provided with utilities and services. Localized lines may need to be extended or relocated within the project site. (See Section 19: Utilities and Service Systems for additional discussion of utilities.) In addition to on-site improvements and connections to utility lines along Dubuque Avenue, off-site utility improvements are proposed as a part of the project as follows:

- The project proposes to underground the existing above-ground electrical lines along the project site frontage on Dubuque Avenue (approximately 462 linear feet) in coordination with PG&E.
- The project is also proposing upsizing of the existing 8-inch sewer main along the southeastern property line of the project to a 10-inch sewer main for approximately 1,400 linear feet along the project site and south to the existing 10-inch main that crosses the Caltrain tracks (the junction is at manhole sJ2750, near the southern edge of the 720 Dubuque Avenue parcel). The project is also proposing to rehabilitate this approximately 200 linear foot length across the Caltrain tracks (between manhole sJ2750 and Poletti Way) in place, which could include sliplining, cured in place pipe, pipe bursting, or replacement of the existing pipe with a new 10-inch sewer main.

Construction

Project construction activities are anticipated to span approximately 4 years with an assumed start for purposes of this analysis in mid-2023 or later. [4] Demolition and site preparation would take approximately 4 months. Excavation work would run approximately the next 9 months, followed by building construction over about 26 months and finishing/paving/landscaping over about 6 months.

Once leased, tenant improvements would follow to the interior of the buildings and are likely to take approximately an additional 3 months or more. The buildings are currently expected to be operational as early as mid-2027.

The project would involve removal of 331,000 cubic yards of soil and excavation for subsurface parking extending to depths of up to about 50 feet below ground surface. Up to 18 months of construction dewatering would be necessary during excavation as further discussed in Section 7: Geology and Soils and Section 10: Hydrology and Water Quality. Several subsurface investigations were completed between 2015 and 2022, and concluded, most recently, that while small areas of residual soil contamination may exist across the area, the risk of significant hazardous materials requiring remediation is low or non-existent. Specifically, certain metals, volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs) and total petroleum hydrocarbons (TPH) were found sporadically across the site at levels that are not anticipated to require special disposal arrangements. Because the majority of site soils will be excavated to accommodate subterranean parking, residual soil and groundwater impacts will be removed from the site, resulting in a cumulatively cleaner site. Soil and groundwater handling are detailed in Section 9: Hazards and Hazardous Materials.

[4] While this analysis was performed with an assumption of a construction start in mid-2023, if construction is initiated later, impacts would be the same or lessened (due to increasing emissions controls) from those analyzed here.



Figure 1: Project Location
Source: Hexagon, 2023, modified

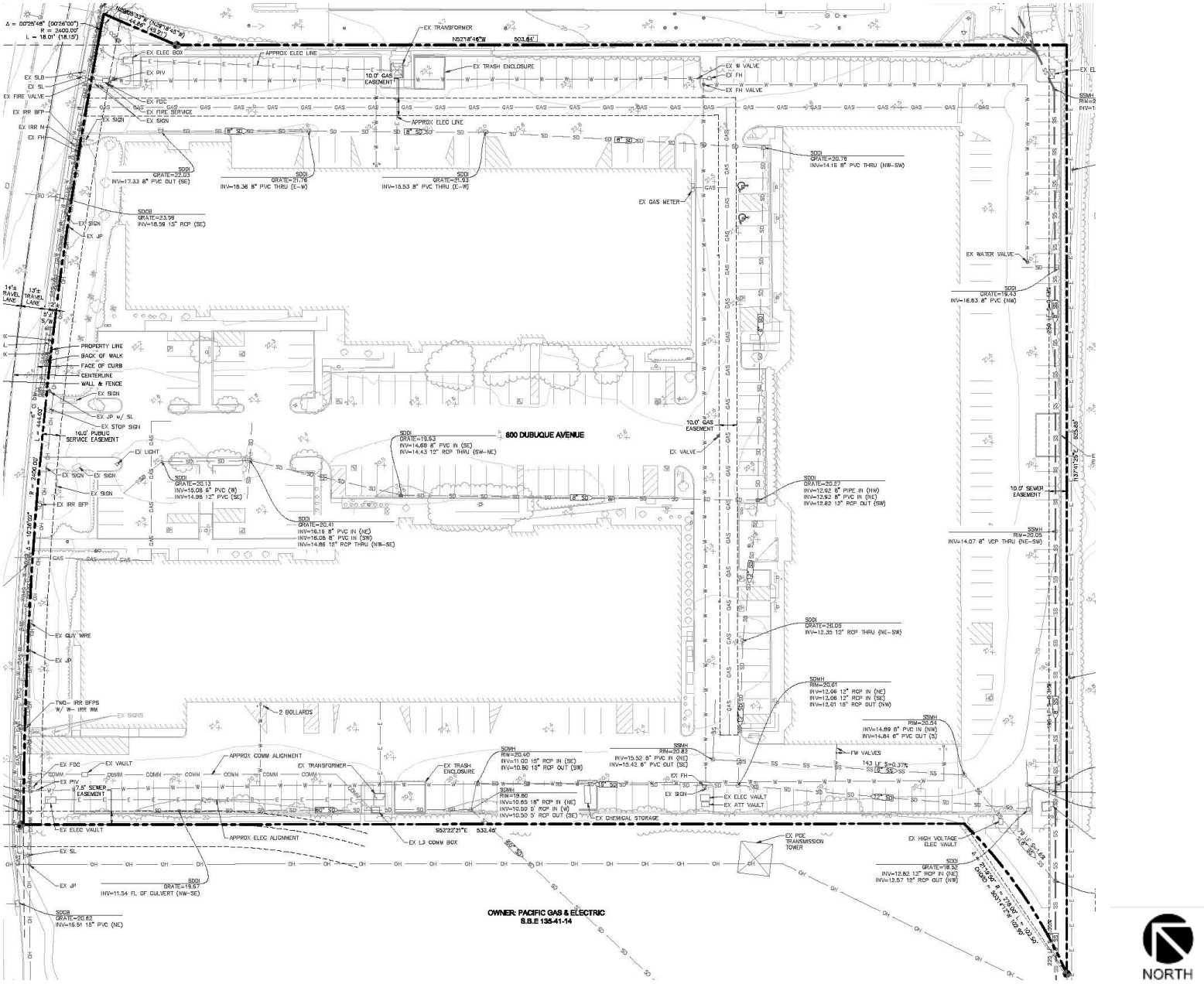


Figure 2: Existing Conditions
Source: Project Plan Set, dated October 31, 2022

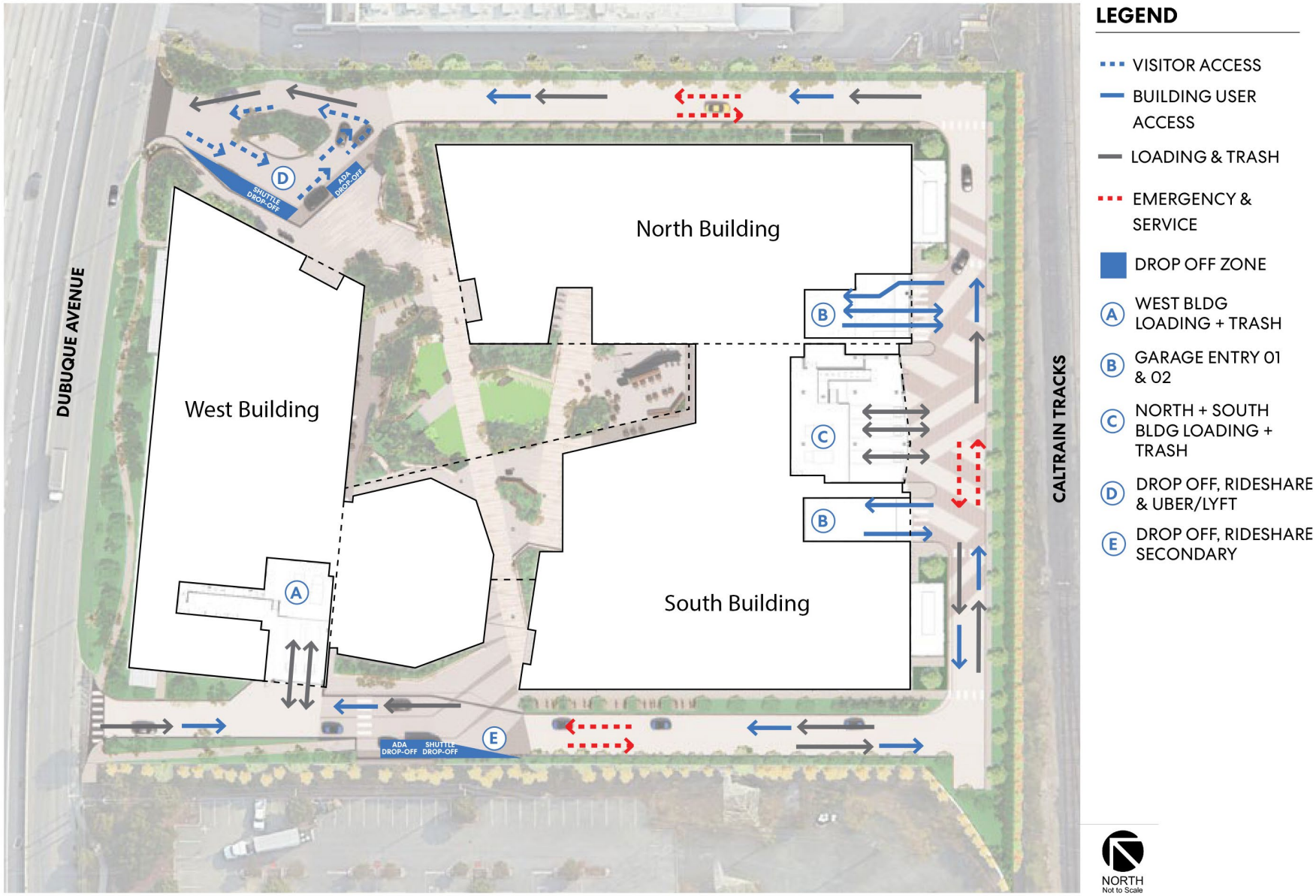


Figure 3: Site Plan
Source: Project Plan Set, dated October 31, 2022, as modified by Hexagon



Figure 4: Visual Model
Source: Project Plan Set, dated October 31, 2022



Figure 5: Building Sections
Source: Project Plan Set, dated October 31, 2022

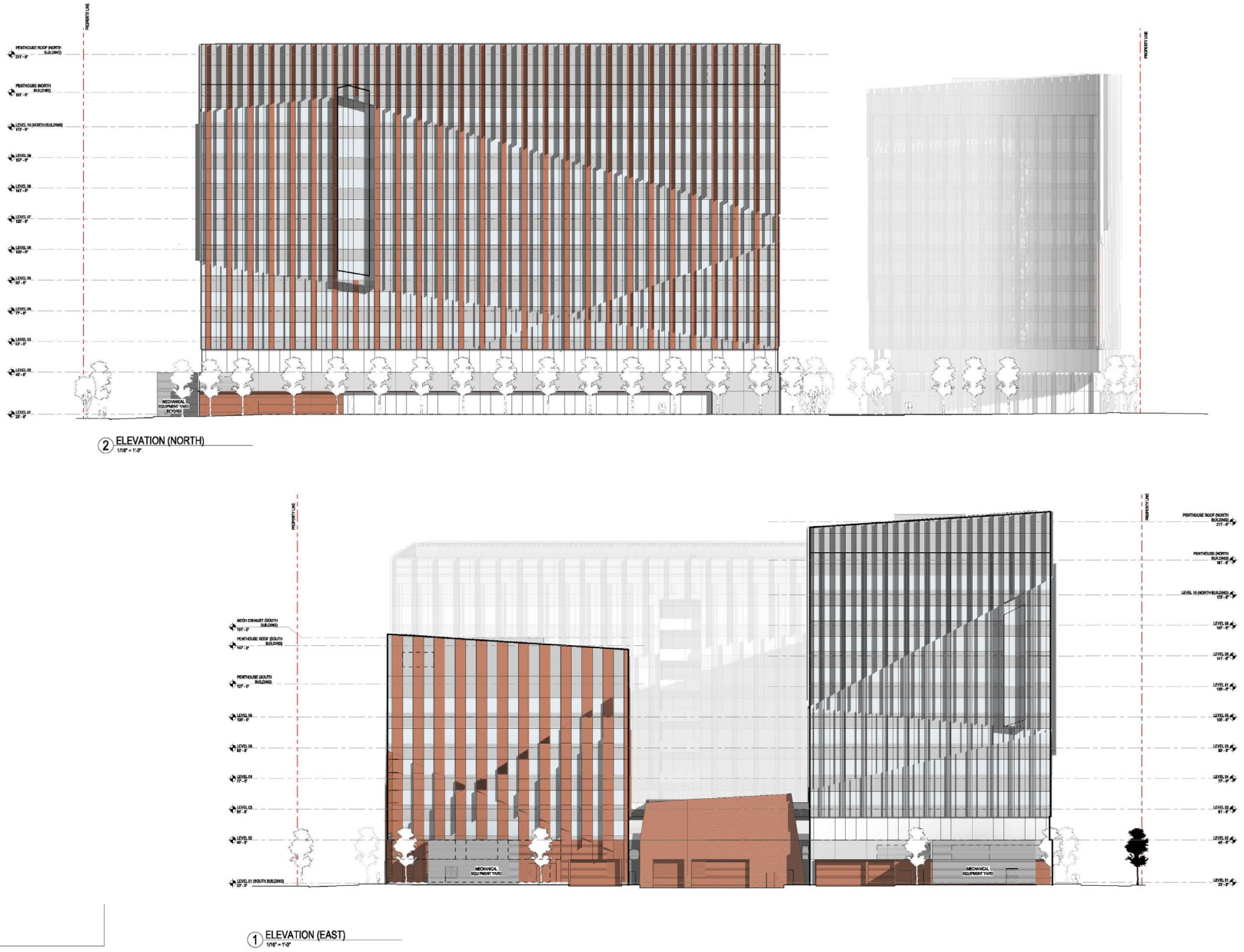


Figure 6: Elevations, North and East
Source: Project Plan Set, dated October 31, 2022

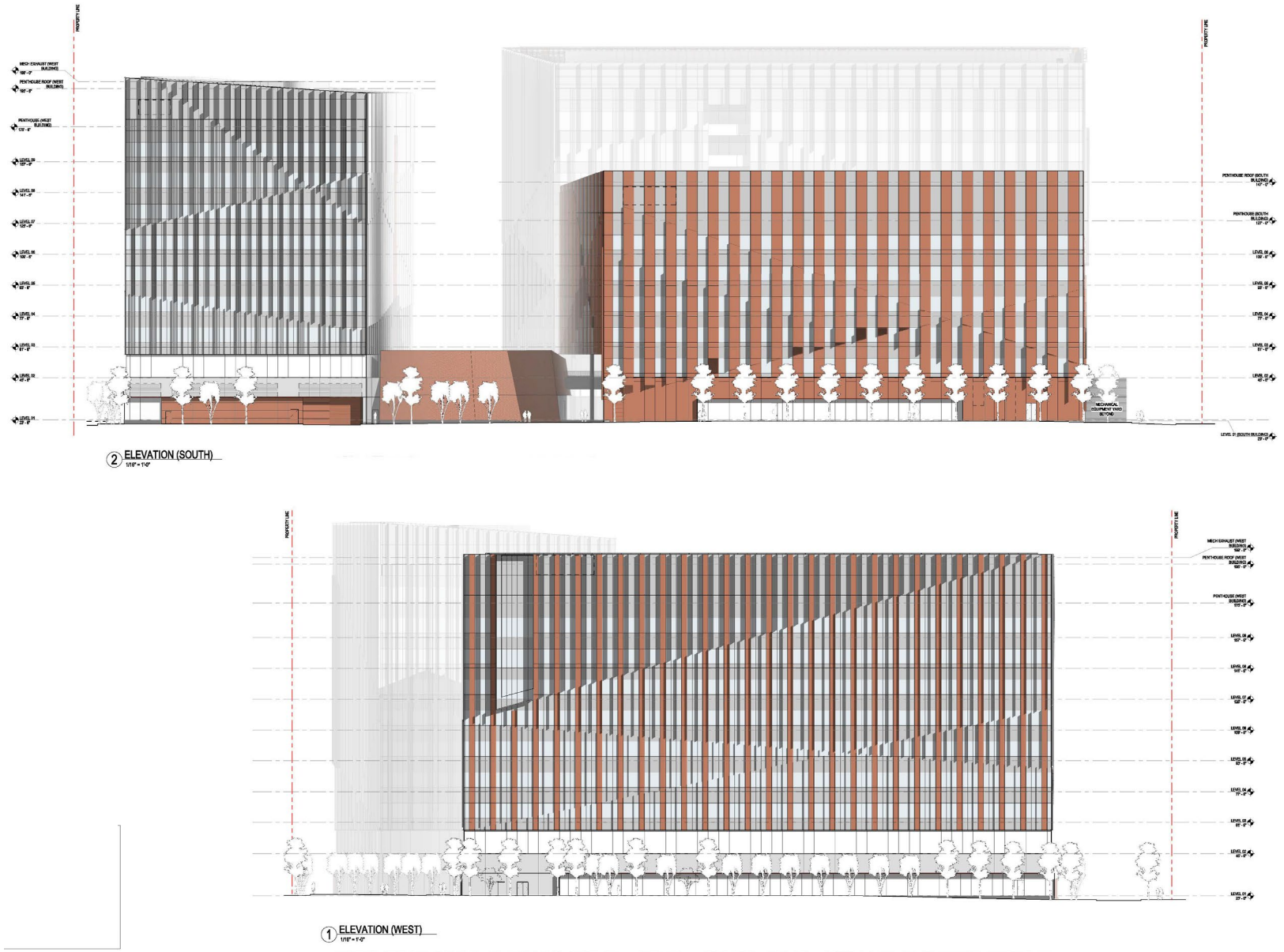


Figure 7: Elevations, South and West
Source: Project Plan Set, dated October 31, 2022

MITIGATED NEGATIVE DECLARATION

PROJECT DESCRIPTION, LOCATION, AND SETTING

This Mitigated Negative Declaration has been prepared for the 800 Dubuque Avenue project. See the Introduction and Project Information section of this document for details of the project.

POTENTIALLY SIGNIFICANT IMPACTS REQUIRING MITIGATION

The following is a list of potential project impacts and the mitigation measures recommended to reduce these impacts to a less than significant level. Refer to the Initial Study Checklist section of this document for a more detailed discussion.

Potential Impact	Mitigation Measures
Air Quality, Construction Emissions: Construction activities can result in emissions and fugitive dust. While the project emissions would be below criteria pollutant threshold levels, the Bay Area Air Quality Management District (BAAQMD) considers dust generated by grading and construction activities to be a significant impact associated with project development if uncontrolled, and recommends implementation of construction mitigation measures to reduce construction-related emissions and dust for all projects, regardless of comparison to their construction-period thresholds. These measures were adopted as part of the ShapeSSF General Plan 2040 EIR (GP-MM-Air-1a) and would be applicable to the project. Mitigation Measure Air-2 would be implemented to reduce potential health risks from project construction emissions.	
	General Plan Mitigation Measures **GP-MM-Air-1a: Basic Construction Management Practices.** [The project applicant / owner / sponsor] shall incorporate the following Basic Construction Mitigation Measures recommended by the Bay Area Air Quality Management District (BAAQMD): i) All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day. ii) All haul trucks transporting soil, sand, or other loose material off-site shall be covered. iii) All visible mud or dirt trackout 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. iv) All vehicle speeds on unpaved roads shall be limited to 15 mph. v) 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.

Potential Impact	Mitigation Measures
	Mitigation Measure **Air-2: Reduce Diesel Particulate Matter During Construction.** The project applicant / owner / sponsor shall implement a feasible plan to reduce DPM emissions by at least 50 percent such that increased cancer risk and annual PM2.5 concentrations from construction would be reduced below TAC significance levels as follows: 1. All construction equipment larger than 25 horsepower used at the site for more than two continuous days or 20 hours total shall meet U.S. EPA Tier 4 emission standards for PM (PM10 and PM2.5), if feasible, otherwise, a. If use of Tier 4 equipment is not available, alternatively use equipment that meets U.S. EPA emission standards for Tier 3 engines and include particulate matter emissions control equivalent to CARB Level 3 verifiable diesel emission control devices that altogether achieve at least a 50 percent reduction in particulate matter exhaust in comparison to uncontrolled equipment; alternatively (or in combination). b. Use of electrical or non-diesel fueled equipment. 2. Dewatering pumps shall be powered by electricity. 3. Use of electric portable equipment following the site preparation and grading phases. 4. Alternatively, the applicant may develop another construction operations plan demonstrating that the construction equipment used on-site would achieve a reduction in construction diesel particulate matter emissions by 50 percent or greater. Elements of the plan could include a combination of some of the following measures: • Implementation of No. 1 above to use Tier 4 or alternatively fueled equipment, • Installation of electric power lines during early construction phases to avoid use of diesel generators and compressors, • Use of electrically-powered equipment, • Forklifts and aerial lifts used for exterior and interior building construction shall be electric or propane/natural gas powered, • Change in construction build-out plans to lengthen phases, and • Implementation of different building techniques that result in less diesel equipment usage. Such a construction operations plan would be subject to review by an air quality expert and approved by the City prior to construction.

Potential Impact	Mitigation Measures
Biological Impact: Trees in the vicinity of the project site could host the nests of common birds that are protected under the federal Migratory Bird Treaty Act and the California Fish and Wildlife Code, so the following mitigation would be applicable to prevent a "take" of these species under these regulations related to disturbance during nesting.	
	Mitigation Measure **Bio-1: Pre-Construction Nesting Bird Survey.** Initiation of construction activities during the avian nesting season (February 15 through September 15) shall be avoided to the extent feasible. If construction initiation during the nesting season cannot be avoided, pre-construction surveys for nesting birds protected by the Migratory Bird Treaty Act of 1918 and/or Fish and Game Code of California within 100 feet of a development site in the project area shall be conducted within 14 days prior to initiation of construction activities. If active nests are found, a 100-foot buffer area shall be established around the nest in which no construction activity takes place. The buffer width may be modified upon recommendations of a qualified biologist regarding the appropriate buffer in consideration of species, stage of nesting, location of the nest, and type of construction activity based upon published protocols and/or guidelines from the U.S. Fish and Wildlife Service or California Department of Fish and Wildlife (USFWS, CDFW) or through consultation with USFWS and/or CDFW. The biologist may also determine that construction activities can be allowed within a buffer area with monitoring by the biologist to and stoppage of work in that area if adverse effects to the nests are observed. The buffer shall be maintained until after the nestlings have fledged and left the nest. These surveys would remain valid as long as construction activity is consistently occurring in a given area and would be completed again if there is a lapse in construction activities of more than 14 consecutive days during the nesting season.
Cultural and Tribal Cultural Resources Impact: There are no known cultural or tribal cultural resources at the site. However, given the moderate to high potential for unrecorded archeological resources and Native American resources and proposed disturbance of native soils which also have the potential to contain paleontological resources, Mitigation Measures Cul-1 through Cul-3 would address the potential for unexpected discovery of such resources.	
	Mitigation Measures **Cul-1: Cultural Resources Worker Environmental Awareness Program (WEAP)**. A qualified archaeologist shall conduct a WEAP training for all construction personnel on the project site prior to construction and ground-disturbing activities. The training shall include basic information about the types of paleontological, archaeological, and/or tribal artifacts and resources that might be encountered during construction activities, and procedures to follow in the event of a discovery. This training shall be provided for any personnel with the potential to be involved in activities that could disturb native soils.

Potential Impact	Mitigation Measures
	Cul-2: Halt Construction Activity, Evaluate Find and Implement Mitigation. In the event that previously unidentified paleontological, archaeological, or tribal resources are uncovered during site preparation, excavation or other construction activity, the project applicant shall cease or ensure that all such activity within 25 feet of the discovery is ceased until the resources have been evaluated by a qualified professional, who shall be retained by the project applicant, and specific measures can be implemented by the project applicant to protect these resources in accordance with sections 21083.2 and 21084.1 of the California Public Resources Code. **Cul-3: Halt Construction Activity, Evaluate Remains and Take Appropriate Action in Coordination with Native American Heritage Commission.** In the event that human remains are uncovered during site preparation, excavation or other construction activity, the project applicant shall cease or ensure that all such activity within 25 feet of the discovery is ceased until the remains have been evaluated by the County Coroner, which evaluation shall be arranged by the project applicant, and appropriate action taken by the project applicant in accordance with section 7050.5 of the California Health and Safety Code or, if the remains are Native American, in coordination with the Native American Heritage Commission and in accordance with section 5097.98 of the California Public Resources Code.
Geological Impact: The San Francisco Bay Area is a seismically active region. The project site includes undocumented fill and construction activities require substantial excavation and dewatering. To mitigate the potential for damage to structures or people, the following measure shall be implemented:	
	Mitigation Measure **Geo-1: Compliance with a design-level Geotechnical Investigation report prepared by a Registered Geotechnical Engineer and with Structural Design Plans as prepared by a Licensed Professional Engineer.** Proper foundation engineering and construction shall be performed in accordance with the recommendations of a Registered Geotechnical Engineer and a Licensed Professional Engineer. The structural engineering design, with supporting Geotechnical Investigation, shall incorporate seismic parameters compliant with the California Building Code.
Hazardous Site Impact: The site is impacted by elevated concentrations of volatile organic compounds, total petroleum hydrocarbons, and metals. Removal of impacted soil is proposed as part of project construction activities and would be performed under Soil Management and Health and Safety Plans.	
	Mitigation Measure **Haz-1: Implement Soil Management and Health and Safety Plans.** The applicant's construction contractor shall implement soil management and health and safety plans to facilitate compliance with applicable federal, state, and local laws and regulations, applicable to earthwork activities at

Potential Impact	Mitigation Measures
	the site as a result of the reported petroleum hydrocarbons and volatile organic compound concentrations in the soil. These plans must be filed with the City before construction permits are granted and are anticipated to include the following components: 1. Soil Management Plan. Recent analytical results indicate that some site soils contain slightly elevated concentrations of SVOCs, VOCs, TPH, and certain metals. The soil management objectives for the site are to minimize exposure of potentially hazardous constituents in soil to construction workers, nearby residents and pedestrians, and future users of the site. A site-specific soil management plan will be developed based on recent comprehensive subsurface investigations covering the site soils to depths exceeding planned excavations and the underlying groundwater. The soil management plan is intended to facilitate compliance with relevant federal, state, and local laws and regulations, applicable to earthwork activities at the site as a result of the identified contamination profiles. Some of the excavated material in the upper 5 feet may need to be disposed off-site at a Class II non-hazardous regulated landfill and/or as unrestrictive waste based on disposal facility's acceptance criteria. The contractor will establish appropriate off-site disposal locations and direct truck loading scheduling and tracking and recording of all shipments per applicable regulations and/or stockpile locations on the site to properly segregate, cover, moisture control, and profile the excavated material. Further testing may instead determine that no special soil handling is required. Unless from a documented clean source such as a quarry, soil imported onto the site will be tested in accordance with the "Clean Imported Fill Material" information advisory developed by the California DTSC in October 2001. 2. Health and Safety Plan. The potential health risk to on-site construction workers and the public will be minimized by developing and implementing a comprehensive Health and Safety Plan (HASP). The contractor will be responsible for developing and implementing the HASP. The HASP plan will describe the health and safety training requirements, specific personal hygiene, and monitoring equipment that will be used during construction to protect and verify the health and safety of the construction workers and the general public from exposure to constituents in the soil, which is anticipated to include the following: • the site will be fenced; • exposed soil at the construction site will be watered at least twice daily to prevent visible dust from migrating off-site; • stockpiles will be covered; • water will be misted or sprayed during loading of material onto trucks for off haul; • trucks transporting contaminated material will be covered with a tarpaulin or other cover;

Potential Impact	Mitigation Measures
	• the wheels of the trucks exiting the site will be cleaned prior to entering public streets; • public streets will be swept daily if material is visible, excavation and loading activities will be suspended if winds exceed 15 miles per hour; and the fence will be posted with requirements of the safe drinking water and toxic enforcement act (Proposition 65). 3. Health and Safety Officer. A site health and safety officer identified in the Health and Safety Plan will be on site at all times during excavation activities to ensure that all health and safety measures are maintained. The health and safety officer will have authority to direct and stop (if necessary) all construction activities in order to ensure compliance with the health and safety plan. 4. Dust Control. During all excavation activities, dust control measures will be implemented to reduce potential exposure. These measures may include moisture conditioning the soil and covering exposed soil and stockpiles with weighted down plastic sheeting to prevent exposure of the soil. Dust control measures at a minimum will include: • Covering soil stockpiles with plastic sheeting. • Watering uncovered ground surface at the site; use of water will be limited to prevent runoff. • Misting or spraying of soil during excavation and loading. • Emplacement of gravel and/or rubble plates on site access roads as feasible. • Trucks hauling soil from the site will be covered. • Visible dust will be monitored during excavation and subsurface demolition. • The soil drop height from an excavator's bucket onto soil piles or into transport trucks will be minimized. • Windbreaks will be deployed as necessary. • If necessary, the area of excavation may be limited to reduce dust generation. • Site vehicle speed limits. • Street sweeping. • Termination of excavation if winds exceed 25 mph. • Addition of soil stabilizers and other responses as needed. 5. Odor Control. If strong odors are noted during excavation activities, odor suppression measures will be implemented by the General Contractor to minimize odor during excavation activities. 6. Storm Water Pollution Controls. Storm water pollution controls will be implemented to minimize storm water runoff and sediment transport from the site. A Storm Water Pollution Prevention Plan (SWPPP) will

Potential Impact	Mitigation Measures
	identify Best Management Practices for activities as specified by the California Storm Water Best Management Practices Handbook (Stormwater Quality Task Force, 1993) and/or the Manual of Standards for Erosion and Sediment Control Measures (ABAG, 1995). The SWPPP will include protocols (i.e., earth dikes and drainage swales) to control storm water contact with, or runoff from, potentially impacted soil during wet weather conditions. 7. Groundwater Management. Groundwater at the site has been encountered at depths of nine feet to fifteen feet below ground surface. Construction dewatering is anticipated based on development plans. Any construction dewatering must adhere to a discharge permit obtained from the South San Francisco Department of Public Works Water Quality Control Division, Environmental Compliance Program or the Regional Water Quality Control Board. Based on the analytical results, the groundwater may need to be treated prior to discharge. Any proposed groundwater treatment prior to discharge will require analytical testing and approval from the appropriate regulatory agency prior to discharging. 8. Contingency Plans for Unknown/Unexpected Conditions. The following tasks shall be implemented during excavation activities if unknown historical subsurface features and/or unanticipated hazardous materials are encountered. Such materials may include unaccounted for underground storage tanks (UST) and associated product lines, sumps, and/or vaults, former monitoring wells, and/or soil with significant petroleum hydrocarbon odors and/or stains. • Stop work in the area where the suspect material is encountered and cover with plastic sheets. • Notify the General Contractor's site safety officer and site superintendent. • Review the existing health and safety plan for revisions, if necessary, and have appropriately trained personnel on-site to work with the affected materials, once directed by the General Contractor. 9. Soil and Groundwater Management Completion Report. A Soil and Groundwater Management Completion Report (SGMCR) will be prepared that summarizes the soil and groundwater management activities and any subsequent investigative and removal activities that were completed during redevelopment. The SGMCR will present a chronology of the construction events, a summary of analytical data, a copy of all manifests from the site, and a description of all soil and groundwater management activities at the site. The report will also contain laboratory analytical results and figures, as appropriate, to provide detail regarding the amount and type of contamination encountered (if any) during various activities. The report will also summarize any residual contaminants that were left on the site after

Potential Impact	Mitigation Measures
	completion of redevelopment activities and document that soil handling procedures were implemented in accordance with this mitigation measure.
Transportation Impact: Sight distance to the south at both project driveways on Dubuque Avenue was found to be inadequate but could be corrected with the measures identified in Mitigation Measure Trans-1.	
	Mitigation Measure **Trans-1: Demonstrate Adequate Sight Distance at Project Driveways.** The applicant shall demonstrate to the satisfaction of the City that the sight distance is adequate at both project driveways, which could include but is not limited to the following measures: • Coordination with the City to decrease the speed limit on Dubuque Avenue to 25 mph. • Coordination with the City to remove all line-of-sight obstructions (vegetation, utility poles and sign boards) to create clear sight lines within the City's right-of-way to the south of the project site. • Coordination with the adjacent property to the south (720 Dubuque Avenue/PG&E easement) to push back the existing metal fence on the southern boundary of the project site and remove vegetation to provide a clear zone to the south of the project's southern driveway.

LEAD AGENCY DETERMINATION

On the basis of this evaluation, it can be concluded that:

☐ The proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☒ Although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because mitigation measures to reduce these impacts will be required of the project. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ The proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ The proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ Although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

INITIAL STUDY CHECKLIST

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

Environmental factors that may be affected by the project are listed alphabetically below. Factors marked with an "X" (☒) were determined to be potentially affected by the project, involving at least one impact that is a potentially significant impact as indicated by the Checklist on the following pages. Unmarked factors (☐) were determined to not be significantly affected by the project, based on discussion provided in the Checklist, including the application of mitigation measures.

☐ Aesthetics	☐ Agricultural/Forest Resources	☐ Air Quality
☐ Biological Resources	☐ Cultural Resources	☐ Energy
☐ Geology/Soils	☐ Greenhouse Gas Emissions	☐ Hazards/Hazardous Material
☐ Hydrology/Water Quality	☐ Land Use/Planning	☐ Mineral Resources
☐ Noise	☐ Population/Housing	☐ Public Services
☐ Recreation	☐ Transportation	☐ Tribal Cultural Resources
☐ Utilities/Service Systems	☐ Wildfire	☐ Mandatory Findings of Significance

There are no impacts that would remain significant with implementation of the identified mitigation measures.

EVALUATION OF ENVIRONMENTAL EFFECTS

The Checklist portion of the Initial Study begins below, with explanations of each CEQA issue topic. Four outcomes are possible, as explained below.

1. A "no impact" response indicates that no action that would have an adverse effect on the environment would occur due to the project.

2. A "less than significant" response indicates that while there may be potential for an environmental impact, there are standard procedures or regulations in place, or other features of the project as proposed, which would limit the extent of this impact to a level of "less than significant."

3. Responses that indicate that the impact of the project would be "less than significant with mitigation" indicate that mitigation measures, identified in the subsequent discussion, will be required as a condition of project approval in order to effectively reduce potential project-related environmental effects to a level of "less than significant."

4. A "potentially significant impact" response indicates that further analysis is required to determine the extent of the potential impact and identify any appropriate mitigation. If any topics are indicated with a "potentially significant impact," these topics would need to be analyzed in an Environmental Impact Report.

1. AESTHETICS Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
a) Have a substantial adverse effect on a scenic vista?			☒	
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?			☒	
c) Substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage points.) If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?			☒	
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?			☒	

Under CEQA Section 21099(d), "Aesthetic… impacts of a residential, mixed-use residential, or employment center project on an infill site located within a transit priority area shall not be considered significant impacts on the environment."

Accordingly, aesthetics is no longer considered in determining if a project has the potential to result in significant environmental effects for projects that meet all three of the following criteria:

1. The project is in a transit priority area. CEQA Section 21099(a)(7) defines a "transit priority area" as an area within one-half mile of an existing or planned major transit stop. A "major transit stop" is defined in CEQA Section 21064.3 as a rail transit station, a ferry terminal served by either a bus or rail transit service, or the intersection of two or more major bus routes with a frequency of service interval of 15 minutes or less during the a.m. and p.m. peak commute periods.

2. The project is on an infill site. CEQA Section 21099(a)(4) defines an "infill site" as either (1) a lot within an urban area that was previously developed; or (2) a vacant site where at least 75 percent of the site perimeter adjoins (or is separated by only an improved public right-of-way from) parcels that are developed with qualified urban uses.

3. The project is residential, mixed-use residential, or an employment center. CEQA Section 21099(a)(1) defines an "employment center" as a project situated on property zoned for commercial uses with a floor area ratio of no less than 0.75 and located within a transit priority area.

The proposed project meets all three of the above criteria because the project (1) is in a transit priority area due to its location less than 0.5 miles from the South San Francisco Caltrain (rail) Station;[1] (2) is on an infill site that has been previously developed and is fully adjoined by urban uses and public rights-of-way within South San Francisco; and (3) is an employment center with a projected FAR of approximately 3.33. Thus, this section does not consider aesthetics, including the aesthetic impacts of light and glare, in determining the significance of project impacts under CEQA.

Nevertheless, the City recognizes that the public and decision makers may be interested in information about the aesthetic effects of a proposed project; therefore, the information contained in this section related to aesthetics, light, and glare is provided solely for informational purposes and is not used to determine the significance of environmental impacts pursuant to CEQA.

a) Scenic Vistas

The project vicinity is predominantly developed with business park and industrial uses and is not considered a scenic resource or vista in any vicinity plans. Policy LU-8.1 of the ShapeSSF General Plan 2040 aims to "maintain and protect unique public views of the city, the bay, and local landmarks from major thoroughfares and hillside open spaces."[2] CEQA generally protects against significant adverse impacts to public views of scenic vistas, taking into consideration whether the view is from a location at which people gather specifically to enjoy views and the environmental context (i.e., if the area is a natural area or a developed urban area). While views of the Bay and San Bruno Mountain are considered scenic vistas for purposes of this analysis, there are no designated public viewing locations in the vicinity of the project. Views from public roadways are discussed below to indicate the potential for changed views from public locations.

Views toward the Bay (to the east of the project site) and San Bruno Mountain (to the northwest of the project site) from area roadways that would cross the site are already substantially blocked at road level by existing area development, topography, and landscaping.

While areas of the adjacent development could experience some blockage of views of the Bay or San Bruno Mountain, these are not public viewing locations where people gather specifically to enjoy views and obstruction of private views is therefore not considered a significant environmental impact under CEQA.

As noted above, this topic is being discussed as an informational item only because the CEQA Guidelines have determined this type of project would not have a significant impact in this regard. This informational discussion agrees with the statutory conclusion that the project impact would not be significant.

b) Scenic Highways

U.S. 101 is not a designated or eligible State Scenic Highway corridor in the vicinity of the project nor are there any scenic corridors identified in the area.[3] The project would not be visible from a

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1 Metropolitan Transportation Commission, 2021, Transit Priority Area, accessed at: https://www.arcgis.com/home/item.html?id=370de9dc4d65402d992a769bf6ac8ef5

2 City of South San Francisco, ShapeSSF General Plan 2040. February 2022, page 76.

3 California Department of Transportation, State Scenic Highway Mapping System, available at:

designated or eligible State Scenic Highway. As noted above, this topic is being discussed as an informational item only because this type of project would not have a significant impact pursuant to the CEQA Guidelines. This informational discussion is consistent with the statutory conclusion that the project's impact would not be significant.

c) Visual Character

As a project located in an urbanized area, the applicable criteria would have been whether the project would conflict with applicable zoning and other regulations governing scenic quality. The project is consistent with the zoning updates consistent with the ShapeSSF General Plan 2040. The project is generally consistent with the visual character of other office/R&D development in the vicinity. Other than those discussed elsewhere in this section, there are no other policies or regulations specific to scenic character that would be applicable to the project site.

As noted above, this topic is being discussed as an informational item only because this type of project would not have a significant impact pursuant to the CEQA Guidelines. This informational discussion is consistent with the statutory conclusion that the project's impact would not be significant. Additionally, the City would review the proposed design as part of the approval process, which can include considerations beyond those strictly environmental-focused.

d) Light and Glare

Sources of light and glare in the project vicinity include interior and exterior building lights, service areas and surface parking lots, pedestrian lighting, and city streetlights. Light and glare associated with vehicular traffic along major thoroughfares in the area also create sources of light and glare. The existing level and sources of light and glare are typical of those in a developed urban commercial/industrial setting.

Residential uses and natural areas are particularly sensitive to light and glare impacts. The project is located in a commercial and industrial area with no immediately adjacent residential uses or natural areas and has lighting consistent with that existing in the area. As a standard condition of project approval, new lighting would be required to conform to the City's standards that limit the amount of light that can spill over to other properties through the use of downcast lighting fixtures.

The project would result in development and lighting treatments typical of the existing commercial and industrial urban settings and consistent with lighting standards to minimize lighting on adjacent areas and would therefore not result in new sources of substantial adverse light or glare. As noted above, this topic is being discussed as an informational item only because this type of project would not have a significant impact pursuant to the CEQA Guidelines. This informational discussion is consistent with the statutory conclusion that the project's impact would not be significant.

https://dot.ca.gov/programs/design/lap-landscape-architecture-and-community-livability/lap-liv-i-scenic-highways

2. AGRICULTURE AND FORESTRY RESOURCES In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?				☒
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?				☒
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?				☒
d) Result in the loss of forest land or conversion of forest land to non-forest use?				☒
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?				☒

a-e) Agriculture and Forestry Resources

The project site is located in a developed urban area adjacent to a highway. No part of the site is zoned for, mapped as, or currently being used for agricultural or forestry purposes or is subject to the Williamson Act. There would be ***no impact*** to agricultural and forestry resources as a result of this project.

3. AIR QUALITY Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Conflict with or obstruct implementation of the applicable air quality plan?		☒		
b) 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?		☒		
c) Expose sensitive receptors to substantial pollutant concentrations?		☒		
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?			☒	

This section utilizes information from the Construction Air Quality & Greenhouse Gas Assessment prepared for this analysis by Illingworth & Rodkin, Inc. and dated February 17, 2023, included in full as Attachment A.

a) Air Quality Plan

Projects within South San Francisco are subject to the Bay Area Clean Air Plan, first adopted by the Bay Area Air Quality Management District (BAAQMD) (in association with the Metropolitan Transportation Commission and the Association of Bay Area Governments) in 1991 to meet state requirements and those of the Federal Clean Air Act. The plan is meant to demonstrate progress toward meeting the ozone standards, but also includes other elements related to particulate matter, toxic air contaminants, and greenhouse gases. The latest update to the plan, adopted in April 2017, is the Bay Area 2017 Clean Air Plan.

BAAQMD recommends analyzing a project's consistency with current air quality plan primary goals and control measures. The impact would be presumed significant if the project would conflict with or obstruct attainment of the primary goals or implementation of the control measures.

The primary goals of the Bay Area 2017 Clean Air Plan are:

- Attain all state and national air quality standards
- Eliminate disparities among Bay Area communities in cancer health risk from toxic air contaminants
- Reduce Bay Area GHG emissions 40 percent below 1990 levels by 2030, and 80 percent below 1990 levels by 2050 (This standard is addressed in Section 8: Greenhouse Gas Emissions.)

The project would be required to comply with all applicable rules and regulations related to emissions and health risk and would not result in a new substantial source of emissions or toxic air contaminants (see items b-d below) or otherwise conflict with the primary goals of the 2017 Clean Air Plan.

Many of the Clean Air Plan's control measures are targeted to area-wide improvements, large stationary source reductions, or large employers and these are not applicable to the proposed project. However, the project would be consistent with all rules and regulations related to construction activities and the proposed development would meet current standards of energy and water efficiency (Energy Control Measure EN1 and Water Control Measure WR2) and recycling and green waste requirements (Waste Management Control Measures WA3 and WA4) and does not conflict with applicable control measures aimed at improving access/connectivity for bicycles and pedestrians (Transportation Control Measure TR9) or any other control measures.

The EIR for the ShapeSSF General Plan 2040 evaluated consistency with the Clean Air Plan and identified a significant and unavoidable impact from buildout under the General Plan due to the increase in VMT compared to population increase. Three mitigation measures were included in the EIR to ensure individual projects could potentially be developed under the General Plan with less than significant impacts. This project would implement relevant General Plan EIR mitigation measures (indicated as "GP-MM") requiring basic construction management practices to reduce construction dust and emissions (GP-MM-AIR-1a, discussed under item b and included in full, below), diesel emissions reduction during construction (GP-MM-AIR-1b, implemented through analysis by Illingworth and Rodkin and Mitigation Measure Air-2, discussed under item c below), and comply with the City's TDM Ordinance (see Section 17: Transportation).

General Plan Mitigation Measures GP-MM-Air-1a and Mitigation Measure Air-2 requiring compliance with basic construction management practices to reduce construction dust and emissions, and a plan to reduce particulate matter by at least 50 percent during construction, would also reduce the potential impact related to conflict with the Clean Air Plan.

The project, therefore, would be consistent with the Clean Air Plan and have a ***less than significant with mitigation*** impact in this regard.

b) Air Quality Standards/Criteria Pollutants

Ambient air quality standards have been established by state and federal environmental agencies for specific air pollutants most pervasive in urban environments. These pollutants are referred to as criteria air pollutants because the standards established for them were developed to meet specific health and welfare criteria set forth in the enabling legislation and include ozone precursors including nitrogen oxides and reactive organic gasses (NOx and ROG), carbon monoxide (CO), and suspended particulate matter (PM_{10} and $PM_{2.5}$). The Bay Area is considered "attainment" for all of the national standards, with the exception of ozone. It is considered "nonattainment" for State standards for ozone and particulate matter.

Past, present, and future development projects contribute to the region's adverse air quality impacts on a cumulative basis. By its very nature, air pollution is largely a cumulative impact. No

single project is sufficient in size to, by itself, result in nonattainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulatively significant adverse air quality impacts.[4]

BAAQMD updated its Guidelines for air quality analysis in coordination with adoption of new recommended CEQA thresholds of significance on June 2, 2010.[5] The most recent version of the Guidelines is dated May 2017.

Project-related air quality impacts fall into two categories: short-term impacts that would occur during construction of the project and long-term impacts due to project operation. BAAQMD's adopted thresholds are average daily emissions during construction or operation of 54 pounds per day or operational emissions of 10 tons per year of NOx, ROG or $PM_{2.5}$ and 82 pounds per day or 15 tons per year of PM_{10}.

Construction and operational emissions for the project were modeled using the California Emissions Estimator Model ("CalEEMod") version 2020.4.0. Project details were entered into the model including the proposed land uses, Transportation Demand Management Plan trip reductions, Peninsula Clean Energy carbon intensity factors, demolition/earthwork volumes, and construction schedule. Model defaults were otherwise used. The CARB EMission FACtors 2021 (EMFAC2021) model was used to predict emissions from construction traffic, which includes worker travel, vendor trucks, and haul trucks. The CalEEMod results and EMFAC inputs are included in Attachment A.

Construction Emissions

Construction of the project would involve excavation, site preparation, building erection, paving, and finishing and landscaping. Although these construction activities would be temporary, they would have the potential to cause both nuisance and health-related air quality impacts.

BAAQMD's adopted thresholds are average daily emissions during construction of 54 pounds per day of NOx, ROG or $PM_{2.5}$ and 82 pounds per day of PM_{10}.

The results from emissions modeling for construction are summarized in **Table 1** (and included in full in Attachment A).

Table 1: Daily Regional Air Pollutant Emissions for Construction (Pounds per Day)

Description	ROG	NOx	PM10*	PM2.5 *
Maximum Average Daily Emissions	13.16	32.74	1.48	0.95
BAAQMD Daily Thresholds	*54*	*54*	*82*	*54*
Exceeds Threshold?	*No*	*No*	*No*	*No*

* Applies to exhaust emissions only
Source: Illingworth & Rodkin 2023, Table 4 in Attachment A.

[4] BAAQMD, May 2017, California Environmental Quality Act Air Quality Guidelines, p. 2-1.

[5] Bay Area Air Quality Management District. June 2, 2010. News Release http://www.baaqmd.gov/~/media/Files/Communications%20and%20Outreach/Publications/News%20Releases/2010/ceqa_100602.ashx .

Construction-period emissions levels are below BAAQMD thresholds presented in Table 1. However, BAAQMD considers dust generated by grading and construction activities to be a significant impact associated with project development if uncontrolled and recommends implementation of construction mitigation measures to reduce construction-related emissions and dust for all projects, regardless of comparison to their construction-period thresholds. These basic measures are included in ShapeSSF General Plan 2040 Mitigation Measure GP-MM-Air-1a, which would implement BAAQMD-recommended best management practices to further reduce construction-period criteria pollutant impacts.

General Plan Mitigation Measure

GP-MM-Air-1a: **Basic Construction Management Practices.** [The project applicant / owner / sponsor] shall incorporate the following Basic Construction Mitigation Measures recommended by the Bay Area Air Quality Management District (BAAQMD):

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

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

iii) All visible mud or dirt trackout onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day, unless the City The use of dry power sweeping is prohibited.

iv) All vehicle speeds on unpaved roads shall be limited to 15 mph.

v) 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.

With implementation of General Plan Mitigation Measure GP-MM-Air-1a, the impact related to construction-period criteria pollutant impacts would be ***less than significant with mitigation***. Because construction-period emissions would not exceed applicable significance thresholds, additional construction mitigation measures would not be required to mitigate impacts.

Operational Emissions

Emissions from operation of the project could cumulatively contribute to air pollutant levels in the region. These air pollutants include ROG and NOx that affect ozone levels (and to some degree, particulate levels), PM10 and PM2.5. Emissions of air pollutants associated with the project were predicted using CalEEMod. This model predicts daily emissions associated with development projects by combining predicted daily traffic activity, including reductions for existing uses and the required Transportation Demand Management (TDM) plan (see Section 17, Transportation, and Attachment D), associated with the different land use types, with emission factors from the State's mobile emission factor model (i.e., EMFAC2021). Emissions associated with vehicle travel depend on the year of analysis because emission control technology requirements are phased-in over time. Therefore, the earlier the year analyzed in the model, the higher the emission rates utilized by CalEEMod. The earliest full year of operation could be 2028 if construction begins in 2023. Other inputs considered for operational emissions include the project's two emergency diesel generators, six cooling towers, solid waste generation use and water/wastewater use.

BAAQMD's adopted thresholds are emissions during operations of 54 pounds per day or 10 tons per year of NOx, ROG or $PM_{2.5}$ and 82 pounds per day or 15 tons per year of PM_{10}.

Results of operational emissions modeling are included in full in Attachment A and summarized in **Table 2**, below.

As shown in **Table 2** below, the project's operational emissions would not exceed applicable thresholds and the project would not result in individually or cumulatively significant impacts from operational criteria pollutant emissions.

Table 2: Regional Air Pollutant Emissions for Operations (Tons per Year for Annual)

Description	ROG	NOx	PM10	PM2.5
2028 Project Emissions, Annual	6.37	2.47	4.26	1.14
Project Generator Emissions	0.61	0.43	0.02	0.02
Project Cooling Tower Emissions	--	--	<0.01	<0.01
2022 Existing Use Emissions	0.95	0.47	0.61	0.16
Net Total Operational Emissions	6.04	2.43	3.67	0.99
BAAQMD Annual Significance Thresholds	*10*	*10*	*15*	*10*
Exceeds Annual Threshold?	*No*	*No*	*No*	*No*
Project Emissions, Daily (lbs/day)	2.34	1.60	1.42	0.40
BAAQMD Daily Significance Thresholds (lbs/day)	*54*	*54*	*82*	*54*
Exceeds Daily Threshold?	*No*	*No*	*No*	*No*

Source: Illingworth & Rodkin 2023, Table 5 in Attachment A.

As vehicular emissions have improved over the years, carbon monoxide hotspots have become less of a concern. BAAQMD presents traffic-based criteria as screening criteria for carbon monoxide impacts, as follows.[6] The project would implement a Transportation Demand Management Program per South San Francisco Municipal Code to reduce project trips. The project is therefore consistent with the Congestion Management Plan (CMP) of the San Mateo City/County Association of Governments (C/CAG), which is the first threshold. The other two screening thresholds are whether the project would increase traffic volumes at affected intersections to more than 44,000 vehicles per hour or to more than 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited (such as a tunnel or underground parking garage). These hourly traffic volumes are very high and much higher than those in the vicinity. For example, Grand Avenue is one of the highest volume roadways in the vicinity, which carries less than 35,000 vehicles per day under existing conditions. Spread over a day, that would be substantially less than 44,000 vehicles per

[6] Bay Area Air Quality Management District. May 2017. *California Environmental Quality Act Air Quality Guidelines*, p. 3-2, 3-3.

hour. The project's underground parking garage would serve only project vehicles with expected parking for 1,335 vehicles, which is again substantially fewer than the threshold of 24,000 vehicles per hour. Therefore, conditions in and around the project would be well below screening levels and the project would not result in individually or cumulatively significant impacts from CO emissions.

The project is below significance thresholds established by BAAQMD and meets localized CO screening criteria. As a result, the project would have a *less than significant* impact on regional air quality during the operational period.

c) Sensitive Receptors

A toxic air contaminant (TAC) is defined by California law as an air pollutant that may cause or contribute to an increase in mortality or an increase in serious illness, or which may pose a present or potential hazard to human health. In the Bay Area, a number of urban or industrialized communities exist where the exposure to TACs is relatively high compared to other communities. According to the BAAQMD CEQA Guidelines, the project site is in an overburdened community.[7] An overburdened community is a location that is especially vulnerable to air pollution impacts due to high background levels of air pollution or other environmental pollution burdens, presence of sensitive populations, and socioeconomic factors that may lead to inadequate health care or other health stressors.[8],[9] BAAQMD sets more stringent health risk limits and public noticing requirements for projects located in overburdened communities.

Substantial sources of TACs include, but are not limited to, land uses such as highways and high-volume roadways, truck distribution centers, ports, rail yards, refineries, chrome plating facilities, dry cleaners using perchloroethylene, and gasoline dispensing facilities. The project would not involve any of these uses. However, construction activity that uses traditional diesel-powered equipment results in the emission of diesel particulate matter including fine particulate matter, which is considered a toxic air contaminant and potential health risk.

Certain population groups, such as children, the elderly, and people with health problems, can be particularly sensitive to air pollution. With respect to air pollutants, examples of sensitive receptors include health care facilities, retirement homes, school and playground facilities, and residential areas. The project itself is not considered a sensitive receptor. The closest sensitive receptors to the project site are the multi-family residences approximately 350 feet to the west on the other side of U.S. 101, as well as the Gateway Child Development Center YMCA, approximately 750 feet southeast of the project site. These sensitive receptors are within 1,000 feet from the proposed project, which is the screening distance recommended by BAAQMD. A community health risk assessment was performed as included in full in Attachment A and summarized below.

For the purpose of assessing a proposed project's impacts on exposure of sensitive receptors to risks and hazards, BAAQMD's adopted thresholds for a project in an "overburdened community" are a project-specific cancer risk exceeding 6 in one million, a non-cancer risk exceeding a Hazard Index of

[7] Bay Area Air Quality Management District. May 2017. *California Environmental Quality Act Air Quality Guidelines*, Figure 5-1.

[8] Bay Area Air Quality Management District. December 2021. Frequently Asked Questions for 2022 Permit Reform and Implementation of Regulation 2-1 and 2-5 Amendments.

[9] Bay Area Air Quality Management District. December 15, 2021. Regulation 2 Permits Rule 1 General Requirements, Regulation 2-1-243

1.0 (or exceeding a cumulative risk of 100 in one million or a Hazard Index of 10.0 respectively), and/or an annual average $PM_{2.5}$ concentration exceeding 0.3 µg/m^3 (or 0.8 µg/m^3 cumulatively).

Construction activity that uses traditional diesel-powered equipment results in the emission of diesel particulate matter including fine particulate matter, which is considered a toxic air contaminant and potential health risk. The generation of these emissions would be temporary, confined to the construction-period. Operational emissions from the proposed emergency generator would also contribute to community risk.

Community risks assessments from project construction and operations were performed using the recommended EPA dispersion model AERMOD to determine the potential health risks related to diesel exhaust from construction equipment and the routine testing of the diesel generator, as summarized in **Table 3**.

Table 3: Construction and Operation Risk (Maximally Exposed Individual Sensitive Receptor)

Source		Cancer Risk (per million)	Annual PM25 (µg/m3)	Hazard Index
Project Construction (Years 0-4)	Unmitigated	**11.03**	0.05	<0.01
	Mitigated	2.12	0.02	<0.01
Project Generator (Years 4-30)		0.14	<0.01	<0.01
Project Cooling Towers (Years 4-30)		-	<0.01	-
Project Operational Trips (Years 4-30)		0.05	<0.01	<0.01
Total/Maximum Project Impacts (Years 0-30)				
	Unmitigated	**11.46**	0.05	<0.01
	Mitigated	2.15	0.02	<0.01
BAAQMD Single-Source Threshold		*6.0*[1]	*0.3*	*1.0*
Exceed Threshold?	*Unmitigated*	***Yes***	*No*	*No*
	Mitigated	*No*	*No*	*No*

[1]Project site and receptors are in an overburdened community as defined by BAAQMD.

Notes: Risks in this table are reported for the maximally exposed individual, factoring in age-sensitivity, and represent increased lifetime risks. Risk to all area sensitive receptors would be the same or less than that shown in this table. See Attachment A for additional detail.

Source: Illingworth & Rodkin, 2023, Table 6 in Attachment A

As shown in Table 3, project-specific construction-period risk would be above applicable BAAQMD thresholds without mitigation. ShapeSSF General Plan 2040 Mitigation Measure GP-MM-Air-1b requires a project-specific health risk assessment when sensitive receptors may be impacted and implementation of applicable risk reduction measures, a condition that is satisfied by the Construction Air Quality & Greenhouse Gas Assessment included as Attachment A and implementation of the identified Mitigation Measure Air-2, which sets requirements to reduce diesel particulate matter (DPM) emissions by at least 50 percent.

Mitigation Measure

Air-2: **Reduce Diesel Particulate Matter During Construction**. The project applicant / owner / sponsor shall implement a feasible plan to reduce DPM emissions by at least 50 percent such that increased cancer risk and annual PM2.5 concentrations from construction would be reduced below TAC significance levels as follows:

1. All construction equipment larger than 25 horsepower used at the site for more than two continuous days or 20 hours total shall meet U.S. EPA Tier 4 emission standards for PM (PM10 and PM2.5), if feasible, otherwise,
    a. If use of Tier 4 equipment is not available, alternatively use equipment that meets U.S. EPA emission standards for Tier 3 engines and include particulate matter emissions control equivalent to CARB Level 3 verifiable diesel emission control devices that altogether achieve at least a 50 percent reduction in particulate matter exhaust in comparison to uncontrolled equipment; alternatively (or in combination).
    b. Use of electrical or non-diesel fueled equipment.
2. Dewatering pumps shall be powered by electricity.
3. Use of electric portable equipment following the site preparation and grading phases.
4. Alternatively, the applicant may develop another construction operations plan demonstrating that the construction equipment used on-site would achieve a reduction in construction diesel particulate matter emissions by 50 percent or greater. Elements of the plan could include a combination of some of the following measures:
    - Implementation of No. 1 above to use Tier 4 or alternatively fueled equipment,
    - Installation of electric power lines during early construction phases to avoid use of diesel generators and compressors,
    - Use of electrically-powered equipment,
    - Forklifts and aerial lifts used for exterior and interior building construction shall be electric or propane/natural gas powered,
    - Change in construction build-out plans to lengthen phases, and
    - Implementation of different building techniques that result in less diesel equipment usage.

    Such a construction operations plan would be subject to review by an air quality expert and approved by the City prior to construction.

With the implementation of Mitigation Measure Air-2, the project's construction risks would be reduced below the BAAQMD single source threshold for cancer risks.

Community health risk assessments typically also look at all substantial sources of TACs that can affect sensitive receptors and are located within 1,000 feet of the project site (i.e., influence area). These sources can include railroads, freeways or highways, high-volume surface streets, and stationary sources permitted by BAAQMD.

The project vicinity includes three high volume roadways with average daily traffic (ADT) above 10,000 (Highway 101, Dubuque Avenue, and Airport Boulevard), Caltrain, and stationary sources

such as diesel generators and gas stations. Therefore, an additional cumulative community risk analysis was completed. The cumulative cancer risk, hazard index, and annual $PM_{2.5}$ concentrations are summarized in **Table 4**.

Table 4: Cumulative Community Risk (Maximally Exposed Individual Sensitive Receptor, Mitigated)

Source	Cancer Risk (per million)	Annual PM25 (µg/m3)	Hazard Index
Total/Maximum Project Risk, Mitigated (Years 0-30)	2.15	0.02	<0.01
Additional Cumulative Sources			
U.S. 101, ADT 179,520	2.29	0.12	<0.01
Caltrain Zone 1	4.50	<0.01	<0.01
Airport Boulevard	0.15	0.01	<0.01
Dubuque Avenue	0.16	0.02	<0.01
Other stationary sources	15.97	0.39	<0.10
Combined Sources	25.22	<0.57	<0.15
BAAQMD Cumulative Source Threshold	100	0.8	10.0
Exceed Threshold?	No	No	No

Notes: Risks in this table are reported for the maximally exposed individual, factoring in age-sensitivity, and represent increased lifetime risks. Risk to all area sensitive receptors would be the same or less than that shown in this table. See Attachment A for additional detail.

Source: Illingworth & Rodkin, 2023, Table 7 in Attachment A

As shown in Table 4, cumulative health risks to off-site sensitive receptors would not exceed threshold levels.

Exposure risks for the maximally exposed individual are below threshold levels with implementation of Mitigation Measure Air-2; therefore, the impact related to exposure to sensitive receptors to substantial pollutant concentrations would be ***less than significant with mitigation*.**

d) Other Emissions

Odors from construction activities are associated with construction equipment exhaust and the application of asphalt and architectural coatings. Odors emitted from construction activities would be temporary and not likely to be noticeable much beyond a project site's boundaries. The proposed office/R&D use is consistent with the type of development in the area and is not a use type considered by BAAQMD to be a source of substantial objectionable odors.[10] Therefore, the potential for objectionable odor impacts to adversely affect a substantial number of people is ***less than significant*.**

[10] Bay Area Air Quality Management District. May 2017. *California Environmental Quality Act Air Quality Guidelines*, Table 3-3.

4. BIOLOGICAL RESOURCES Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?		☒		
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or US Fish and Wildlife Service?				☒
c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?				☒
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?				☒
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?			☒	
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?				☒

a) <u>Special Status Species and Habitat</u>

The project site consists entirely of developed land and has been under industrial or commercial usage since the 1920s. It is situated within a heavily urbanized area and is surrounded on all sides by commercial or transportation uses. The site has little or no habitat value. There is a line of trees along the eastern property line between the project site and Caltrain right-of-way, trees between the project site and both adjacent lots, and trees in the central parking lot.

Special-status species are unlikely to occur in the project vicinity due to its highly disturbed and urbanized nature. Plant and animal species that may occur in such areas would be common species associated with urban, developed, and ruderal conditions throughout the San Francisco Bay area.

The site does not contain protected habitat, is not in an ecologically sensitive area, and does not provide connections for wildlife.[11]

Special-status and non-status nesting birds have the potential to nest in trees, shrubs, herbaceous vegetation, and on bare ground and man-made structures within and adjacent to the project site. The federal Migratory Bird Treaty Act and Fish and Game Code of California protect bird species year-round, as well as their eggs and nests during the nesting season. The list of migratory birds includes almost every native bird in the United States. Project construction activities have the potential to impact nests on site or in nearby areas if construction is initiated during the breeding bird season. Indirect visual and acoustic disturbance from construction to off-site nesting birds in adjacent areas has the potential to result in nest abandonment, which is considered a potentially significant impact.

Mitigation Measure

Bio-1: **Pre-Construction Nesting Bird Survey**. Initiation of construction activities during the avian nesting season (February 15 through September 15) shall be avoided to the extent feasible. If construction initiation during the nesting season cannot be avoided, pre-construction surveys for nesting birds protected by the Migratory Bird Treaty Act of 1918 and/or Fish and Game Code of California within 100 feet of a development site in the project area shall be conducted within 14 days prior to initiation of construction activities. If active nests are found, a 100-foot buffer area shall be established around the nest in which no construction activity takes place. The buffer width may be modified upon recommendations of a qualified biologist regarding the appropriate buffer in consideration of species, stage of nesting, location of the nest, and type of construction activity based upon published protocols and/or guidelines from the U.S. Fish and Wildlife Service or California Department of Fish and Wildlife (USFWS, CDFW) or through consultation with USFWS and/or CDFW. The biologist may also determine that construction activities can be allowed within a buffer area with monitoring by the biologist to and stoppage of work in that area if adverse effects to the nests are observed. The buffer shall be maintained until after the nestlings have fledged and left the nest. These surveys would remain valid as long as construction activity is consistently occurring in a given area and would be completed again if there is a lapse in construction activities of more than 14 consecutive days during the nesting season.

With implementation of Mitigation Measure Bio-1, which requires avoidance of nesting season or a nesting survey and buffers from any nests as appropriate, the impact related to special-status and non-status bird species would be ***less than significant with mitigation***.

[11] City of South San Francisco, ShapeSSF General Plan 2040. February 2022, Figures 48, 49, and 50.

b, c) Riparian Habitat and Wetlands

No wetlands, riparian habitats, or other sensitive habitats are present at the site.[12, 13] Therefore, the project would have ***no impact*** with respect to riparian habitats and wetlands.

d) Wildlife Corridors or Nursery Sites

The project site is surrounded by roadways and other developed areas and does not connect undeveloped areas or otherwise have the potential to act as a substantial wildlife corridor or nursery site. Therefore, the project would have ***no impact*** with respect to wildlife nursery sites or movement.

e) Local Policies and Ordinances

There are approximately 118 mature trees at the existing project site. As part of the proposed development, the project proposes removal of 23 mature trees, two of which qualify as "protected" trees under the City's Tree Preservation Ordinance (Title 13, Chapter 13.30 of the City's Municipal Code). The applicant is required to comply with the City's Tree Preservation Ordinance as applicable, which requires demonstrating adequate replacement and obtaining a permit for removal of "protected" trees.

Approximately 150 trees would be planted with the project's landscape plan. This is consistent with Policy LU-8.4 of the ShapeSSF General Plan 2040, which requires new developments to add street trees along streets and public places, as well as Policy ES-4.3, which requires each removed tree to be replaced with three new trees, when removal cannot be avoided.[14]

The project would have a ***less than significant*** impact regarding conflicts with local policies and ordinances, including tree preservation.

f) Conservation Plans

There are no habitat conservation plans applicable to the project site. Therefore, the project would have ***no impact*** with respect to conservation plans.

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[12] U.S. Fish and Wildlife Service, National Wetlands Inventory, Wetlands Mapper. Available at https://www.fws.gov/wetlands/data/mapper.html. Accessed August 2022.

[13] City of South San Francisco, ShapeSSF General Plan 2040. February 2022, Figures 48, 49, and 50.

[14] City of South San Francisco, ShapeSSF General Plan 2040. February, 2022.

5. CULTURAL RESOURCES Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
a) Cause a substantial adverse change in the significance of a historical resource pursuant to Public Resources Section 15064.5?				☒
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Public Resources Section 15064.5?		☒		
c) Disturb any human remains, including those interred outside of formal cemeteries?		☒		

a) Historic Resources

A records search was performed by the Northwest Information Center (Attachment B), which indicated that the project site has no recorded buildings or structures listed with the historical registries consulted. The existing structures were built in 1986. There is no potential to impact historic resources, thus the project would have ***no impact*** on historic resources.

b, c) Archaeological Resources and Human Remains

The records search performed by the Northwest Information Center, which indicated that while there are no known cultural resources present in the project area, there is a moderately high potential for the inadvertent discovery of previously unrecorded Native American and historic-period archaeological resources based on the characteristics of the site and history of the region. A record search of the Native American Heritage Commission Sacred Lands File was completed for the project and indicated there are no known sacred lands present in the vicinity of the site (see Attachment B). See Section 18: Tribal Cultural Resources for additional discussion of this topic.

Although previous studies included field survey of the project site, significant excavation and below-grade levels are proposed, which would disturb previously-undisturbed soils well below the field survey levels. Construction activities associated with the project would include excavation extending approximately 50 feet below the surface in the area of the parking garage. Given the moderately high potential for unrecorded archeological resources and Native American resources, Mitigation Measures Cul-1 through Cul-3 shall be implemented.

Mitigation Measures

Cul-1: **Cultural Resources Worker Environmental Awareness Program (WEAP).** A qualified archaeologist shall conduct a WEAP training for all construction personnel on the project site prior to construction and ground-disturbing activities. The training shall include basic information about the types of paleontological, archaeological, and/or tribal artifacts and resources that might be encountered during construction activities, and procedures to follow in the

event of a discovery. This training shall be provided for any personnel with the potential to be involved in activities that could disturb native soils.

Cul-2: **Halt Construction Activity, Evaluate Find and Implement Mitigation.** In the event that previously unidentified paleontological, archaeological, or tribal resources are uncovered during site preparation, excavation or other construction activity, the project applicant shall cease or ensure that all such activity within 100 feet of the discovery is ceased until the resources have been evaluated by a qualified professional, who shall be retained by the project applicant, and specific measures can be implemented by the project applicant to protect these resources in accordance with sections 21083.2 and 21084.1 of the California Public Resources Code. If protections are required, they must be approved by the Economic and Community Development Department before work can resume.

Cul-3: **Halt Construction Activity, Evaluate Remains and Take Appropriate Action in Coordination with Native American Heritage Commission.** In the event that human remains are uncovered during site preparation, excavation or other construction activity, the project applicant shall cease or ensure that all such activity within 25 feet of the discovery is ceased until the remains have been evaluated by the County Coroner, which evaluation shall be arranged by the project applicant, and appropriate action taken by the project applicant in accordance with section 7050.5 of the California Health and Safety Code or, if the remains are Native American, in coordination with the Native American Heritage Commission and in accordance with section 5097.98 of the California Public Resources Code.

These mitigation measures are consistent with and expand upon ShapeSSF General Plan 2040 Policy ES-10.5, which would require all work to cease within 100 feet if significant historic or prehistoric archaeological artifacts are discovered during construction or grading activities until the resources can be examined by a qualified archaeologist, and if necessary, protected with a plan approved by the Economic and Community Development Department. Implementation of Mitigation Measures Cul-1, Cul-2, and Cul-3 would reduce the impacts associated with possible disturbance of unidentified cultural resources at the project site to a level of ***less than significant with mitigation***.

6. ENERGY Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?			☒	
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?			☒	

a, b) Energy

The threshold of significance related to energy use is whether the project would result in wasteful, inefficient, or unnecessary consumption of energy resources or conflict with or obstruct state or local plans for renewable energy or energy efficiency.

The project would include short-term demolition and construction activities that would consume energy, primarily in the form of diesel fuel (e.g., mobile construction equipment), gasoline (e.g. vehicle trips by construction workers), and electricity (e.g., power tools). Energy would also be used for conveyance of water used in dust control, transportation and disposal of construction waste, and energy used in production and transport of construction materials.

During operation, energy demand from the project would include fuel consumed by employees 'and delivery vehicles, and electricity consumed by the proposed structures, including lighting, research equipment, water conveyance, heating and air conditioning.

Table 5 shows the project's estimated total construction energy consumption and annual energy consumption.

As shown in Table 5, project construction would require what equates to 123,942 MMBtu of energy use. The project would implement construction management practices per Mitigation Measure GP-MM-Air-1a (See Section 3: Air Quality). While focused on emissions and dust reduction, the construction management practices would also reduce energy consumption through anti-idling measures and proper maintenance of equipment. The project would comply with the requirements of the California Green Building Standards Code (CALGreen) to divert a minimum of 65 percent of construction and demolition debris. By reusing or recycling construction and demolition debris, energy that would be used in the extraction, processing and transportation of new resources is reduced. Therefore, the project would not involve the inefficient, wasteful, and unnecessary use of energy during construction, and the project's construction energy consumption.

As also shown in Table 5, project annual energy consumption would equate to 113,050 MMBtu of energy use. Consistent with the City's Reach Code, the project has proposed all-electric construction. The project's required TDM plan (see Section 17: Transportation) will also include various measures designed to reduce total vehicle trips, which would reduce the consumption of fuel for vehicles.

Table 5: Construction and Operational Energy Usage

Source	Energy Consumption	
	Amount and Units	**Converted to MMBtu**
Construction Energy Use (Total)		
Construction Worker Vehicle Trips (Gasoline)	155,278 gallons	17,047 MMBtu
Construction Equipment and Vendor/Hauling Trips (Diesel)	778,092 gallons	106,895 MMBtu
Total Construction Energy Use		***123,942 MMBtu***
Operational Vehicle Fuel Use (Gross Annual)		
Gasoline	449,307 gallons	49,328 MMBtu
Diesel	50,314 gallons	6,912 MMBtu
Operational Built Environment (Gross Annual)		
Site Improvements	16.65 GWh	56,810 MMBtu
Total Gross Annual Operational Energy Use		***113,050 MMBtu***

Note: The energy use reported in this table is gross operational energy use for the proposed project with no reduction to account for energy use of existing uses.

Source: Energy Calculations included as Attachment C

When subtracting existing operational fuel and built environment energy use from the project totals above, the total net increase in annual operational energy use would be 99,297 MMBtu (see Attachment C for additional detail).

As detailed in Section 17: Transportation, with implementation of the required TDM Plan, the project would result in reduced levels of vehicle travel relative to regional averages and would help meet regional efforts to reduce vehicle travel and therefore related vehicular consumption of fuel energy.

As detailed in Section 3: Air Quality and Section 8: Greenhouse Gas Emissions, the project is also consistent with regional and local climate actions plans. The project incorporates energy and energy-related efficiency measures meeting all applicable requirements, including water and waste efficiency. The project would be required to comply with all standards of the City's Reach Code, Title 24 of the California Code of Regulations, and CALGreen, as applicable, aimed at the incorporation of energy-conserving design and construction. The project would meet LEED Gold standards and comply with Architecture 2030's energy target of an 80% reduction in energy use of comparable buildings in the same climate zone. Sustainability features to reduce the use of energy may include, but are not limited to, the following:

- Architectural fin optimization for solar shading and daylighting
- High performance windows exceeding energy code thermal performance
- High performance walls, roof, and floors exceeding energy code thermal performance
- Tight building construction targeting 0.40 CFM/SF air infiltration at 75 Pa pressure
- Heat recovery for ventilation air
- Air source heat pump space heating and cooling
- Low flow domestic hot water fixtures
- Daylight harvesting and dimming in common spaces
- High efficiency lighting
- Occupancy/vacancy sensors to control lighting in back of house spaces

Additionally, approximately 15% of the roof area of each building is available to support PV solar panels, which could be readily integrated to meet tenant and market demand.

While representing a change from the former uses at the site, the project is consistent with the type of development in the area and allowed under the land use designation and zoning and would be replacing less efficient buildings.

Therefore, although the project would incrementally increase energy consumption, it would not result in a significant impact related to energy consumption in a wasteful, inefficient, or unnecessary manner or otherwise conflict with energy plans and the impact in this regard would be ***less than significant*.**

7. GEOLOGY AND SOILS Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? (Refer to Division of Mines and Geology Special Publication 42)				☒
ii) Strong seismic ground shaking?		☒		
iii) Seismic-related ground failure, including liquefaction?		☒		
iv) Landslides?				☒
b) Result in substantial soil erosion or the loss of topsoil?			☒	
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?		☒		
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?				☒
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?				☒
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?		☒		

This section utilizes information from the Geotechnical Investigation prepared for the applicants by Langan Engineering and Environmental Services, dated July 9, 2021, and the Draft Dewatering Assessment also prepared by Langan and dated September 2, 2022, both of which are available as part of project materials on file with the City.

a) <u>Seismic Hazards</u>

The major active faults in the area are the San Andreas, San Gregorio, and Hayward Faults. The closest fault traces are located approximately 3.1 miles from the project site. The project site is not within an Alquist-Priolo Seismic Hazard Zone, and no known active or potentially active faults traverse the site. Therefore, the project has ***no impact*** related to rupture along a fault.

Similarly, the project site is generally flat and is not located proximate to steep slopes and would therefore not be subject to landslide hazards (***no impact***).

However, the San Francisco Bay Area is a seismically active region, and the site is likely to encounter strong seismic ground shaking during the lifetime of the project, which can result in seismic-related ground failure depending on the characteristics of the site and development.

The Geotechnical Investigation determined the potential geological hazards based on site soils to include the potential for seismic hazards, including liquefaction-induced settlement and seismic densification. Geotechnical considerations include the localized presence of marsh and Bay Mud deposits, the need to provide adequate bearing for the building loads, design and installation of shoring and dewatering systems to support the basement excavation and reduce the potential for impacting surrounding improvements, design and installation of micropiles, and construction considerations, as summarized below.

The project site is not within a mapped liquefaction hazard zone, but the project's Geotechnical Investigation assessed the potential for liquefaction given the characteristics of the site soils. The medium dense sand below the groundwater level is not susceptible to liquefaction and would also be removed from under the proposed building. The medium-dense granular soil present above the groundwater level presents a low risk for cyclic densification and settlement during a seismic event, although portions of the site could see settlement of about ¾ inches during a major earthquake. These would also be removed from the under the building footprint during excavation, but design of utilities and building entrances and other improvements at the building perimeter, if any, should consider this potential differential settlement between the outside ground and building.

The Geotechnical Report concluded that the potential seismic hazards can be addressed through appropriate design and construction, which would occur as part of the design-level geotechnical recommendations and structural plans as specified in Mitigation Measure Geo-1.

Mitigation Measure

Geo-1: **Compliance with a design-level Geotechnical Investigation report prepared by a Registered Geotechnical Engineer and with Structural Design Plans as prepared by a Licensed Professional Engineer.** Proper foundation engineering and construction shall be performed in accordance with the recommendations of a Registered Geotechnical Engineer and a Licensed Professional Engineer. The structural engineering design, with supporting Geotechnical Investigation, shall incorporate seismic parameters compliant with the California Building Code.

This mitigation measure is consistent with, and expands upon, ShapeSSF General Plan 2040 Action CR-4.4.1, which requires site-specific soils and geologic reports for review and approval by the City Engineer as part of the standard City process, and incorporation of the recommended actions during construction. Compliance with a design-level Geotechnical Investigation and Structural Design Plans, as required by Mitigation Measure **Geo-1** would reduce the potential impact of seismic hazards including seismic ground shaking and liquefaction to a level of ***less than significant with mitigation***.

b) Soil Erosion

Construction activities, particularly grading and site preparation, can result in erosion and loss of topsoil. The project also proposes substantial additional excavation for up to 4 floors of subsurface parking. While intentional removal of soil from the site would not be considered erosion, the disturbance of the site could result in the potential for unintended erosion.

The project would be required to obtain coverage under the statewide National Pollutant Discharge Elimination System (NPDES) General Permit for Discharges of Storm Water Associated with Construction Activity, Construction General Permit Order 2009-0009-DWQ (Construction General Permit), administered by the State Water Resources Control Board (SWRCB). Coverage under the NPDES Permit would require implementation of a Stormwater Pollution Prevention Plan (SWPPP) and various site-specific best management practices (BMPs) to reduce erosion and loss of topsoil during site demolition and construction. Compliance with the NPDES permit and BMPs during demolition and construction such as straw wattles, silt fencing, concrete washouts, and inlet protection during construction would reduce impacts resulting from loss of topsoil. The project would be required to comply with South San Francisco Municipal Code ("SSFMC") Section 15.56.030, which would require the development of the project site to control filling, grading, and dredging which may increase flood damage.

Soil erosion after construction would be controlled by implementation of approved landscape and irrigation plans. With the implementation of a SWPPP and Erosion Control Plan to prevent erosion, sedimentation, and loss of topsoil during and following construction – which are required under existing regulations - the soil erosion impacts of the project would be ***less than significant***.

c) Unstable Soil

The soils at the project site and in the surrounding areas contain 4 to 8.5 feet of fill, generally consisting of medium dense to dense sands and very stiff to hard clay. With the exception of the southwestern portion of the site, below the fill is approximately 37.5 to 48.5 feet of Colma formation, which consists of silty and clayey sand and is generally dense to very dense.

In the southwestern portion of the project site, the fill is underlain by weak, compressible marsh deposits. Under those deposits is approximately 11 feet of Bay Mud, a weak and compressible marine clay. Characteristics of site soils would largely be addressed through the proposed excavation, which would remove unstable soils in the building basement footprint.

The Geotechnical Investigation determined the project site to be at low risk for lateral spreading due to its flat nature, the absence of any nearby steep slopes and its low potential for liquefaction.

However, the project would require substantial excavation and related dewatering activities, which could result in on- and off-site subsidence or collapse if not handled appropriately. To minimize the need for dewatering, the project is proposing shoring using deep soil mixing (DSM) walls with grouted tiebacks and/or internal bracing for additional lateral support for temporary excavation support. Because DSM walls are continuous, they act to temporarily cut off groundwater infiltration through the sides of the excavation, resulting in the need for less dewatering. Langan performed a series of groundwater drawdown simulations to address potential conditions that could be encountered during excavation and in all cases, the potential for settlement would be 1.75 inches or less at 25 feet from the excavation and declining farther from the site.

The Langan report concludes that the potential geological hazards related to unstable soil, including off-site subsidence or collapse due to excavation and dewatering, can be addressed through appropriate design and construction, which would occur as part of the design-level geotechnical recommendations and structural plans as specified in Mitigation Measure Geo-1.

Mitigation Measure Geo-1 requiring compliance with geotechnical investigation construction methodologies would also reduce the potential impact related to unstable soil or collapse.

Compliance with a design-level Geotechnical Investigation and Structural Design Plans, as required by Mitigation Measure Geo-1 would reduce the potential impact of unstable soil hazards including off-site subsidence or collapse due to excavation and dewatering to a level of ***less than significant with mitigation***.

d) Expansive Soil

The Geotechnical Investigation did not identify the potential for expansive soils at the site. Therefore, the project has ***no impact*** related to expansive soils.

e) Septic Tanks

The project would not include the use of septic tanks and associated disposal facilities. Therefore, the project would have ***no impact*** in this regard.

f) Unique Geologic Feature or Paleontological Resource

The project site is a generally flat infill site and does not contain unique geologic features.

The area east of Highway 101 is underlain by deposits of Bay mud, which have some sensitivity for paleontological vertebrates, though there are no known paleontological resources in the vicinity of the project site.[15, 16]

The project site falls within a highly urbanized area and the site is underlain by about 4 to 8.5 feet of fill; however, the excavation for the parking garage would dig to a depth of up to about 50 feet, which is likely to encounter native soils that have not been previously disturbed. Therefore, the project has a potential to encounter paleontological resources, which would be addressed through the following measures.

Mitigation Measures Cul-1 and Cul-2 would reduce the potential impact related to unknown paleontological resources.

Implementation of Mitigation Measures Cul-1 and Cul-2 would reduce the impacts associated with possible disturbance of previously-unidentified paleontological resources to ***less than significant with mitigation***.

[15] South San Francisco General Plan, 1999.

[16] University of California Museum of Paleontology (UCMP) Online Database. 2019. UCMP specimen search portal, http://ucmpdb.berkeley.edu/ (accessed August 2022).

8. GREENHOUSE GAS EMISSIONS Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?			☒	
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?			☒	

This section utilizes information from the Air Quality & Greenhouse Gas Assessment prepared for this analysis by Illingworth & Rodkin, Inc. and dated February 17, 2023, included in full as Attachment A.

a) Greenhouse Gas Emissions

BAAQMD determined that greenhouse gas (GHG) emissions and global climate change represent cumulative impacts. Construction and operation of the proposed project would be additional sources of GHG emissions, primarily through consumption of fuel for transportation and energy usage on an ongoing basis.

State Assembly Bill 32 (AB 32) required California state and local governments to reduce greenhouse gas emissions to 1990 levels by 2020. State Senate Bill 32 was subsequently adopted to require that there be a further reduction in GHG emissions to 40% below the 1990 levels by 2030. The additional 40% reduction by 2030 identified in SB 32 equates to a 2030 efficiency standard of 2.8 metric tons CO_2e per year per service population.

In April 2022, BAAQMD issued new GHG emissions thresholds, revising the quantified threshold to a checklist of compliance, requiring consistency with either criterion A or B as follows:

A. Projects must include, at a minimum, the following project design elements:
   1. Buildings
      a. The project will not include natural gas appliances or natural gas plumbing (in both residential and nonresidential development).
      b. The project will not result in any wasteful, inefficient, or unnecessary electrical usage as determined by the analysis required under CEQA Section 21100(b)(3) and Section 15126.2(b) of the State CEQA Guidelines.
   2. Transportation
      a. Achieve compliance with electric vehicle requirements in the most recently adopted version of CALGreen Tier 2.
      b. Achieve a reduction in project-generated vehicle miles traveled (VMT) below the regional average consistent with the current version of the California Climate Change Scoping Plan (currently 15 percent) or meet a locally adopted Senate Bill 743 VMT target, reflecting the recommendations provided in the Governor's Office of Planning and Research's Technical Advisory on Evaluating Transportation Impacts in CEQA:

i. Residential projects: 15 percent below the existing VMT per capita
ii. Office projects: 15 percent below the existing VMT per employee
iii. Retail projects: no net increase in existing VMT

B. Be consistent with a local GHG reduction strategy that meets the criteria under State CEQA Guidelines Section 15183.5(b).

Regarding criterion A, the proposed buildings would be constructed in conformance with CALGreen and the Title 24 Building Code, which requires high-efficiency water fixtures, water-efficient irrigation systems, and compliance with current energy efficacy standards and would meet BAAQMD's checklist as follows:

A.1.a. Avoid construction of new natural gas connections for the non-residential building,

Conforms – project includes a stub natural gas connection but is designed to be operated with 100% electricity.

A.1.b. Avoid wasteful or inefficient use of electricity,

Conforms – would meet CALGreen Building Standards Code requirements that are considered to be energy efficient.

A.2.a. Include electric vehicle charging infrastructure that meets current Building Code CALGreen Tier 2 compliance, and

Conforms – 81 EV parking spaces are proposed to be constructed up front (6% of total) with an additional 268 spaces EV-ready for future operation (20% of total). This is consistent with the requirements under Section 20.330.008 of the City's Municipal Code and the CalGreen Tier 2 requirements at the time of project application.

A.2.b. Reduce VMT per service population by 15 percent over regional average.

Conforms – The proposed TDM plan would reduce vehicle trips more than 15 percent over regional average (see Section 17: Transportation).

As indicated above, all relevant criteria would be met and the project would therefore be considered to have a ***less than significant*** impact with respect to Greenhouse Gas Emissions.

Note that it is not necessary to consider criterion B since the project meets criterion A. However, the following information is provided for informational purposes.

Along with the ShapeSSF General Plan 2040, the City adopted a Climate Action Plan (CAP) in October 2022 with the goal of achieving carbon neutrality by 2045, reduce emissions 40% by 2030, and 80% by 2040.

There is not currently a checklist for development projects, but the following strategies and actions are indirectly applicable to this proposed project through action and enforcement by the City:

BNC 1.1 Improve the energy efficiency of new construction. Provide a combination of financial and development process incentives (e.g. Expedited permitting, FAR increase, etc.) to encourage new development to exceed Title 24 energy efficiency standard.

Supports – The project would meet LEED Gold standards and the Architecture 2030 Energy target of an 80% reduction in energy use of comparable buildings in the same climate zone.

BNC 2.1 All-Electric Reach Code for Nonresidential New Construction. Implement residential all-electric reach code and adopt all-electric reach code for nonresidential new construction.

Supports – The project is designed to operate as all-electric.

BE 1.3 Energy Efficiency Programs. Update zoning and building codes to require alterations or additions at least 50% the size of the original building to comply with minimum CALGreen requirements.

Supports – The project would meet minimum applicable CALGreen requirements. The project would also meet LEED Gold requirements.

TL 2.2 TDM Program. Implement, monitor, and enforce compliance with the City's TDM Ordinance.

Supports – The project would incorporate a TDM plan that follows the City's TDM Ordinance.

TL 2.6 Complete Streets Policy. Ensure that all roadway and development projects are designed and evaluated to meet the needs of all street users, and that development projects contribute to multimodal improvements in proportion to their potential impacts on vehicle miles traveled. Incorporate bicycle and pedestrian improvements identified in the Active South City Plan.

Assumed Support – Pedestrian and bicycle circulation on Dubuque Avenue are currently under study. The project applicant would coordinate with the City to incorporate any applicable bicycle or pedestrian improvements necessary to meet this policy when finalized.

WW 2.1 Indoor Water Efficiency Standards. Require high-efficiency fixtures in all new construction and major renovations, comparable to CalGreen Tier 1 or 2 standards.

Supports – The project would be required to meet the CALGreen and the Title 24 Building Code, which requires high-efficiency water fixtures and water-efficient irrigation systems.

To further support conclusions related to the qualitative criteria above, GHG emissions were modeled quantitatively using CalEEMod, as discussed in Section 3: Air Quality, and are included here as an informational item. To meet 2020 reduction targets, BAAQMD had recommended threshold of significance for operational GHGs of 1,100 metric tons carbon dioxide equivalent (CO_2e) per year or, if the project was too large to meet that threshold, an efficiency threshold of 4.6 metric tons CO_2e per service population (residents and employees) per year. Because this is a relatively large office/R&D project, the efficiency threshold would be most applicable to this analysis. While BAAQMD did not update recommendations to address 2030 reduction targets, industry standard is to assume an additional 40% reduction per State directives, which equates to a standard of 2.8 metric tons CO_2e per year per service population. A summary of the results is included in **Table 6**.

Table 6: Greenhouse Gas Emissions

Description	GHG in metric tons CO2e per year [1]
Project Emissions, Operational	5,510
Project Emissions, Construction (averaged over 40 years) [2]	168
Project Emissions, Total	**5,678**
Project Service Population [3]	2,690
Project Emissions, Total (per Service Population) [4]	**2.11**
Project Service Population Extrapolated Significance Threshold	2.8 in 2030
Exceeds Threshold?	*No*

Source: Illingworth & Rodkin, 2023, Table 8 in Attachment A.

1 CO_2e is carbon dioxide equivalent units, the standard measure of total greenhouse gasses.

2 Standard practice is to divide the construction emissions by 40 years (an average building life) and add that to the operational emissions for comparison to thresholds.

3 Service Population was calculated at approximately 300 square feet per employee for office/R&D.

4 The emissions in this table are gross emissions for the proposed project with no reduction to account for existing uses and emissions.

As shown in Table 6 above, quantified GHG emissions would be below the relevant efficiency threshold and therefore consistent with the less than significant impact conclusion.

b) Greenhouse Gas Reduction Plans

With respect to GHG emissions, the Clean Air Plan includes a goal to reduce Bay Area GHG emissions 40 percent below 1990 levels by 2030, and 80 percent below 1990 levels by 2050. This is consistent with the target reductions intended to be met by the BAAQMD thresholds and the City's CAP. As demonstrated under criterion a) above, the project would be consistent with BAAQMD thresholds and the City's CAP and would therefore be consistent with the GHG emissions reduction goal of the Clean Air Plan.

Additionally, emissions associated with the development of the proposed project were analyzed per the BAAQMD May 2017 CEQA Air Quality Guidelines, as updated. BAAQMD's thresholds and methodologies take into account implementation of state-wide regulations and plans, such as the AB 32 Scoping Plan, as updated, and adopted state regulations such as Pavley and the low carbon fuel standard. Therefore, the impact would be ***less than significant*** with respect to consistency with GHG reduction plans.

9. HAZARDS AND HAZARDOUS MATERIALS Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?			☒	
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?		☒		
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?				☒
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?		☒		
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?			☒	
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?			☒	
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?				☒

This section utilizes information from the Phase I Environmental Site Assessment prepared for the applicants by Ramboll US Consulting, Inc., dated January 2021, and the draft Soil and Groundwater Management Plan prepared by Langan Engineering and Environmental Services, Inc., dated July 15, 2021, which are available as part of project materials on file with the City.

a) Routine Use of Hazardous Materials

It is likely that equipment used at the site during construction activities could utilize substances considered by regulatory bodies as hazardous, such as diesel fuel and gasoline. However, all construction activities would be required to conform with Title 49 of the Code of Federal Regulations, US Department of Transportation, State of California, and local laws, ordinances and procedures.

While specific tenants have not yet been identified, any commercial uses would involve household hazardous waste such as cleaners. Biotech and pharmaceutical research laboratories typically use limited quantities of materials considered to be biological hazards and/or chemical hazards. The San

Mateo County Environmental Health Division enforces regulations pertaining to safe handling and proper storage of hazardous materials to prevent or reduce the potential for injury to human health and the environment. Occupational safety standards exist in federal and state laws to minimize worker safety risks from both physical and chemical hazards in the workplace. The California Division of Occupational Safety and Health Administration is responsible for developing and enforcing workplace safety standards and ensuring worker safety in the handling and use of hazardous materials.

With compliance with applicable regulations, project construction and operations are not anticipated to create a significant hazard to the public or environment through the routine transport, use or disposal of hazardous materials (***less than significant***).

b, d) Hazardous Materials Site and Accidental Release

The project site is not identified as a listed hazardous materials site pursuant to Section 65962.5 of the Government Code.[17] The site was first developed in 1925 for use by Fontana Food Products Co. as a macaroni factory. By 1950 until 1982, the site was occupied by Dubuque Packing Co., a meat packing facility. A subsurface investigation conducted in 2015 sampled soil and groundwater from areas adjacent to a former 15,000-gallon fuel oil underground storage tank (UST). There was one detection of total petroleum hydrocarbons (TPH) from a depth of 5 feet below ground surface in the area of the former UST above applicable residential environmental screening levels (ESLs), however, the sample collected from the area near the base of the tank did not exceed ESLs indicating that the shallower contamination was not a result of a leaking UST. There were low-level detections of volatile organic compounds (VOCs) and metals in the soil that were either below ESLs or typical of background concentrations in the Bay Area. The groundwater samples collected from each boring did not detect TPH in any of the samples. The report concluded that there was no widespread contamination at the site and that no further investigation was needed at the time. The site was redeveloped in 1986 into a commercial multi-tenant facility, and likely regraded at that time.

A comprehensive soil and groundwater investigation was completed in 2021 by Langan. More than 100 soil samples were obtained from 20 borings across the site with samples occurring at approximately 5-foot intervals to approximately 60 feet below ground surface. No Class I Resource Conservation and Recovery Act (RCRA) or non-RCRA hazardous material was detected in the site soils. Low detections of VOCs, SVOCs, TPH, and metals were found in select borings that exceeded Tier 1 ESLs, primarily in the upper 5 feet. Metals detections were sporadic throughout the site and slightly above either Tier 1 ESLs or typical background metal concentrations for the Bay Area. Based on the extensive sampling done across the site and soluble testing completed, the elevated metal concentrations are not anticipated to present a restriction when disposing of the soil. All remaining material will likely be excavated and disposed of as unrestricted waste depending on the disposal facility's acceptance criteria or reused on site. Groundwater was sampled from five borings as a part of this investigation. Based on the recorded groundwater elevations at the site and proposed excavation, dewatering activities will be needed during excavation activities, and, depending on the method of discharge pre-treatment may be required.

[17] State Water Resources Control Board GeoTracker Database, website accessed 8/6/2022 at http://geotracker.waterboards.ca.gov/; Department of Toxic Substances Control EnviroStor Database, website accessed 8/6/2022 at http://www.envirostor.dtsc.ca.gov/public/.

In all, the site history, supported by several in-depth environmental investigations of the site support the finding that minimal impacts due to hazardous materials at the site exist but the existence of residual soil and groundwater impacts are sufficient to warrant health and safety measures and a soil management plan during excavation and construction activities, which are tailored to control fugitive dust that may contain residual hazardous materials and groundwater treatment as needed to neutralize any residual contaminants in dewatering groundwater before discharge. Mitigation Measure Haz-1 is tailored to address these specific risks.

Mitigation Measure Haz-1: **Implement Soil Management and Health and Safety Plans.** The applicant's construction contractor shall implement soil management and health and safety plans to facilitate compliance with applicable federal, state, and local laws and regulations, applicable to earthwork activities at the site as a result of the reported petroleum hydrocarbons and volatile organic compound concentrations in the soil. These plans must be filed with the City before construction permits are granted and are anticipated to include the following components:

1. Soil Management Plan. Recent analytical results indicate that some site soils contain slightly elevated concentrations of SVOCs, VOCs, TPH, and certain metals. The soil management objectives for the site are to minimize exposure of potentially hazardous constituents in soil to construction workers, nearby residents and pedestrians, and future users of the site. A site-specific soil management plan will be developed based on recent comprehensive subsurface investigations covering the site soils to depths exceeding planned excavations and the underlying groundwater. The soil management plan is intended to facilitate compliance with relevant federal, state, and local laws and regulations, applicable to earthwork activities at the site as a result of the identified contamination profiles. Some of the excavated material in the upper 5 feet may need to be disposed off-site at a Class II non-hazardous regulated landfill and/or as unrestrictive waste based on disposal facility's acceptance criteria. The contractor will establish appropriate off-site disposal locations and direct truck loading scheduling and tracking and recording of all shipments per applicable regulations and/or stockpile locations on the site to properly segregate, cover, moisture control, and profile the excavated material. Further testing may instead determine that no special soil handling is required. Unless from a documented clean source such as a quarry, soil imported onto the site will be tested in accordance with the "Clean Imported Fill Material" information advisory developed by the California DTSC in October 2001.

2. Health and Safety Plan. The potential health risk to on-site construction workers and the public will be minimized by developing and implementing a comprehensive Health and Safety Plan (HASP). The contractor will be responsible for developing and implementing the HASP. The HASP plan will describe the health and safety training requirements, specific personal hygiene, and monitoring equipment that will be used during construction to

protect and verify the health and safety of the construction workers and the general public from exposure to constituents in the soil, which is anticipated to include the following:

- the site will be fenced;
- exposed soil at the construction site will be watered at least twice daily to prevent visible dust from migrating off-site;
- stockpiles will be covered;
- water will be misted or sprayed during loading of material onto trucks for off haul;
- trucks transporting contaminated material will be covered with a tarpaulin or other cover;
- the wheels of the trucks exiting the site will be cleaned prior to entering public streets;
- public streets will be swept daily if material is visible, excavation and loading activities will be suspended if winds exceed 15 miles per hour; and the fence will be posted with requirements of the safe drinking water and toxic enforcement act (Proposition 65).

3. Health and Safety Officer. A site health and safety officer identified in the Health and Safety Plan will be on site at all times during excavation activities to ensure that all health and safety measures are maintained. The health and safety officer will have authority to direct and stop (if necessary) all construction activities in order to ensure compliance with the health and safety plan.

4. Dust Control. During all excavation activities, dust control measures will be implemented to reduce potential exposure. These measures may include moisture conditioning the soil and covering exposed soil and stockpiles with weighted down plastic sheeting to prevent exposure of the soil. Dust control measures at a minimum will include:

   - Covering soil stockpiles with plastic sheeting.
   - Watering uncovered ground surface at the site; use of water will be limited to prevent runoff.
   - Misting or spraying of soil during excavation and loading.
   - Emplacement of gravel and/or rubble plates on site access roads as feasible.
   - Trucks hauling soil from the site will be covered.
   - Visible dust will be monitored during excavation and subsurface demolition.
   - The soil drop height from an excavator's bucket onto soil piles or into transport trucks will be minimized.
   - Windbreaks will be deployed as necessary.
   - If necessary, the area of excavation may be limited to reduce dust generation.
   - Site vehicle speed limits.

- Street sweeping.
- Termination of excavation if winds exceed 25 mph.
- Addition of soil stabilizers and other responses as needed.

5. Odor Control. If strong odors are noted during excavation activities, odor suppression measures will be implemented by the General Contractor to minimize odor during excavation activities.

6. Storm Water Pollution Controls. Storm water pollution controls will be implemented to minimize storm water runoff and sediment transport from the site. A Storm Water Pollution Prevention Plan (SWPPP) will identify Best Management Practices for activities as specified by the California Storm Water Best Management Practices Handbook (Stormwater Quality Task Force, 1993) and/or the Manual of Standards for Erosion and Sediment Control Measures (ABAG, 1995). The SWPPP will include protocols (i.e., earth dikes and drainage swales) to control storm water contact with, or runoff from potentially impacted soil during wet weather conditions.

7. Groundwater Management. Groundwater at the site has been encountered at depths of nine feet to fifteen feet below ground surface. Construction dewatering is anticipated based on development plans. Any construction dewatering must adhere to a discharge permit obtained from the South San Francisco Department of Public Works Water Quality Control Division, Environmental Compliance Program or the Regional Water Quality Control Board. Based on the analytical results, the groundwater may need to be treated prior to discharge. Any proposed groundwater treatment prior to discharge will require analytical testing and approval from the appropriate regulatory agency prior to discharging.

8. Contingency Plans for Unknown/Unexpected Conditions. The following tasks shall be implemented during excavation activities if unknown historical subsurface features and/or unanticipated hazardous materials are encountered. Such materials may include unaccounted for underground storage tanks (UST) and associated product lines, sumps, and/or vaults, former monitoring wells, and/or soil with significant petroleum hydrocarbon odors and/or stains.

    - Stop work in the area where the suspect material is encountered and cover with plastic sheets.
    - Notify the General Contractor's site safety officer and site superintendent.
    - Review the existing health and safety plan for revisions, if necessary, and have appropriately trained personnel on-site to work with the affected materials, once directed by the General Contractor.

9. Soil and Groundwater Management Completion Report. A Soil and Groundwater Management Completion Report (SGMCR) will be prepared that summarizes the soil and groundwater management activities and any subsequent investigative and removal activities that were completed during redevelopment. The SGMCR will present a chronology of the construction

events, a summary of analytical data, a copy of all manifests from the site, and a description of all soil and groundwater management activities at the site. The report will also contain laboratory analytical results and figures, as appropriate, to provide detail regarding the amount and type of contamination encountered (if any) during various activities. The report will also summarize any residual contaminants that were left on the site after completion of redevelopment activities and document that soil handling procedures were implemented in accordance with this mitigation measure.

Implementation of Mitigation Measure Haz-1 would reduce the impacts associated with upset or accidental release related to a hazardous materials site to a level of ***less than significant with mitigation***.

Routine use of hazardous materials as a part of construction activities and operations are discussed under this Section 9(a) above.

c) Hazardous Materials Near Schools

No school is located within one-quarter mile of the project site. No hazardous materials with the potential for release during operation would be handled on or emitted from the site. Construction activities are discussed above. Therefore, the project would have ***no impact*** with respect to hazardous materials near schools.

e) Airport Hazards

The closest airport is the San Francisco International Airport (SFO), approximately 2 miles from the project site. The project site is within the boundary of the SFO Airport Land Use Consistency Plan (ALUCP) and as such, the compatibility criteria contained within the ALUCP are applicable to development at the project site. Most of the East of 101 Area, including the project site, is located outside of the ALUCP-designated Safety Compatibility zone that would have restricted types of uses, so the main applicable restrictions are height limitations. Development on the project site is limited to maximum heights of 261 feet above mean sea level but could be modified through consultation with the Federal Aviation Administration (FAA).[18] Factoring in the height of the site, the applicant estimates that the proposed project would reach heights of about 218 feet above mean sea level plus additional rooftop elements, all of which would be below the lowest FAA height limit at the site of 261 feet. The project is consistent with airport-related building safety policies identified in the ALUCP. Notification and consultation with the FAA would be required under CFR part 77.9 and would ensure that the project is compatible with the SFO ALUCP. Therefore, this impact would be ***less than significant***.

f) Emergency Response Plan

The project would not include any changes to existing public roadways that provide emergency access to the site or surrounding area. The proposed project would be designed to comply with the

[18] City/County Association of Governments of San Mateo County, November 2012, Comprehensive Airport Land Use Compatibility Plan for the Environs of San Francisco International Airport, including Exhibit IV-14. Available at: http://ccag.ca.gov/wp-content/uploads/2014/10/Consolidated_CCAG_ALUCP_November-20121.pdf

California Fire Code and the City Fire Marshal's code requirements that require on site access for emergency vehicles, a standard condition for any new project approval.

No substantial obstruction in public rights-of-way has been proposed with the project's construction activities. However, any construction activities can result in temporary intermittent roadway obstructions, but these would be handled through standard procedures with the City to ensure adequate clearance is maintained.

Therefore, with compliance with applicable regulations and standard procedures, the impact with respect to impairment or interference with an Emergency Response or Evacuation Plan would be ***less than significant***.

g) Wildland Fire

The project site is in a highly developed industrial/commercial area, and no wildlands are intermixed within this urban area. The closest wildlands area is San Bruno Mountain County Park located over 3,000 feet away, which is considered to have moderate to high (not very high) fire hazard. The proposed project would not exacerbate wildfire risks of any nature, would not substantially impair an adopted emergency evacuation plan or emergency response plan, and is not located in or near a Local or State Responsibility area with a Very High Fire Hazard Severity Zone designation.[19, 20] The project is not susceptible to significant risk of loss, injury or death involving wildland fires and there would be ***no impact*** in this regard.

[19] California Department of Forestry and Fire Protection. 2007. San Mateo County Fire Hazard Severity Zones in SRA. Available: https://osfm.fire.ca.gov/divisions/wildfire-planning-engineering/wildland-hazards-building-codes/fire-hazard-severity-zones-maps/.

[20] Department of Forestry and Fire Protection Fire and Resource Assessment Program, *San Mateo County Very High Fire Hazard Severity Zones in Local Responsibility Area*, November 24, 2008, available at: https://osfm.fire.ca.gov/media/6800/fhszl_map41.pdf.

10. HYDROLOGY AND WATER QUALITY Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?		☒		
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?			☒	
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner which would: i) result in substantial erosion or siltation on- or off-site; ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site; iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or			☒	
d) In flood hazard, tsunami or seiche zones, risk release of pollutants due to project inundation?			☒	
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?			☒	

This section utilizes information from the Draft Dewatering Assessment prepared by Langan and dated September 2, 2022, which is available as part of project materials on file with the City.

a) Water Quality and Discharge

Construction Period

Construction activities have the potential to impact water quality through erosion and through debris and oil/grease carried in runoff which could result in pollutants and siltation entering stormwater runoff and downstream receiving waters if not properly managed. The project would be required to obtain coverage under the General Construction Activity Storm Water Permit (General Construction Permit) issued by the State Water Resources Control Board. Coverage under this permit requires preparation of a Stormwater Pollution Prevention Plan (SWPPP) for review and approval by the City.[21] At a minimum, the SWPPP would include a description of construction

[21] SWRCB, Construction General Permit Order 2009-0009-DWQ (Construction General Permit)

materials, practices, and equipment storage and maintenance; a list of pollutants likely to contact stormwater; a list of provisions to eliminate or reduce discharge of materials to stormwater; best management practices (BMPs); and an inspection and monitoring program. Furthermore, the County of San Mateo's Water Pollution Prevention Program would require the project site to implement BMPs during project construction to reduce pollution carried by stormwater such as keeping sediment on site using perimeter barriers and storm drain inlet protection and proper management of construction materials, chemicals, and wastes on site. Additional BMPs required by South San Francisco Municipal Code Section 14.04.180 would also be implemented during project construction. Per standard City procedures, compliance with SWPPP requirements and BMPs would be verified during the construction permitting process.

As discussed in more detail in the Section 7: Geology and Soils, project construction activities would require substantial excavation and related dewatering activities, which would need to then be discharged. To minimize the need for dewatering, the project is proposing shoring using continuous DSM walls for temporary excavation support, which act to temporarily cut off groundwater infiltration through the sides of the excavation, resulting in the need for less dewatering. As discussed in more detail in Section 9: Hazards and Hazardous Materials, contaminants were detected in the groundwater above commercial screening levels for groundwater not used as a drinking water resource or for aquatic habitat. Per the analytic results of the groundwater sampling, it is anticipated the groundwater from site dewatering will need to be analyzed and possibly treated to be able to be discharged into the sanitary sewer system. Any construction dewatering must adhere to a discharge permit obtained from the South San Francisco Department of Public Works Water Quality Control Division, Environmental Compliance Program or the Regional Water Quality Control Board. The groundwater would be pumped into appropriate containers and samples obtained for chemical analyses and appropriate treatment prior to disposal, if needed.

Mitigation Measures Geo-1 and Haz-1 would require construction techniques to minimize necessary dewatering and appropriate handling of dewatering and would also reduce the potential impact related to water quality and discharge.

Compliance with a design-level Geotechnical Investigation and Structural Design Plans, as required by Mitigation Measure **Geo-1** and implementation of groundwater management as required by Mitigation Measure **Haz-1** would reduce the potential impact related to water quality and discharge to a level of ***less than significant with mitigation***.

Operational Period

Project operations have the potential to result in sources of stormwater pollutants such as oil, grease, and debris to stormwater drainage flowing over roadways and other impermeable surfaces and entering the city's stormwater system, served by the City of South San Francisco's Public Works Department, Maintenance Division. The project site drains to an existing storm drain system that outfalls to a tidally influenced channel that is connected to the San Francisco Bay. With the proposed improvements, runoff from the rooftop and parking areas would be retained and treated via bio-retention basins and flow-through planters.

Federal Clean Water Act regulations require municipalities to obtain National Pollution Discharge Elimination System (NPDES) permits which outline programs and activities to control surface stormwater pollution. Municipalities, such as the City of South San Francisco, must eliminate or reduce "non-point" pollution, consisting of all types of substances generated as a result of urbanization (e.g. pesticides, fertilizers, automobile fluids, sewage, litter, etc.), to the "maximum extent practicable" (as required by Clean Water Act Section 402(p)(3)(iii)). Clean Water Act Section

402(p) and USEPA regulations (40 CFR 122.26) specify a municipal program of "best management practices" to control stormwater pollutants. Best Management Practices (BMP) refers to any kind of procedure or device designed to minimize the quantity of pollutants that enter the storm drain system. To comply with these regulations, each incorporated city and town in San Mateo County joined with the County of San Mateo to form the San Mateo County Water Pollution Prevention Program (SMCWPPP) in applying for a regional NPDES permit, which includes Provision C.3. [22] The C.3 requirements are intended to protect water quality by minimizing pollutants in runoff, and to prevent downstream erosion by: designing the project site to minimize imperviousness, detain runoff, and infiltrate runoff where feasible; treating runoff prior to discharge from the site; ensuring runoff does not exceed pre-project peaks and durations; and maintaining treatment facilities. Project applicants must prepare and implement a Stormwater Control Plan containing treatment and source control measures that meet the "maximum extent practicable" standard as specified in the NPDES permit and the SMCWPPP C.3 Guidebook. Project applicants must also prepare a Stormwater Facility Operation and Maintenance Plan and execute agreements to ensure the stormwater treatment and flow-control facilities are maintained in perpetuity.

Project compliance with applicable State General Permit requirements, City ordinances, and County of San Mateo's guidelines would not result in significant impacts on water quality and would not result in a violation of water quality standards. Impacts would be *less than significant* with respect to water quality and discharge.

b) Groundwater Recharge and Supplies

The project is located in a designated urban area within the Westside groundwater basin.[23]

The California Water Service (Cal Water) supplies water to the City of South San Francisco and would serve the project site. Cal Water's Urban Water Management Plan (UWMP) anticipates future growth in the region, although the current project is not explicitly included. The majority of the water supply to the Cal Water South San Francisco District (i.e., approximately 80 percent from 2005-2019) is treated water purchased from the City and County of San Francisco's Regional Water System (RWS), which is operated by the San Francisco Public Utilities Commission (SFPUC) and originates largely (85%) from the Hetch Hetchy watershed (surface water). Groundwater makes up approximately 20 percent of the water supply for the South San Francisco District, which comes from the "Westside Basin", which underlies the South San Francisco District. The Basin is currently categorized by the California Department of Water Resources as a very low priority basin and as such, the Basin is not subject to the requirements of the California Sustainable Groundwater Management Act though the Basin has been actively managed for years, including the establishment of pumping limitations.[24] As discussed in more detail in Section 19: Utilities and Service Systems, a Water Supply Assessment was done for the project and is included in the project materials on file with the City.

[22] Regional Water Board, 2007, Order No. R2-2007-0027, NPDES Permit No. CAS0029921.

[23] California Regional Water Quality Control Board San Francisco Bay Region, San Francisco Bay Basin Water Quality Control Plan (Basin Plan), November 2019.

[24] California Water Service (Cal Water), adopted June 2021, 2020 Urban Water Management Plan: South San Francisco District., available at: https://www.calwater.com/docs/uwmp2020/SSF_2020_UWMP_FINAL.pdf.

The site is currently developed and therefore consists primarily of impervious surfaces, with landscaping along the frontage and in the parking lot areas. The project would result in a decrease of impervious surfaces with the addition of areas of permeable paving and construction of a new above and below ground drainage system that includes catch-basins, storm drainpipe, bio-retention areas, and flow-through planters to capture, treat, and discharge runoff from the entire site. The proposed drainage system would maintain the existing flow discharge pattern.

As discussed in more detail in the Section 7: Geology and Soils, project construction activities would require substantial excavation and up to 18 months of related dewatering activities. Because groundwater at the site is not used for drinking water or for aquatic habitat and draw-down from dewatering activities would be temporary, this would not be considered a significant impact on groundwater supplies.

As discussed under this Section 10(a) above, the project would comply with stormwater drainage requirements, including bio-retention/treatment areas to address both quality and volumes of runoff and is consistent with expected use of the site in basin planning. The project would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge, and would have a ***less than significant*** impact related to groundwater.

Because groundwater in the vicinity of the project site is not used as a drinking water source and is derived from the Bay, the potential to deplete groundwater supplies is considered a less than significant impact and no mitigation is required.

c) Drainage Pattern Alteration

The site is currently developed and therefore consists almost entirely of impervious surfaces across the 5.89-acre site. The project would result in approximately 4.63 acres of impervious surface (79% of the site).

There are existing storm drainpipes on the project site, located on the long sides of the existing buildings. The project is proposing to remove the existing storm drainpipes and replace them with new drainpipes along all four sides of the project site. In compliance with City requirements, the project would implement low-impact development stormwater management best practices to minimize runoff and encourage stormwater infiltration, including using concrete-lined flow-through planters to manage stormwater on the project site. An on-site storm drain detention system would be provided to limit flows into the public storm drain system to pre-project conditions, in accordance with City requirements.

As discussed under this Section 10(a) above, through compliance with applicable regulations, runoff from site would be the same or reduced from that existing and would not cause erosion, siltation, pollution, or flooding and as discussed above, changes to on-site conditions would meet applicable requirements and would not exceed capacity of the stormwater drainage system or result in on- or off-site flooding. Project impacts related to alteration of drainage patterns would be ***less than significant***.

d) Inundation

The project site is approximately 1 to 1.5 miles from the San Francisco Bay and approximately 5 miles from the Pacific Ocean, and according to state hazard mapping is not located in a tsunami hazard area.[25]

The nearest body of water that could experience seiche (water level oscillations in an enclosed or partially enclosed body of water) is the San Francisco Bay located approximately 1 mile northeast and 1.5 miles east of the project site. A seiche would not experience run up higher than a tsunami and as discussed above, the site is not located in a tsunami hazard area and is therefore not in an area at risk for seiche inundation either. No other large bodies of water with the potential to inundate the project site by a seiche are located near the site.

The project is not located within Federal Emergency Management Agency (FEMA) Flood Zone and is therefore not at substantial risk of flooding from 100-year or more common storms.[26]

Therefore, the proposed project would not result in the risk of release of pollutants due to inundation by a tsunami, seiche, or flooding and the project impact in this regard would be ***less than significant***.

e) Implementation of Plans

As discussed under this Section 10(a) above, the project would comply with applicable requirements under the General Construction Activity Storm Water Permit, County of San Mateo's Water Pollution Prevention Program, National Pollution Discharge Elimination System (NPDES), which are intended to implement relevant laws and plans related to water quality.

As discussed under this Section 10(b) above, the local groundwater basin is not required to comply with the Sustainable Groundwater Management Act. The project would not otherwise conflict with Cal Water's Urban Water Management Plan or groundwater management and the project impact with respect to implementation of plans would be ***less than significant***.

[25] California Geological Survey, 2021, Tsunami Hazard Area Map, San Mateo County, available at: https://www.conservation.ca.gov/cgs/tsunami/maps.

[26] Federal Emergency Management Agency (FEMA), effective 4/5/2019, Flood Insurance Rate Map (FIRM), Map Number 06081C0042F, available at https://www.fema.gov/flood-maps.

11. LAND USE AND PLANNING Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
a) Physically divide an established community?				☒
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?			☒	

a) Physical Division of a Community

The project site is in an urbanized area surrounded by developed parcels and infrastructure. The site is a development parcel and does not act as a connection point for other parcels. The project would not involve any physical changes that would have the potential to divide an established community and there would therefore be ***no impact*** in this regard.

b) Conflict with Land Use Plan

An environmental impact could occur when a project conflicts with a policy or regulation intended to avoid or reduce an environmental impact. The following discussion does not replace or preclude a consistency assessment for project approval considerations, which take into account more than potential impacts to the environment.

The proposed project conforms to the updated height, density and use controls in the ShapeSSF General Plan 2040 for the East of 101 Transit Core designation. The site is zoned for East of 101 Transit Core use, under which R&D and office uses are permitted, and the project otherwise conforms with the height and density controls of the zoning code.

Therefore, the project would have a ***less than significant*** impact with regard to land use plan conflicts.

12. MINERAL RESOURCES Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?				☒
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?				☒

a, b) Mineral Resources

The site contains no known mineral resources and has not been delineated as a locally important mineral recovery site on any land use plan.[27] The project would have ***no impact*** related to mineral resources.

[27] U.S. Geological Survey, Mineral Resources Data System: U.S. Geological Survey, Reston, Virginia. Accessed August 2022, at: http://tin.er.usgs.gov/mrds/

13. NOISE Would the project result in:	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?			☒	
b) Generation of excessive groundborne vibration or groundborne noise levels?			☒	
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?			☒	

a, b) Excessive Noise or Vibration

Noise and vibrations from construction depend on the noise generated by various pieces of construction equipment, the timing and duration of noise-generating activities, and the distance between construction noise sources and noise sensitive receptors. Construction noise impacts primarily occur when construction activities occur during noise-sensitive times of the day (early morning, evening, or nighttime hours), the construction occurs in areas immediately adjoining noise sensitive land uses, or when construction involves particularly noisy techniques, such as driven piles. The closest noise-sensitive receptors to the project site are the multi-family residences approximately 400 feet to the west on the other side of U.S. 101.

The South San Francisco Noise Ordinance (Chapter 8.32 of the Municipal Code, Section 8.32.050) restricts construction activities to the hours of 8:00 AM to 8:00 PM on weekdays, 9:00 AM to 8:00 PM on Saturdays, and 10:00 AM to 6:00 PM on Sundays and holidays. This ordinance also limits noise generation of any individual piece of equipment to 90 dBA at 25 feet or at the property line. The project is not anticipated to require pile driving and the project's construction activities would comply with the Noise Ordinance. With compliance with Noise Ordinance requirements, temporary construction-period noise and vibration impacts are considered ***less than significant***.

Operation of an office/R&D use would not be considered a noise-sensitive receptor and does not produce substantial levels of off-site vibration or noise. Rooftop equipment would be required to comply with the City's Noise Ordinance, would be shielded as appropriate, and in any case, would not have the potential to generate noise levels above those of the U.S. 101 at receptors across the highway from the project site. Traffic-related noise impacts generally have the potential to occur with at least a doubling of traffic volumes on roadways adjacent to areas with noise sensitive uses that are already at or above acceptable noise conditions. The project is located proximate to U.S. 101 and would not require substantial trips to pass by noise sensitive uses other than on high-volume roadways such as U.S. 101, which carries substantially more than the volume of project

traffic under existing conditions and would therefore not experience a doubling in volume with the addition of project traffic. Operationally, the project itself would not be considered a source of substantial noise or vibration. Therefore, operation of the project would be ***less than significant***.

c) Airport Noise

The closest airport to the project site is the San Francisco International Airport, approximately 2 miles to the south. The project site is within the boundary of the Airport Land Use Compatibility Plan (ALUCP), but is not within the area substantially impacted by airplane flyover noise (i.e., the Community Noise Equivalent Level 70 Noise Contours).[28] Impacts related to excessive aircraft noise exposure would be ***less than significant***.

[28] City/County Association of Governments of San Mateo County, November 2012. Comprehensive Airport Land Use Compatibility Plan for the Environs of San Francisco International Airport. Available at: http://ccag.ca.gov/wp-content/uploads/2014/10/Consolidated_CCAG_ALUCP_November-20121.pdf

14. POPULATION AND HOUSING Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?			☒	
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?				☒

a) Substantial Population Growth

While neither housing nor population are directly created as a result of this project, employment opportunities can indirectly increase population and the demand for housing.

The applicants project an employment density of 300 gross square footage per employee. Based on this, the project is estimated to introduce up to approximately 3,000 new jobs to the City of South San Francisco. Table 2-6 of the EIR for the ShapeSSF General Plan 2040 projects a growth of 17,978 jobs in the East of 101 Transit Core.[29] The General Plan 2040 projects a growth of 59% from the population of 2018, with approximately 49,800 additional residents by 2040.[30] The EIR for the General Plan 2040 determined that this population growth would have a less that significant impact.

Plan Bay Area 2050 is the current regional long-range plan charting the course for the future of the nine-county San Francisco Bay Area. Plan Bay Area 2050 focuses on four key issues — the economy, the environment, housing, and transportation. Plan Bay Area 2050 estimates a total of 5,408,000 total jobs to the Bay Area by 2050 (an addition of 1,403,000 jobs between 2015 and 2050).[31] The project's addition of up to 3,000 employees would increase jobs in the City and region incrementally. Compared to the total jobs projection for the entire Bay Area, the addition of 3,000 jobs would not be substantial. The location of an employment center close to regional transit (Caltrain) would be consistent with Plan Bay Area 2050 goals to locate more jobs near transit. Therefore, the project impact with respect to indirect population growth would be ***less than significant***.

b) Displacement of Housing or People

There is currently no housing or people at the site that would be displaced by the project. The project would have ***no impact*** related to displacement of housing or people.

[29] FirstCarbon Solutions, Draft Program Environmental Impact Report General Plan Update, Zoning Code Amendments, and Climate Action Plan, City of South San Francisco, San Mateo County, California. June 24, 2022.

[30] City of South San Francisco, ShapeSSF General Plan 2040. February 2022.

[31] Association of Bay Area Governments and Metropolitan Transportation Commission, Plan Bay Area 2050 Final Blueprint Growth Pattern, January 2021. Available at: https://www.planbayarea.org/digital-library/plan-bay-area-2050-final-blueprint-growth-pattern

15. PUBLIC SERVICES Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the following public services?	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
a) Fire protection			☒	
b) Police protection			☒	
c) Schools			☒	
d) Parks			☒	
e) Other public facilities			☒	

a-e) Public Services

The proposed project is located on a developed site within the City of South San Francisco that is within the public services area, which includes South San Francisco Fire Department Station 62 located 1.2 miles away from the project site, and the South San Francisco Fire Department located 1.3 miles away. The project would not directly add population, and an office/R&D use would not be anticipated to substantially increase utilization of public services, such that new or physically altered facilities would be required. The minimal increases in demand for services expected with the worker population and potential indirect population growth (see Section 14: Population and Housing), would be offset through payment of development fees and annual taxes, a portion of which go toward ongoing provision of and improvements to public services. Therefore, the impact to public services would be ***less than significant***.

16. RECREATION Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.			☒	
b) Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.			☒	

a, b) Recreation

The project proposes onsite open space in the form of landscaped areas and outdoor seating areas. The construction of onsite amenities has been included in the analysis in this document and would not result in significant impacts to the environment. The project would not otherwise construct or cause to be constructed parks or recreational facilities.

All commercial development is required to pay development impact fees to the City, which helps fund City parks and recreation facilities and programs. The use of public recreational facilities would not be anticipated to increase substantially due to project employees such that physical deterioration would occur, or construction or expansion would be necessary. Therefore, the impact related to recreation would be ***less than significant***.

17. TRANSPORTATION Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
a) Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?			☒	
b) Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?			☒	
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?		☒		
d) Result in inadequate emergency services?				☒

This section utilizes information from the Transportation Analysis prepared for this analysis by Hexagon Transportation Consultants, Inc., included in full as Attachment D.

a) Circulation System Plans and Facilities

The Transportation Analysis assessed pedestrian, bicycle, and transit access and circulation and consistency with applicable regulations.

Pedestrians: Sidewalks and crosswalks are provided on most streets in the immediate vicinity of the proposed project. Sidewalks exist along the east side of Dubuque Avenue, on Grand Avenue and Airport Boulevard, with signalized intersections at Dubuque Avenue/Oyster Point and Dubuque Avenue/Grand Avenue. As part of the South San Francisco Caltrain Reconstruction Project that is currently in progress, an underpass was constructed that provides a direct connection for pedestrians and bicyclists between areas to the west and east of the Caltrain tracks. This underpass also provides a connection to the new Caltrain station platform. Currently, there is no ADA access from Dubuque Avenue to the Caltrain station platform, which is accessible by stairs, however, the 580 Dubuque project that is under development includes a condition of approval to provide a pedestrian route to the station that is ADA accessible.

A significant impact would occur if the proposed project conflicted with applicable or adopted policies, plans or programs related to pedestrian facilities or otherwise decreased the performance or safety of pedestrian facilities. The project would not remove any pedestrian facilities nor conflict with *Active South City*, the City's Bicycle and Pedestrian Master Plan. The South San Francisco General Plan requires project proponents to provide sidewalks and street trees as part of frontage improvements for new development. The project would reconstruct the sidewalk along its frontage on Dubuque Avenue in order to move it away from the curb and change it to a curving path through plantings and trees. Striped crosswalks would connect the sidewalk across both driveways. Therefore, the project would have a ***less than significant*** impact on the existing and planned pedestrian facilities.

Bicyclists: Bicycle access to the project site is currently limited as there are no bike lanes on Dubuque Avenue. In the vicinity of the project, Class II bike lanes are located on Airport Boulevard (north of Miller Avenue), along Poletti Way, Gateway Boulevard (between E Grand Avenue and Airport Boulevard), along Sister Cities Boulevard, and along Oyster Point Boulevard (east of Gateway Boulevard). The new pedestrian/bicycle undercrossing provides bicycle access between East Grand Avenue /Poletti Way and Airport Boulevard, with direct access to the South San Francisco Caltrain station platform. The existing Caltrain Station access driveway on Dubuque Avenue would provide bicycle access between the Caltrain station and the project site. An impact to bicyclists would occur if the proposed project disrupted existing bicycle facilities or conflicted with or created inconsistencies with adopted bicycle system plans, guidelines, and policies. The project would not remove any bicycle facilities nor would it conflict with *Active South City,* which proposes upgrades to some of the existing bike lanes near the project site. Therefore, the impact to bicycle facilities would be ***less than significant***.

Transit: Existing transit service to the study area is provided by Caltrain, San Mateo County Transit District (SamTrans), Bay Area Rapid Transit (BART), Water Emergency Transit (WETA), and commuter shuttles. The project site is located less than 1/2-mile from the Caltrain station. Since the project is located close to the Caltrain station, it is expected to generate trips via transit services. According to state CEQA guidelines, the addition of new transit riders should not be treated as an adverse impact because such development also improves regional flow by adding less vehicle travel onto the regional network. Additionally, the recent Caltrain station improvement project has been planned to accommodate increases in ridership. Therefore, the project is anticipated to have a ***less than significant*** impact on transit facilities and services.

The Zoning Code Amendments associated with the ShapeSSF General Plan 2040 included an updated TDM Ordinance. A TDM program is required for the proposed project to meet the TDM Ordinance, which requires a minimum of 50% alternative mode use (less than 50% single occupancy vehicles). TDM program measures further promote alternative modes, including pedestrian, bicycle, carpool, and transit options.

Per Senate Bill 743 discussed under this Section 17(b) below, auto delay, level of service (LOS), and similar measures of vehicular capacity or traffic congestion are no longer considered as a basis for determining significant impacts under CEQA. The following discussion is provided for informational purposes and is based on the Local Transportation Analysis prepared by Hexagon Transportation Consultants, Inc., which is available as part of the project material on file with the City.

The proposed project would generate an average of 5,635 new daily trips, with 815 new trips during the AM peak hour and 815 new trips during the PM peak hour. These trips rates factor in implementation of the required TDM program. The Local Transportation Assessment concluded that the project would not cause any study intersections or highway segments to degrade from acceptable operations to unacceptable operations with the exception of the intersection of Sister Cities Boulevard/Oyster Point Boulevard and Airport Boulevard, which would degrade to an unacceptable level during AM peak hours with the addition of project traffic to existing traffic volumes. Under cumulative conditions expected in 2040, six intersections studied would operate at unacceptable levels during at least one of the peak hours, with or without the addition of project traffic. The project would pay required Citywide Transportation Fees to offset any operational impacts on the City's transportation system. The General Plan 2040's Mobility Plan identifies several major transportation projects to improve traffic circulation in the East of 101 area, as most of the study intersections are already built to capacity. The Citywide Transportation Fee is a source of funding for transportation improvements such as those identified in the Mobility Plan.

b) Vehicle Circulation and Congestion

Senate Bill (SB) 743 changed CEQA transportation impact analysis significance criteria to eliminate auto delay, level of service (LOS), and similar measures of vehicular capacity or traffic congestion as a basis for determining significant impacts under CEQA (although a jurisdiction may choose to maintain these measures under its General Plan). The changes in CEQA Guidelines to implement SB 743 present vehicles miles traveled (VMT) as an appropriate measure of transportation impacts.

The City of South San Francisco provides VMT screening criteria for development projects. The criteria are based on the type of project, characteristics, and/or location. If a project meets the City's screening criteria, the project is determined to result in less-than-significant impacts, and a detailed VMT analysis is not required. The City's policy states that projects within 0.5 miles of an existing or planned high-quality transit corridor or major transit station should be presumed to have no impact on VMT. However, this presumption would not apply if the project FAR is less than 0.75, includes parking that is higher than required by the City, is inconsistent with Plan Bay Area, or replaces affordable residential units with a smaller number of market-rate units. The project site is located within 1/2 mile from the South San Francisco Caltrain Station. The project is proposing an FAR of approximately 3.33, does not exceed required parking spaces, and is consistent with the land use under the City's 2040 General Plan and related zoning.

Therefore, a detailed VMT analysis is not required and the impact with respect to VMT would be ***less than significant***. Additionally, South San Francisco Municipal Code requires preparation and implementation of a TDM program, which requires a minimum of 50% alternative mode use (less than 50% single occupancy vehicles). Successful implementation of TDM program measures could serve to further reduce project VMT.

c) Hazards

The Transportation Analysis evaluated the sight distance at both project driveways on Dubuque Avenue. According to the South San Francisco Municipal Code, the speed limit on Dubuque Avenue is 30 mph. The sight distance was found to be adequate from either driveway looking right to the north on Dubuque Avenue with the removal of the existing signboards at the project driveways. However, sight distance looking left to the south is inadequate due to a slight curve to the road and line-of-sight obstructions, including a utility pole, vegetation, signage, and a metal fence. The project proposes to clear all line-of sight obstructions along the project site frontage on Dubuque Avenue, including the utility poles, which would be removed as part of the project's proposal to underground approximately 462 linear feet of electrical line along the project's Dubuque Avenue frontage. The following mitigation would improve the safety at both driveways.

Mitigation Measure

Trans-1: **Demonstrate Adequate Sight Distance at Project Driveways**. The applicant shall demonstrate to the satisfaction of the City that the sight distance is adequate at both project driveways, which could include but is not limited to the following measures:

- Coordination with the City to decrease the speed limit on Dubuque Avenue to 25 mph.
- Coordination with the City to remove all line-of-sight obstructions (vegetation, utility poles and sign boards) to create clear sight lines within the City's right-of-way to the south of the project site.

- Coordination with the adjacent property to the south (720 Dubuque Avenue/PG&E easement) to push back the existing metal fence on the southern boundary of the project site and remove vegetation to provide a clear zone to the south of the project's southern driveway.

With these improvements, the impact with respect to traffic hazards would be ***less than significant with mitigation***.

As is standard practice, landscaping installed along the roadway frontage near driveways should be maintained to be either low-lying or trees with canopies that do not fall below seven feet and parking should be restricted within 25 feet of the driveways.

d) Emergency Access

The proposed project would not reroute or change any of the city streets in its vicinity that would impact emergency vehicle access to properties along Dubuque Avenue. The proposed site access roadways would accommodate emergency vehicles. The project would have ***no impact*** with regard to inadequate emergency access.

18. TRIBAL CULTURAL RESOURCES Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
a) Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is: i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.		☒		

a) Tribal Cultural Resources

A record search of the Native American Heritage Commission Sacred Lands File was completed for the project and indicated there are no known sacred lands present in the vicinity of the site (see Attachment B). While no tribes have requested notification of potential consultation opportunities for projects in this area, per recommendation of the Native American Heritage Commission, notice was sent to listed tribes on October 12, 2022. No responses were received within the required 30 day response period.

The records search performed by the Northwest Information Center indicated that there is a moderate to high potential for the inadvertent discovery of previously unrecorded Native American resources based on the characteristics of the site and history of the region (see Attachment B).

Although previous studies included field survey of the project site, significant excavation and below-grade levels are proposed, which would disturb previously-undisturbed native soils well below the field survey levels. Construction activities associated with the project would include excavation extending up to approximately 60 feet below the surface in the area of the parking garage.

Mitigation Measures Cul-1, Cul-2, and Cul-3 would require proper handling of any discoveries and would also reduce the potential impact related to unknown tribal cultural resources.

Compliance with the protection procedures specified in Mitigation Measures Cul-1, Cul-2, and Cul-3 would require that if any previously-unknown tribal cultural resources and/or human remains are discovered, these would be handled appropriately and the impact of the project would be ***less than significant with mitigation***.

19. UTILITIES AND SERVICE SYSTEMS Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
a) Require or result in the relocation or construction of new or expanded water, or wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?			☒	
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?			☒	
c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?			☒	
d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?			☒	
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?			☒	

a, b, c) Water, Stormwater, Wastewater, and Other Utilities

Water

As discussed in Section 10: Hydrology and Water Quality, the City of South San Francisco's East of 101 Area is served by Cal Water through a combination of local groundwater and water purchased from SFPUC's Hetch Hetchy System. Cal Water's Urban Water Management Plan (UWMP), which plans for provision of water, anticipates future growth in the region, but does not explicitly include the project.

Based on preliminary Fire Flow Calculations and results from Fire Flow Tests performed by Cal Water, the 6-inch water main in Dubuque Avenue has sufficient capacity to serve the project. Two new fire water services and one new domestic water service will be installed between the main and the buildings.

A separate Water Supply Assessment (WSA) was prepared for the project per Senate Bill 610 through coordination between the City and Cal Water (available as part of the project materials on file with the City). The WSA, prepared by EKI Environment & Water, Inc., in August 2022, estimates the project's net annual water demand to be approximately 189 acre-feet per year. Because this project was not explicitly accounted for in the SSF District 2020 UWMP, the water demand of the project was assumed to not be included in the projected SSF District water demands.

In 2021, Cal Water started a Development Offset Program, which requires any new residential, commercial, or industrial development within any of the three Peninsula Districts that is projected to demand more than 50 acre-feet per year to pay a special facilities fee per acre-feet of net demand increase, to fund projects that will increase supply reliability. The project would be responsible for offsetting its actual anticipated net demand, based on detailed calculations for the final project design. Cal Water would verify compliance with the Development Offset Program before establishing a water service connection to the project. With the offset of the net increase of water through payment of the special facilities fee, the project would not be expected to result in a net increase in water demands to Cal Water's SSF District. Impacts with respect to water would be ***less than significant***. [32, 33, 34]

Wastewater

The wastewater collection system that serves the project site is owned and operated by the City of South San Francisco. The nearest publicly-owned sewer system, which is owned and maintained by the City, is an 8-inch main located within a sewer easement along the southeastern property line of the project site. The project would construct two onsite sanitary sewer lines, as well as connections to the existing public sewer line to the east.

The project is also proposing upsizing of the existing 8-inch sewer main to a 10-inch main approximately 1,400 linear feet along the project site and south to the existing 10-inch main that crosses the Caltrain tracks.

The existing 10-inch sewer main across the Caltrain tracks (between manhole sJ2750 near the southern edge of the 720 Dubuque Avenue parcel and Poletti Way) has sufficient capacity, but is older and developing some deficiencies (pipe roughness and sags). The project is also proposing to rehabilitate this approximately 200 linear foot length in place, which could include sliplining, cured in place pipe, pipe bursting, or replacement of the existing pipe with a new 10-inch sewer main.

It is anticipated that with the proposed sewer main improvements, there would be adequate capacity for the project and other anticipated potential future office/R&D development along the Dubuque Avenue corridor consistent with the ShapeSSF General Plan 2040. (If residential development is instead proposed along this corridor, further upsizing may be required.)

The ShapeSSF General Plan 2040 EIR analyzed buildout of 14,100,523 new square feet of non-residential building space at full buildout and determined that no new or expanded wastewater treatment facilities would be required to provide services to the anticipated new buildout, including the current project.[35] The impact related to required wastewater capacity would be ***less than significant***.

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[32] California State Water Board, amended plan adopted December 12, 2021, Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary, available at: https://www.waterboards.ca.gov/plans_policies/docs/2018wqcp.pdf .

[33] BAWSCA, Water Reliability webpage, available at: https://bawsca.org/water/reliability

[34] California Water Service (Cal Water), adopted June 2021, 2020 Urban Water Management Plan: South San Francisco District., available at: https://www.calwater.com/docs/uwmp2020/SSF_2020_UWMP_FINAL.pdf.

[35] FirstCarbon Solutions, Draft Program Environmental Impact Report General Plan Update, Zoning Code Amendments, and Climate Action Plan, City of South San Francisco, San Mateo County, California. June 24, 2022.

Stormwater

As discussed in Section 10: Hydrology and Water Quality, the proposed drainage system would maintain the existing flow discharge pattern and connect to the existing storm drain system operated and maintained by the City of South San Francisco. The existing storm drainpipes on site would be removed and replaced by new storm drainpipes that would loop around the building. In compliance with City requirements, the project would implement low-impact development stormwater management best practices to minimize runoff and encourage stormwater infiltration, including using concrete-lined flow-through planters to manage stormwater on the project site. As redevelopment on a currently developed site, the project would result in a decrease in impervious surface (to 79% of the site) and would construct a new above and below ground drainage system that includes catch-basins, storm drainpipe, bio-retention areas, and flow-through planters to capture, treat, and discharge runoff from the entire site. With an increase of pervious surface area and on-site storm drainage infrastructure that would reduce the existing runoff rate, the project would reduce demand on the storm drainage facilities compared to existing conditions. Impacts with respect to stormwater would be ***less than significant***.

Electricity, Natural Gas, and Telecommunications

As discussed in Section 6: Energy, the project would not result in the wasteful, inefficient, or unnecessary consumption of energy. In addition, the project would not require the construction of new electric power, natural gas, or telecommunications facilities because it is located in an urban area already served by those utilities. The project proposes to underground the electrical lines along the project's frontage on Dubuque Avenue (approximately 462 linear feet) in coordination with PG&E. This is consistent with Policy LU-8.10 of the ShapeSSF General Plan 2040, which includes undergrounding new and existing utilities when feasible.[36]

The project would be designed to operate on 100% electric energy. As an infill site in applicable service areas, the project impacts with respect to electricity, natural gas, and telecommunications would be ***less than significant***.

d, e) Solid Waste and Solid Waste Reduction

South San Francisco Scavenger Company, Inc. (SSFSC) manages all trash and recycling services in South San Francisco. SSFSC collects, receives, processes, and recycles (or transfers for landfill disposal) over 250,000 tons of waste a year.[37] Of all solid waste generated, approximately 84 percent is sent to the Corinda Los Trancos Landfill (Ox Mountain) in Half Moon Bay, California. The Corinda Los Trancos Landfill (Ox Mountain) accepts up to 3,598 tons per day and is anticipated to have available capacity until 2034.[38]

[36] City of South San Francisco, 2040 General Plan. February 2022.

[37] South San Francisco Scavenger Company, Inc. website, "About Us", available at: https://ssfscavenger.com/about-us/, accessed August 2022.

[38] California Department of Resources Recycling and Recovery (CalRecycle), 2019, SWIS Facility Detail: Corinda Los Trancos Landfill (Ox Mtn) (41-AA-002), https://www2.calrecycle.ca.gov/SolidWaste/SiteActivity/Details/1561?siteID=3223, accessed August 2022.

The proposed project would generate solid waste during construction and operation. Handling of debris and waste generated during construction would be subject to SSFMC Section 8.16 coordination with Scavengers Company; and SSFMC Section 15.22.030 diversion of at least 65 percent of construction or demolition waste.

The project would generate approximately 68.39 tons of waste per year, or approximately 0.19 tons per day. The estimate is conservative as it does not factor in any recycling or waste-diversion programs. The 0.19 tons of solid waste generated daily by the project would represent less than 0.001 percent of the permitted landfill throughput.[39]

The City of South San Francisco is required to meet the statewide waste diversion goal of 50 percent set by AB 939. The proposed project would comply with federal, state, and local statutes and regulations related to solid waste, such as AB 939, the SSFMC, and the City's recycling program. Impacts related to solid waste and waste facilities would be ***less than significant***.

[39] Solid waste estimated from CalEEMod output in Attachment A.

20. WILDFIRE If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?				☒
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?				☒
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?				☒
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?				☒

a-d) Wildfire Risk and Emergency Response

The project site is located within an urbanized area of the City of South San Francisco and is surrounded by existing industrial/commercial development and infrastructure. Neither the project site nor the City of South San Francisco is identified as being within a state responsibility area or a very high fire hazard severity zone.[40, 41] The proposed project would have ***no impact*** related to wildfire.

[40] California Department of Forestry and Fire Protection. 2007. San Mateo County Fire Hazard Severity Zones in State Responsibility Area. Available: https://osfm.fire.ca.gov/divisions/wildfire-planning-engineering/wildland-hazards-building-codes/fire-hazard-severity-zones-maps/.

[41] Department of Forestry and Fire Protection Fire and Resource Assessment Program, *San Mateo County Very High Fire Hazard Severity Zones in Local Responsibility Area*, November 24, 2008, available at: https://osfm.fire.ca.gov/media/6800/fhszl_map41.pdf.

21. MANDATORY FINDINGS OF SIGNIFICANCE	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?		☒		
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?		☒		
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?		☒		

a) Environmental Quality. With the implementation of Mitigation Measures Bio-1 to protect nesting birds during construction and Cul-1 through Cul-3 to address the potential discovery of currently unknown cultural, tribal cultural, or paleontological resources at the site, the project would not degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, or threaten to eliminate a plant or animal community. The project would not impact rare or endangered wildlife species or eliminate important examples of the major periods of California history or prehistory.

b) Cumulative Impacts. The project would not result in adverse impacts that are individually limited but cumulatively considerable, including effects for which project-level mitigation were identified to reduce impacts to less than significant levels. All potential effects of the project were assessed in the context of area development, including assessment of emissions impacts analyzed against cumulative thresholds per the Air District recommendations. Project-specific impacts would be less than significant with implementation of mitigation measures identified in this document, including Mitigation Measure GP-MM-Air-1a to address construction period dust and emissions, and would not result in contribution of considerable levels to cumulative impacts.

c) Adverse Effects on Human Beings. The project would not result in substantial adverse effects on human beings, either directly or indirectly. Mitigation Measures GP-MM-Air-1a, Air-2, Geo-1, and Haz-1 would minimize the potential for safety impacts related to construction-period emissions, disturbance of site contaminants, and appropriate techniques for safety during excavation and building construction. Therefore, the potential adverse effects on human beings would be less than significant with mitigation.

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SOURCES

1. Association of Bay Area Governments and Metropolitan Transportation Commission, Plan Bay Area 2050 Final Blueprint Growth Pattern, January 2021.
2. BAWSCA, Water Reliability webpage, available at: https://bawsca.org/water/reliability
3. Bay Area Air Quality Management District, May 2017, California Environmental Quality Act Air Quality Guidelines.
4. Bay Area Air Quality Management District, June 2, 2010, News Release http://www.baaqmd.gov/~/media/Files/Communications%20and%20Outreach/Publications/News%20Releases/2010/ceqa_100602.ashx
5. Bay Area Air Quality Management District. December 2021. Frequently Asked Questions for 2022 Permit Reform and Implementation of Regulation 2-1 and 2-5 Amendments.
6. Bay Area Air Quality Management District. December 15, 2021. Regulation 2 Permits Rule 1 General Requirements, Regulation 2-1-243
7. California Department of Forestry and Fire Protection, 2007, San Mateo County Fire Hazard Severity Zones in State Responsibility Areas, available at https://osfm.fire.ca.gov/divisions/wildfire-planning-engineering/wildland-hazards-building-codes/fire-hazard-severity-zones-maps/.

8. California Department of Forestry and Fire Protection Fire and Resource Assessment Program, November 24, 2008, San Mateo County Very High Fire Hazard Severity Zones in Local Responsibility Area, available at: https://osfm.fire.ca.gov/media/6800/fhszl_map41.pdf.
9. California Department of Resources Recycling and Recovery (CalRecycle), 2019, SWIS Facility Detail: Corinda Los Trancos Landfill (Ox Mtn) (41-AA-002), website accessed at https://www2.calrecycle.ca.gov/SolidWaste/SiteActivity/Details/1561?siteID=3223
10. California Department of Transportation, State Scenic Highway Mapping System, available at: https://dot.ca.gov/programs/design/lap-landscape-architecture-and-community-livability/lap-liv-i-scenic-highways
11. California Geological Survey, 2021, Tsunami Hazard Area Map, San Mateo County, available at: https://www.conservation.ca.gov/cgs/tsunami/maps.
12. California Regional Water Quality Control Board San Francisco Bay Region, San Francisco Bay Basin Water Quality Control Plan (Basin Plan), November 2019.
13. California Water Service (Cal Water), adopted June 2021, 2020 Urban Water Management Plan: South San Francisco District.
14. City/County Association of Governments of San Mateo County, November 2012, Comprehensive Airport Land Use Compatibility Plan for the Environs of San Francisco International Airport.
15. City of South San Francisco, 2022, ShapeSSF General Plan 2040.
16. Department of Toxic Substances Control EnviroStor Database, website accessed at http://www.envirostor.dtsc.ca.gov/public/
17. Federal Emergency Management Agency (FEMA), April 2019, Flood Insurance Rate Map (FIRM), Map Number 06081C0042F.
18. FirstCarbon Solutions, June 24, 2022, Draft Program Environmental Impact Report General Plan Update, Zoning Code Amendments, and Climate Action Plan, City of South San Francisco, San Mateo County, California.
19. Langan Engineering and Environmental Services, July 9, 2021, Geotechnical Investigation.
20. Langan Engineering and Environmental Services, September 2, 2022, Draft Dewatering Assessment.
21. Langan Engineering and Environmental Services, July 15, 2022, Draft Soil and Groundwater Management Plan
22. Metropolitan Transportation Commission, 2021, Transit Priority Areas, accessed at: https://www.arcgis.com/home/item.html?id=370de9dc4d65402d992a769bf6ac8ef5
23. Ramboll US Consulting, Inc., January 2021, Phase I Environmental Site Assessment.
24. South San Francisco Scavenger Company, Inc. website, “About Us”, available at: https://ssfscavenger.com/about-us/.
25. State Water Resources Control Board GeoTracker Database, website accessed at http://geotracker.waterboards.ca.gov/
26. University of California Museum of Paleontology (UCMP) Online Database. 2019. UCMP specimen search portal, http://ucmpdb.berkeley.edu/.
27. U.S. Geological Survey, Mineral Resources Data System: U.S. Geological Survey, website accessed at: http://tin.er.usgs.gov/mrds/

AIR QUALITY AND GREENHOUSE GAS ASSESSMENT

ATTACHMENT A

to the

800 Dubuque Avenue Project Initial Study / Mitigated Negative Declaration

800 DUBUQUE AVENUE CONSTRUCTION AIR QUALITY AND GREENHOUSE GAS ASSESSMENT

South San Francisco, California

November 22, 2022
Revised March 24, 2023

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I&R Project#: 22-106

Introduction

The purpose of this report is to address the potential community risk impacts associated with the construction of the proposed residential project located at 800 Dubuque Avenue in South San Francisco, California. The air quality impacts and GHG emissions would be associated with the demolition of the existing uses at the site, construction of the new building and infrastructure, and operation of the project. Air pollutant emissions associated with construction of the project were predicted using appropriate computer models. In addition, the potential project construction health risk impacts 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]

Project Description

The 5.89-acre project site is currently comprised of two one-story buildings and one two-story building, totaling 113,595 square feet (sf) of office/R&D (life science) use and associated parking. The project proposes to demolish the existing buildings and parking to construct three office/R&D (life science) buildings totaling up to 900,000 square feet (sf). Four levels of subterranean parking are also planned which would provide 1,335 parking spaces, of which 81 electric vehicle (EV) parking spaces are proposed to be constructed up front (6% of total) with an additional 268 spaces EV-ready for future operation (20% of total). This is consistent with the requirements under Section 20.330.008 of the City's Municipal Code and the CalGreen Tier 2 requirements at the time of project application. For purposes of this analysis, construction was assumed to begin as early as August 2023 and be completed by March 2027.

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

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

micrometers or less ($PM_{2.5}$). Elevated concentrations of PM_{10} and $PM_{2.5}$ are the result of both region-wide (or cumulative) emissions and localized emissions. High particulate matter levels aggravate respiratory and cardiovascular diseases, reduce lung function, increase mortality (e.g., lung cancer), and result in reduced lung function growth in children.

Toxic Air Contaminants

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

Diesel exhaust is the predominant TAC in urban air and is estimated to represent about three-quarters of the cancer risk from TACs (based on the Bay Area average). According to the California Air Resources Board (CARB), diesel exhaust is a complex mixture of gases, vapors, and fine particles. This complexity makes the evaluation of health effects of diesel exhaust a complex scientific issue. Some of the chemicals in diesel exhaust, such as benzene and formaldehyde, have been previously identified as TACs by the CARB, and are listed as carcinogens either under the State's Proposition 65 or under the Federal Hazardous Air Pollutants programs. The most recent Office of Environmental Health Hazard Assessment (OEHHA) risk assessment guidelines were published in February of 2015.[2] See *Attachment 1* for a detailed description of the community risk modeling methodology used in this assessment.

Sensitive Receptors

There are groups of people more affected by air pollution than others. CARB has identified the following persons who are most likely to be affected by air pollution: children under 16, the elderly over 65, athletes, and people with cardiovascular and chronic respiratory diseases. These groups are classified as sensitive receptors. Locations that may contain a high concentration of these sensitive population groups include residential areas, hospitals, daycare facilities, elder care facilities, 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 west of the project site. There are more receptors at further distances, including children at the Gateway Child Development Center YMCA approximately 750 feet southeast 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 NO_X and particulate matter (PM_{10} and $PM_{2.5}$) and because the EPA has identified DPM as a probable carcinogen. Implementation of the heavy-duty diesel on-road vehicle standards and the non-road diesel engine standards are estimated to reduce particulate matter and NO_X emissions from diesel engines up to 95 percent in 2030 when the heavy-duty vehicle fleet is completely replaced with newer heavy-duty vehicles that comply with these emission standards.[3]

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

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

State Regulations

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

[3] USEPA, 2000. *Regulatory Announcement, Heavy-Duty Engine and Vehicle Standards and Highway Diesel Fuel Sulfur Control Requirements*. EPA420-F-00-057. December.

[4] California Air Resources Board, 2000. Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles. October.

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

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

Bay Area Air Quality Management District (BAAQMD)

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

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

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

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

programs to estimate concentrations of TAC, and an assessment of exposures and health risks. Throughout the program, information derived from the technical analyses will be used to focus emission reduction measures in areas with high TAC exposures and high density of sensitive populations. Risk reduction activities associated with the CARE program are focused on the most at-risk communities in the Bay Area. 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 BAAQMD has identified six communities as impacted: Concord, Richmond/San Pablo, Western Alameda County, San José, Redwood City/East Palo Alto, and Eastern San Francisco. The project site is located within a BAAQMD overburdened area as the Project site is scored at the 83rd percentile as identified by CalEnviroScreen due to high exposure to diesel particulate matter (DPM) and traffic, but it is not within a CARE area.[7]

The BAAQMD California Environmental Quality Act (*CEQA) Air Quality Guidelines*[8] 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 would establish new sources of particulate matter and gaseous emissions. Emissions would primarily result from the testing of the emergency backup generators. 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] OEHAA, CalEnviroScreen 4.0 Indicator Maps https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-40
[8] 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.

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.

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.

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.

City of South San Francisco 2040 General Plan

Adopted in October 2022, the City of South San Francisco 2040 General Plan 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[9]. It includes a goal of reaching carbon neutrality by 2045 and has set a target of a 40% reduction in communitywide emissions by 2030. The following goals and policies are applicable to the proposed project:

[9] City of South San Francisco, URL: https://shapessf.com/wp-content/uploads/2022/11/SSFGPU_PDFPlan_FinalPlan_Resolution.pdf

General Plan Air Quality Policies

Sub-Areas Element

SA-28.5 **Require sustainable and environmentally sensitive design**. Incorporate sustainable and environmentally sensitive design and equipment, energy conservation features, water conservation measures and drought-tolerant or equivalent landscaping, and sustainable stormwater management features.

SA-32.5 **Create buffering from US-101.** Create landscaping buffers and other buffers to reduce noise, visual, and air quality impacts from US-101. A Prosperous economy for All Element

A Prosperous Economy for All Element

PE-2.1 **Reinvest in industrial property**. Within areas targeted for retention of industrial uses, support industrial property owners seeking to reinvest in and modernize their properties and come into compliance with environmental regulations, current building codes, and use/production of green energy.

Community Health and Environmental Justice

CHEJ-3.1 **Support regional efforts to improve air quality and protect human health**.

Action CHEJ-3.1.1 Monitor air quality in Lindenville, East of 101 and downtown. Work with the Bay Area Air Quality Management District to establish and identify funding for air quality monitoring and reduction strategies. This action may include purchasing particulate matter (PM2.5) monitors to track local air quality data in Lindenville, East of 101, and Downtown.

CHEJ-3.2 **Reduce mobile source pollution**. Reduce emissions from mobile sources of air pollution, such as diesel-based trucks and vehicles that travel to, from, or through South San Francisco.

CHEJ-3.3 **Support businesses transitioning their operations to emit fewer air pollutants.** Support local business owners in transitioning their operations to emit fewer air pollutants through incentives and development standards.

Action CHEJ-3.3.1 Explore incentives for pollution reduction. Explore opportunities for production, distribution, and warehousing uses in Lindenville and East of 101 to reduce pollution, such as greener trucks, energy efficient buildings, and other strategies.

Action CHEJ-3.3.2 **Reduce indoor air pollution**. Explore opportunities to work with property owners to rehabilitate existing buildings and require that new buildings adjacent to production, distribution, and warehousing uses; highways; or rail to implement appropriate mitigation measures to reduce

indoor air pollution such as air filtration/ventilation systems, landscaping, and other physical improvements as recommended by the California Air Resources Board and/or the Bay Area Air Quality Management District.

Action CHEJ-3.2.1 Maintain Truck route map to minimize exposure. Maintain an up-to-date truck routes map that minimizes exposures to sensitive land uses. Prohibit the designation of new truck routes on local neighborhood streets in South San Francisco

Action CHEJ-3.2.2 Adopt an ordinance establishing vehicle idling restrictions. Establish a local ordinance that exceeds the State vehicle idling restrictions where appropriate, including restrictions for bus layovers, delivery vehicles, trucks at warehouses and distribution facilities and taxis, particularly when these activities take place near sensitive land uses (schools, healthcare facilities, affordable housing, and elder and childcare centers). Manage truck idling in new residential neighborhoods in Lindenville and East of 101.

Community Resilience Element

CR-6.1 **Support resilient building design**. Support resilient building design by helping residents weatherize homes to keep them cooler and more energy efficient and to improve indoor air quality.

CP-3.1.1 **Incentivize energy efficient new construction**. Provide incentives to encourage new construction to exceed California's Building Energy Efficiency Standards outlined in Title 24, Part 6.

City of South San Francisco Climate Action Plan

BNC 1.1 **Improve the energy efficiency of new construction**. Provide a combination of financial and development process incentives (e.g., Expedited permitting, FAR increases, etc.) to encourage new development to exceed Title 24 energy efficiency standard.

TL 2.2 **TDM Program**. Implement, monitor, and enforce compliance with the City's TDM Ordinance.

WW 2.1 **Indoor Water Efficiency Standards**. Require high-efficiency fixtures in all new construction and major renovations, comparable to CALGreen Tier 1 or 2 standards.

Goal CP-1: A Carbon Neutral Community

CP-1.1 **Maintain and update the Climate Action Plan**. Maintain and regularly update the City's Climate Action Plan to reduce greenhouse gas (GHG) emissions

generated within the City. Ensure the City's GHG emission target is consistent with California's GHG reduction goals in order to be a qualified plan for California Environmental Quality Act (CEQA).

CP-1.2 **Monitor progress towards carbon neutrality goal.** Track and report progress towards achieving the City's greenhouse gas reduction goal.

Goal CP-2: A resilient and fossil fuel free energy system

CP-2.1 **Maintain Peninsula Clean Energy membership.** Maintain City membership in Peninsula Clean Energy (PCE) and continue to work to maintain a high level of private property owner participation in PCE.

Goal CP-3: Green buildings are the standard in South San Francisco for new construction and major renovations

CP-3.1 **Building code maintenance for new and major renovations (energy efficiency).** Regularly update South San Francisco's building codes to improve the energy performance of new construction and major remodels and to phase in requirements in predictable ways.

CP-3.4 **Adopt Electric Vehicle charging reach code.** Adopt higher electric vehicle charging requirements than CALGreen for multifamily and nonresidential new construction.

City of South San Francisco—General Plan Update, Zoning Code Amendments, and Climate Action Plan Program EIR

The City's Environmental Impact Report (EIR) addressed air quality impacts associated with land use development in South San Francisco that is consistent with the General Plan Update, zoning code amendments and Climate Action Plan[10]. Air quality impacts and mitigation measures were identified in the EIR.

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 its thresholds in the CEQA Air Quality Guidelines in 2017 and again in 2022 (GHG thresholds only). The latest BAAQMD significance thresholds, which were used in this analysis and are summarized in Table 1. Impacts above the threshold are considered potentially significant.

[10] City of South San Francisco. 2022. *General Plan Update, Zoning Code Amendments, and Climate Action Plan Draft Program EIR* See: https://shapessf.com/wp-content/uploads/2022/09/SSF-GPU-Final-EIR_Combined.pdf

Table 1. BAAQMD CEQA Air Quality 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	Not Applicable	
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 $\mu g/m^3$	0.8 $\mu g/m^3$	
Greenhouse Gas Emissions			
Land Use Projects – (Must Include A or B)	A. Projects must include, at a minimum, the following project design elements: 1. Buildings a. The project will not include natural gas appliances or natural gas plumbing (in both residential and nonresidential development). b. The project will not result in any wasteful, inefficient, or unnecessary energy usage as determined by the analysis required under CEQA Section 21100(b)(3) and Section 15126.2(b) of the State CEQA Guidelines. 2. Transportation a. Achieve a reduction in project-generated vehicle miles traveled (VMT) below the regional average consistent with the current version of the California Climate Change Scoping Plan (currently 15 percent) or meet a locally adopted Senate Bill 743 VMT target, reflecting the recommendations provided in the Governor's Office of Planning and Research's Technical Advisory on Evaluating Transportation Impacts in CEQA: i. Residential projects: 15 percent below the existing VMT per capita ii. Office projects: 15 percent below the existing VMT per employee iii. Retail projects: no net increase in existing VMT b. Achieve compliance with off-street electric vehicle requirements in the most recently adopted version of CALGreen Tier 2. B. Be consistent with a local GHG reduction strategy that meets the criteria under State CEQA Guidelines Section 15183.5(b).		

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.

AIR QUALITY IMPACTS AND MITIGATION MEASURES

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

BAAQMD is the regional agency responsible for overseeing compliance with State and Federal laws, regulations, and programs within the San Francisco Bay Area Air Basin (SFBAAB). BAAQMD, with assistance from the Association of Bay Area Governments (ABAG) and Metropolitan Transportation Commission (MTC), prepares and implements specific plans to meet the applicable laws, regulations, and programs. The most recent and comprehensive of which is the *Bay Area 2017 Clean Air Plan*.[11] The primary goals of the Clean Air Plan are to attain air quality standards, reduce population exposure and protect public health, and reduce GHG emissions and protect the climate. The BAAQMD has also developed CEQA guidelines to assist lead agencies in evaluating the significance of air quality and GHG impacts. In formulating compliance strategies, BAAQMD relies on planned land uses established by local general plans. Land use planning affects vehicle travel, which, in turn, affects region-wide emissions of air pollutants and GHGs.

The 2017 Clean Air Plan, adopted by BAAQMD in April 2017, includes control measures that are intended to reduce air pollutant emissions in the Bay Area either directly or indirectly. Plans must show consistency with the control measures listed within the Clean Air Plan. General Plan consistency was evaluated in the EIR for the *General Plan Update, Zoning Code Amendments, and Climate Action Plan*. A significant and unavoidable impact was identified because VMT would increase at a greater rate than population. Mitigation measures would ensure that certain Clean Air Plan measures are properly implemented so that some projects developed under the General Plan would not have significant air quality impacts.

Mitigation measure MM AIR-1a would reduce construction period by requiring individual projects facilitated by the General Plan to incorporate Basic Construction Mitigation Measures recommended by BAAQMD

Because the General Plan does not contain a land use diagram that identifies special overlay zones around existing and planned sources of TACs, MM AIR-1b would be required to ensure that future development would result in less than significant impacts related to exposing sensitive receptors to substantial pollutant concentrations.

To reduce Vehicle Miles Traveled (VMT), MM TRANS-1 from the General Plan EIR requires the City to implement its Transportation Demand Management (TDM) Ordinance as part of the Zoning Code Amendments and parking requirements. The City shall also update its TDM Ordinance and parking requirements every five to ten years and establish an East of 101 Area Trip Cap, to achieve the maximum feasible reductions in vehicle travel. The City shall achieve the performance standards outlined in the TDM Ordinance

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

Conclusion AIR-1

The Project is consistent with the General Plan because of its compliance with MM AIR-1a, MM AIR-1b, and MM TRANS-1. Therefore, the project would not conflict with the latest Clean Air planning efforts. Additionally, 1) the Project would have construction and operational emissions below the BAAQMD thresholds (see Impact 2 below), 2) the project would be considered urban infill, and 3) the project would be located near transit with regional connections.

Impact AIR-2: Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?

The Bay Area is considered a non-attainment area for ground-level 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.[12] The CalEEMod model output along with construction inputs are included in *Attachment 2* and EMFAC2021 vehicle emissions modeling outputs are included in *Attachment 3*.

CalEEMod Inputs

Land Uses

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	900	1,000-sf	900,000	5.9
Enclosed Parking with Elevator	1,420	Parking Spaces	640,000	

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

Construction Inputs

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

The construction equipment worksheets provided by the applicant included the schedule for each phase. Within each phase, the quantity of equipment to be used, average hours per day, and total number of workdays was provided by the applicant. Much of the stationary equipment used during the building phase would be electric powered. Since different equipment would have different estimates of the working days per phase, the hours per day for each phase was computed by dividing the total number of hours that the equipment would be used by the total number of days in that phase.

A phase for interior work was not provided. Therefore, it was assumed that interior work would be conducted during the last 6 months of the construction period that involves finishing, landscape and paving work. This phase would occur in 2026 and 2027.

The construction schedule assumed that the earliest possible start date would be August 2023 and would be built out over a period of approximately 44 months, or 954 construction workdays. The earliest year of full operation was assumed to be 2028.

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 concrete and asphalt truck trips. CalEEMod provides daily estimates of worker and vendor trips for each applicable phase. The total trips for those were computed by multiplying the daily trip rate by the number of days in that phase. Haul trips for demolition and grading were estimated from the provided demolition and grading volumes, using CalEEMod default hauling truck trip rates. The number of concrete and asphalt total round haul trips were provided for the project and converted to total one-way trips, assuming two trips per delivery.

The latest version of the CalEEMod model is based on the older version of the CARB EMFAC2017 motor vehicle emission factor model. This model has been superseded by the EMFAC2021 model; however, CalEEMod has not been updated to include EMFAC2021. 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). Since CalEEMod does not address cement trucks, these were treated as vendor travel distances. Each trip was assumed to include an idle time of 5 minutes. Emissions associated with vehicle starts were also included. On road emissions in San Mateo County for 2023-2027 was 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	3,360	-	539	113,595-sf building and 112 tons pavement demolition. CalEEMod default worker trips.
Grading	10,062	-	41,375	331,000-cy soil export. CalEEMod default worker trips.
Building Construction	313,591	141,876	16,800	8,400 concrete round trips. CalEEMod default worker and vendor trips.
Paving	3,620	-	267	1,111-cy asphalt paving. CalEEMod default worker trips.
Building Interior	14,430	-	-	CalEEMod default worker trips.

[1] Based on 2023-2027 EMFAC2021 light-duty vehicle fleet mix for San Mateo County.
[2] Includes demolition trips estimated by CalEEMod based on amount of material to be removed. Asphalt trips estimated based on data provided by the applicant.

Conclusion AIR-2

Average daily emissions were annualized for each year of construction by dividing the annual construction emissions and dividing those emissions by the number of active workdays during that year. 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 Total (Tons)				
2023	0.22	2.19	0.10	0.07
2024	0.64	6.58	0.28	0.21
2025	0.22	2.62	0.13	0.06
2026	2.86	3.34	0.15	0.09
2027	2.35	0.89	0.04	0.02
Average Daily Construction Emissions (pounds/day)				
2023 - 2027 (954 construction workdays)	13.16	32.74	1.48	0.95
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* - Implement General Plan MM AIR-1a**

MM AIR-1a

This mitigation requires that individual developments facilitated by the City's General Plan shall incorporate the following Basic Construction Mitigation Measures recommended by BAAQMD:

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

- All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.
- Prior to the commencement of construction activities, individual project proponents shall 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 BAAQMD phone number shall also be visible to ensure compliance with applicable regulations

Effectiveness of Mitigation Measure AQ-1

The measures above are consistent with BAAQMD-recommended basic control measures for reducing fugitive particulate matter that are contained in the BAAQMD CEQA Air Quality Guidelines. The measures are also consistent with mitigation measure MM AIR-1a found in the South San Francisco General Plan EIR.

Operational Period Emissions

Operational air emissions from the project would be generated primarily from autos driven by future employees, six diesel-fired emergency generators, and six cooling towers. 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 2028 if construction begins in 2023. Emissions associated with build-out later than 2028 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.[13] The project would produce approximately 9,972 daily trips. MM TRANS-1 of the General Plan EIR requires the project

[13] Email from Rebecca Auld, September 22, 2022.

sponsor to implement the City's TDM Ordinance as part of the Zoning Code Amendments and parking requirements. The TDM Ordinance requires that a maximum of 50 percent of the project's total employees commute alone via car during peak traffic periods. Some of the ways that compliance with this code can be achieved are to allow employees flexible work hours so that their commute is during off peak hours, having employees utilize other methods of travel such as public transit, or encouraging carpooling by reserving parking spaces for carpooling vehicles. This is predicted to result in a 34-percent reduction in trips[14]. The daily trip generation was calculated using the size of the project and the 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 2028 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.[15]

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.

Project Generators

The project would include two emergency generators for each building, a base generator and a tenant generator, for a total of six generators. All three base generators would be 2,800kW generators powered by a 3,753 horsepower (hp) diesel-fired engine. The tenant generators will be two 1,000kW generators powered by a 1,341-hp diesel-fired engine and one 600kW generator powered by a 804-hp diesel-fired engine. These generators would be tested periodically and power the buildings in the event of a power failure. For modeling purposes, it was assumed that the generators would be operated primarily for testing and maintenance purposes. CARB and BAAQMD requirements limit these engine operations to 50 hours each per year of non-emergency

[14] The project will be required to implement a TDM program consistent with the revised Chapter 20.400 of the Municipal Code, and would be required to achieve a maximum of 50 percent of employees commuting via driving alone. The TDM reduction assumes that 50% of the employees will drive alone and the rest of the employees will commute via transit, carpool, bike or walk.

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

operation. During testing periods, the engine would typically be run for less than one hour. The engines would be required to meet CARB and EPA emission standards and consume commercially available California low-sulfur diesel fuel. The generator emissions were modeled using CalEEMod. 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. These include emission limits similar to U.S. EPA Tier 4 standards for the engines larger than 1,000 hp. Four of the six generators are larger than 1,000 hp.

Project Cooling Towers

The project would include two cooling towers to be located on the top of each building for a total of six cooling towers. Based on information provided by the applicant, each cooling tower would have a water flow rate of 750 gallons per minute (GPM), using public water with an average total dissolved solids (TDS) of 96 parts per million (ppm), and a mist eliminator efficiency of 0.001 percent. Details of the cooling tower PM emissions calculations are provided in *Attachment 3*.

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 currently developed with two one-story buildings and one two-story building, totaling 113,595 square feet (sf) of office/R&D (life science) use and associated parking. The existing uses are predicted to generate 947 daily trips. A CalEEMod run was developed for the existing use of the site. Additionally, the trip generation information was provided for the existing use of the site.

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. Operational Period Emissions

Scenario	ROG	NOx	PM_{10}	$PM_{2.5}$
2028 Project Operational Emissions (*tons/year*)	6.37	2.47	4.26	1.14
Project Generator Emissions (*tons/year*)	0.61	0.43	0.02	0.02
Project Cooling Tower Emissions (*tons/year)*	-	-	<0.01	<0.01
2022 Existing Use Emissions (*tons/year*)	0.95	0.47	0.61	0.16
Net Total Operational Emissions	6.04	2.43	3.67	0.99
BAAQMD Thresholds (tons /year)	*10 tons*	*10 tons*	*15 tons*	*10 tons*
Exceed Thresholds?	No	No	No	No
Total (lbs./day)	33.08	13.29	20.11	5.45
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-3: Expose sensitive receptors to substantial pollutant concentrations?

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

MM AIR-1b contained in the General Plan EIR addresses exposure of sensitive receptors to TACs and air pollution. Under this mitigation measure, projects that may result in TAC emissions that are located within 1,000 feet of a sensitive receptors are required to prepare a Health Risk Assessment (HRA). Based on the results of the HRA, the Project may be required to identify and implement measures (such as air filtration systems) to reduce potential exposure to particulate matter, carbon monoxide, diesel fumes, and other potential health hazards. Measures identified in the HRA are to be included into the site development plan as a component of a proposed project.

There are sensitive receptors within 1,000 feet of the project site. Project construction activity would generate dust and equipment exhaust that would affect nearby sensitive receptors. The project would include the installation of six emergency generators powered by diesel engines and six cooling towers, two atop each building. Traffic generated by the project would consist of mostly light-duty gasoline-powered vehicles, which would produce TAC and air pollutant emissions in the local area.

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 describing the cumulative risk which includes the project contribution.

Community Risk Methodology

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, increased traffic from the project, and generator and cooling tower operation. To evaluate the increased cancer risks from the project, a 30-year exposure period was used, per BAAQMD guidance,[16] 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 Gateway Child Development Center YMCA and the existing residences to the west 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 Project Construction

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 $PM_{2.5}$.[17] 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.

The three identified TAC and annual $PM_{2.5}$ sources associated with the project once in operation would be employee trips, infrequent operation of standby generators (assumed to be powered by

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

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

diesel fuel), and cooling towers. Traffic from the project would be made up of mostly gasoline-powered vehicles.

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 0.35 tons (697 pounds). The on-road emissions are a result of haul truck travel during demolition and grading activities, worker travel, and vendor deliveries during construction. A trip length of 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 0.43 tons (863 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.[18] Emission sources for the construction site were grouped into two categories: exhaust emissions of DPM and fugitive $PM_{2.5}$ dust emissions.

Construction Sources

Combustion equipment DPM exhaust emissions were modeled as a series of point sources with a nine-foot release height (construction equipment exhaust stack height) placed at 23 feet (7 meter) intervals throughout the construction site. This resulted in 467 individual point sources being used to represent mobile equipment DPM exhaust emissions in the construction area, with DPM emissions occurring throughout the project construction site. In addition, the following stack parameters were used: a vertical release, a stack diameter of 2.5 inches, an exhaust temperature of 918˚F, and an exit velocity of 309 feet per second. Since these are point sources, plume rise is calculated by the AERMOD dispersion model. Emissions from vehicle travel on- and off-site were also distributed among the point sources throughout the site. The locations of the point sources used for the modeling are identified in Figure 1.

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

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

Emissions from the construction equipment and on-road vehicle travel were distributed throughout the modeled area sources.

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 daily between 7:00 a.m. to 3:30 p.m., when the majority of construction activity is expected to occur. Annual DPM and $PM_{2.5}$ concentrations from construction activities during the 2023-2027 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) and 15 feet (4.5 meters) were used to represent the breathing height on the first and second floor of nearby residences.[19] A receptor height of 3 feet (1 meter) was used to represent breathing height of children at the Gateway Child Development Center YMCA.

Summary of Construction Community Risk Impacts

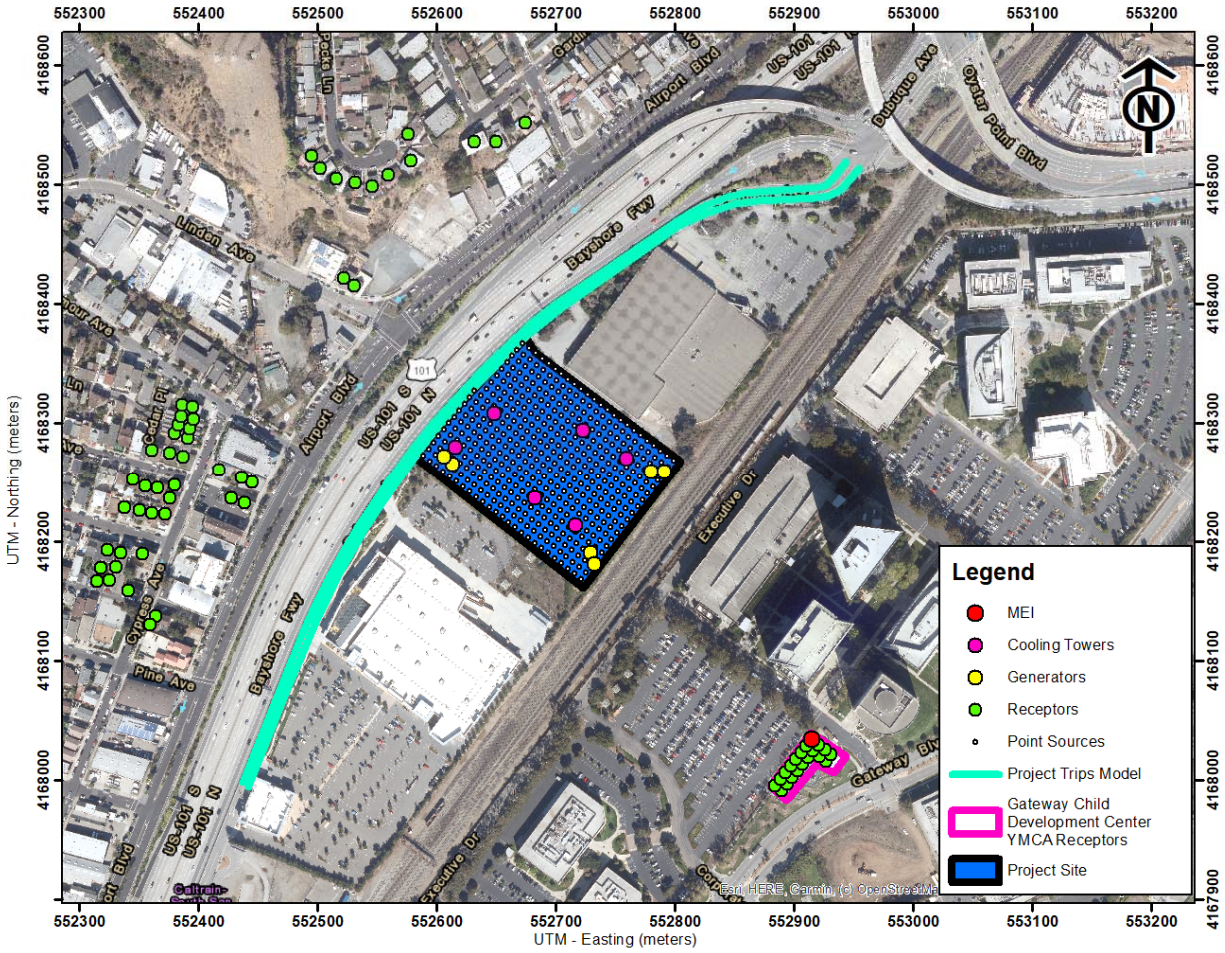
The maximum increased cancer risks were calculated using the modeled TAC concentrations combined with the Office of Environmental Health Hazard Assessment (OEHHA) guidance for age sensitivity factors and exposure parameters as recommended by BAAQMD (see *Attachment 1)*. Non-cancer health hazards and 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. 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 residential MEI was located on the first floor (3 feet above ground) of the Gateway Child Development Center YMCA. Table 5 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.

[19] 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. Location of Project Construction Site, Project Point Sources, Project Generator, Project Cooling Towers, Project Trips Model, Off-Site Sensitive Receptors, and Maximum TAC Impact



Community Risks from Project Operation

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

Project Traffic

Diesel powered vehicles are the primary concern with local traffic-generated TAC impacts. This project would generate a net of 5,635 daily trips[20] with a majority of the trips being from light-duty gasoline-powered vehicles (i.e., passenger cars). The project is not anticipated to generate large amounts of truck trips that would involve diesel vehicles. These trips were modeled to occur on Dubuque Avenue. This analysis involved the development of DPM, organic TACs, and $PM_{2.5}$

[20] Email from Rebecca Auld, September 22, 2022.

emissions for project trips on Dubuque Avenue using the Caltrans version of the CARB EMFAC2017 emissions model, known as CT-EMFAC2017. CT-EMFAC2017 provides aggregate emission factors in for dispersion modeling of mobile source criteria pollutants and TACs, including DPM. Emission processes modeled include running exhaust for DPM, $PM_{2.5}$ and total organic compounds (TOG), running evaporative losses for TOG, and tire and brake wear and fugitive road dust for $PM_{2.5}$. 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), year of analysis (2028 – operational year), local truck mix for San Mateo County (3.13 percent) [21], and season (annual).

For all hours of the day, an average speed of 30 mph on Dubuque Avenue was assumed for all vehicles based on posted speed limit signs on the roadways. Dispersion modeling of TAC and $PM_{2.5}$ emissions was conducted using the U.S. EPA AERMOD dispersion model, which is recommended by the BAAQMD for this type of analysis.[22] TAC and $PM_{2.5}$ emissions from project trips within about 1,000 feet of the project site were evaluated with the model. Emissions from project trips were modeled in AERMOD using a series of volume sources along a line (line volume sources), with line segments used to represent opposing travel lanes on Dubuque Avenue. The same meteorological data and off-site sensitive receptors used in the previous construction dispersion modeling were used in the roadway modeling. Other inputs to the model included road geometry, hourly traffic emissions, and receptor locations and heights. Annual TAC and $PM_{2.5}$ concentrations for 2021 on the haul route were calculated using the model. Concentrations were calculated at the project MEI.

Project Generators

As discussed above in the Operational Period Emissions section, the project would include six generators. Operation of a diesel generator would be a source of TAC emissions. The generators would be operated for testing and maintenance purposes, with a maximum of 50 hours per year of non-emergency operation under normal conditions. During testing periods, the engine would typically be run for less than one hour under light engine loads. The generator engines would be required to meet EPA emission standards and consume commercially available low sulfur diesel fuel. 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.

These diesel engines would be subject to CARB's Stationary Diesel Airborne Toxics Control Measure (ATCM) and require permits from the BAAQMD, since it will be equipped with an engine larger than 50-HP. BACT requirements would apply to these generators that would limit DPM emissions. As part of the BAAQMD permit requirements for toxics screening analysis, the engine emissions will have to meet Best Available Control Technology for Toxics (BACT) and

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

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

pass the toxic risk screening level of less than ten in a million. The risk assessment would be prepared by BAAQMD. Depending on results, BAAQMD would set limits for DPM emissions (e.g., more restricted engine operation periods). Sources of air pollutant emissions complying with all applicable BAAQMD regulations generally will not be considered to have a significant air quality community risk impact.

To obtain an estimate of potential cancer risks and $PM_{2.5}$ impacts from operation of the emergency generators at the project MEI, the U.S. EPA AERMOD dispersion model was used to calculate the maximum annual DPM concentration at off-site sensitive receptor locations (nearby childcare/school and residences). The same receptors, breathing heights, and BAAQMD San Francisco International Airport meteorological data used in the construction dispersion modeling were used for the generator models. Stack parameters for modeling the generators were based on BAAQMD default parameters (i.e., exhaust gas flowrate, stack diameter, stack height, and exhaust gas temperature) for stand-by diesel generators.[23] 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).

Project Cooling Towers

The project would include two cooling towers on the roof of each building for a total of six cooling towers. Particulate matter emissions from evaporative cooling can occur and are a result of evaporation of liquid water entrained in the discharge air stream and carried out of the tower as "drift" droplets that contain dissolved solids in the water. Drift droplets that evaporate can produce small particulate matter (i.e., PM_{10} and $PM_{2.5}$) emissions. These emissions are generated when the drift droplets evaporate and leave the particulate matter formed by crystallization of dissolved solids. The cooling towers are not a source of combustion emissions that may contain TACs.

For the health risk assessment, the $PM_{2.5}$ emissions from evaporative cooling were calculated based on a worst-case assumptions including use of evaporative cooling for 100 percent of the time, a water flow rate of 750 gallons per minute (gpm), use of 0.001 percent drift eliminators, a total dissolved solids (TDS) concentration of 96 parts per million (ppm) in the recirculating water.[24] Based on a calculated total drift rate, recirculating water TDS concentration of 96 ppm, and PM fractions based on SCAQMD,[25] the $PM_{2.5}$ emissions were calculated as 0.0007 tons per year per cooling tower.

To obtain an estimate of potential $PM_{2.5}$ concentrations from operation of the cooling towers, the U.S. EPA AERMOD dispersion model was used to calculate the annual $PM_{2.5}$ concentration at

[23] 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

[24] Recirculating water flow rate and maximum TDS concentration based on South San Francisco 2021 Water Quality Report TDS Range Max. URL: https://www.calwater.com/ccrs/bay-ssf-2021/

[25] South Coast AQMD, *Final-Methodology to Calculate Particulate Matter (PM) 2.5 and PM2.5 Significance Thresholds, Appendix A.* October 2006. Web: http://www.aqmd.gov/docs/default-source/ceqa/handbook/localized-significance-thresholds/particulate-matter-(pm)-2.5-significance-thresholds-and-calculation-methodology/final_pm2_5methodology.pdf

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 cooling tower models. Volume source parameters for modeling the cooling tower were based on project-specific cooling tower parameters (i.e., length of side, release height, emission rate (flow rate, TDS, mist eliminator efficiency)). Annual $PM_{2.5}$ concentrations were modeled assuming that cooling tower would operate at any time of the day (24 hours per day, 365 days per year).

The annual $PM_{2.5}$ concentration were based on an annual maximum risk. Table 6 lists the community risks from cooling towers at the location of childcare MEI and residential maximum receptor. The particulate matter emissions for the proposed cooling towers are included in *Attachment 5*.

Project Laboratories

This type of project may include research and manufacturing type laboratories. Since a specific user or type of lab use is not known at this time, it is not possible to predict whether there would be any TAC emissions and if so the quantities that would be emitted. Typically, laboratory uses have fume hoods and would employ appropriate exhaust systems to control any emission of air pollutants. Emissions of air pollutants or TACs are subject to BAAQMD permitting requirements that would require the District to apply all applicable rules and regulations to limit or control these emissions. Regulation 2, Rule 1: General Requirements, and Regulation 2, Rule 5: New Source Review of Toxic Air Contaminants would apply to any potential emissions from these sources. The District's risk policy is to not issue a permit to any source that would cause a cancer risk of greater than 10 chances per million.

Summary of Project-Related Community Risks at the Offsite Project MEI

The cumulative risk impacts from a project are the combination of construction and operation sources. For this project, these sources include the on-site construction activity, generators, cooling towers, and operational vehicle trips. The project impact is computed by adding the construction cancer risk for an infant to the increased cancer risk for the project operational conditions for the generator and vehicle trips at the MEI over a 30-year period. The project MEI is identified as the sensitive receptor that is most impacted by the project's construction and operation.

For this project, the sensitive receptor identified in Figure 1 as the construction MEI is also the project MEI. At this location, the MEI would be exposed to 4 years of construction cancer risks and 26 years of operational cancer risks. 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 Hazard Index from construction activities at the residential project MEI location would not exceed the single-source significance thresholds.

Table 6. Construction 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 – 4)	Unmitigated	**11.03**	0.05	<0.01
	Mitigated	2.12	0.02	<0.01
Project Generators (Years 4 – 30)		0.38	<0.01	<0.01
Project Cooling Towers (Years 4 – 30)		-	<0.01	-
Project Operational Trips (Years 4 – 30)		0.05	<0.01	<0.01
Total/Maximum Project Impacts (Years 0 – 30)	Unmitigated	**11.46**	0.05	<0.01
	Mitigated	2.15	0.02	<0.01
BAAQMD Single-Source Threshold		***6.0[1]***	***0.3***	***1.0***
Exceed Threshold?	Unmitigated	***Yes***	*No*	*No*
	Mitigated	*No*	*No*	*No*

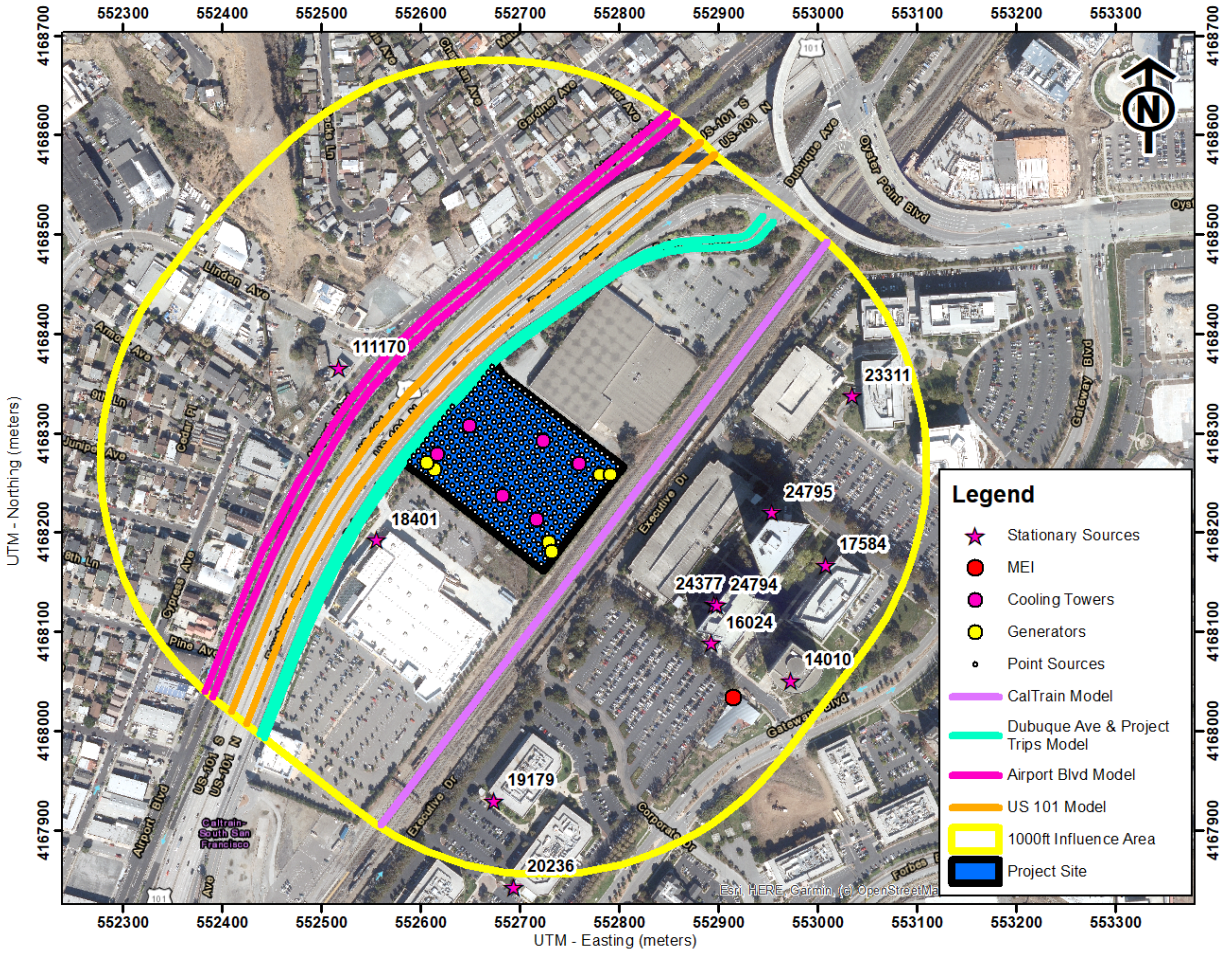
[1] Project site and receptors are located in an overburdened community as defined by BAAQMD.
Note: Risks in this are reported for the maximally exposed individual (MEI), factoring in age-sensitivity at all receptors, and represent increased lifetime risk. See Attachment A for additional details.

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 based on provided traffic information indicated that traffic on U.S. Highway 101, Airport Boulevard, and Dubuque Avenue would exceed 10,000 vehicles per day. Other nearby streets would have less than 10,000 vehicles per day. A review of BAAQMD's highway and railway raster data identified *from* one railway with the potential to affect the project MEI. A review of BAAQMD's stationary source map website identified eleven stationary sources with the potential to affect the project MEI. Figure 2 shows the location of the sources affecting the MEI. Community risk impacts these sources upon the MEI are reported in Table 7. Details of the modeling and community risk calculations are included in *Attachment 5.*

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



Highways & Railways – U.S. Highway 101, CalTrain Zone 1

The project MEI is approximately 75 feet southeast of U.S. Highway 101 and CalTrain Zone 1 borders the project on the southeast side. A refined analysis of the impacts of TACs and $PM_{2.5}$ to the MEI receptor is necessary to evaluate potential cancer risks and $PM_{2.5}$ concentrations from Highway 101. A review of the traffic information reported by Caltrans indicates that Highway 101 traffic includes 184,000 vehicles per day (based on an annual average)[26] that are about 5.1 percent trucks, of which 1.5 percent are considered diesel heavy duty trucks and 3.7 percent are medium duty trucks.[27]

Local Roadways – Airport Boulevard and Dubuque Avenue

A refined analysis of potential health impacts from vehicle traffic on Airport Boulevard and Dubuque 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

[26] Caltrans. 2022. *2020 Traffic Volumes California State Highways.*
[27] Caltrans. 2022. *2020 Annual Average Daily Truck Traffic on the California State Highway System.*

based on the modeled exposures. *Attachment 1* includes a description of how community risk impacts, including cancer risk are computed.

Traffic Emissions Modeling

This analysis involved the development of DPM, organic TACs, and $PM_{2.5}$ emissions for traffic on Highway 101, Airport Boulevard and Dubuque Avenue using the Caltrans version of the CARB EMFAC2017 emissions model, known as CT-EMFAC2017. CT-EMFAC2017 provides emission factors for mobile source criteria pollutants and TACs, including DPM. [28] Emission processes modeled include running exhaust for DPM, $PM_{2.5}$ and total organic compounds (TOG), running evaporative losses for TOG, and tire and brake wear and fugitive road dust for $PM_{2.5}$. All $PM_{2.5}$ emissions from all vehicles were used, rather than just the $PM_{2.5}$ fraction from diesel powered vehicles, because all vehicle types (i.e., gasoline and diesel powered) produce $PM_{2.5}$. Additionally, $PM_{2.5}$ emissions from vehicle tire and brake wear from re-entrained roadway dust were included in these emissions. DPM emissions are projected to decrease in the future and are reflected in the CT-EMFAC2017 emissions data. Inputs to the model include region (San Mateo County), type of road (freeway and major/collector), traffic mix assigned by CT-EMFAC2017 for the county, adjusted for the local truck mix on Highway 101 and truck percentage for non-state highways in San Mateo County (3.13 percent)[29] for the local roadways, year of analysis (2023 – construction start year), and season (annual).

To estimate TAC and $PM_{2.5}$ emissions over the 30-year exposure period used for calculating the increased cancer risks for sensitive receptors at the MEI, the CT-EMFAC2017 model was used to develop vehicle emission factors for the year 2023 (construction start year). Emissions associated with vehicle travel depend on the year of analysis because emission control technology requirements are phased-in over time. Therefore, the earlier the year analyzed in the model, the higher the emission rates utilized by CT-EMFAC2017. Year 2023 emissions were conservatively assumed as being representative of future conditions over the time period that cancer risks are evaluated since, as discussed above, overall vehicle emissions, and in particular diesel truck emissions, will decrease in the future.

The ADT volumes and truck percentages were based on Caltrans data for Highway 101. Traffic volumes were assumed to increase 1 percent per year for a total of 189,520 vehicles. Hourly traffic distributions specific to these segments of Highway 101 were obtained from Caltrans Performance Measurement System (PeMS). PeMS data is collected in real-time from nearly 40,000 individual detectors spanning the freeway system across all major metropolitan areas of California.[30] The fraction of traffic volume each hour was calculated and applied to the 2023 average daily traffic volumes estimate to estimate hourly traffic emission rates for Highway 101.

[28] The CT-EMFAC2017 version was used in the analysis because Caltrans has not yet release a CT-EMFAC version with the updated EMFAC2021 emissions that would provide TAC emission rates.
[29] 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
[30] https://dot.ca.gov/programs/traffic-operations/mpr/pems-source

Based on traffic data from the Caltrans PeMS, traffic speeds during the daytime and nighttime periods were identified. For northbound traffic, the following was assumed for all vehicles:

- 70 mph – All hours of the day except 8:00 a.m. until 6:00 p.m.
- 65 mph – From 8:00 a.m. until 6:00 p.m.

For southbound traffic, the following was assumed for all vehicles:

- 65 mph – All hours of the day except 10:00 a.m. until 7:00 p.m.
- 60 mph – From 10:00 a.m. until 7:00 p.m.

The ADT for each local roadway was calculated based on traffic data provided by the project's traffic consultant.[31] Assuming a 1 percent per year increase, the predicted ADT on Airport Boulevard and Dubuque Avenue was 22,392 and 18,650 vehicles, respectively. Average hourly traffic distributions for San Mateo County roadways were developed using the EMFAC model,[32] which were then applied to the ADT volumes to obtain estimated hourly traffic volumes and emissions for each roadway. An average travel speed of 35 mph for traffic on Airport Boulevard and 30 mph on Dubuque Avenue was used for all hours of the day based on posted speed limit signs on each roadway.

This analysis involved the development of DPM, organic TACs, and $PM_{2.5}$ emissions for future traffic on Highway 101 and each local roadway and using these emissions with an air quality dispersion model to calculate TAC and $PM_{2.5}$ concentrations at the project MEI receptor locations. Maximum increased lifetime cancer risks and annual $PM_{2.5}$ concentrations for the receptors were then computed using modeled TAC and $PM_{2.5}$ concentrations and BAAQMD methods and exposure parameters described in *Attachment 1*.

Rail Line Community Risk Impacts

The project site is located near the Caltrain rail lines, about 120 feet east of the site. Rail activity on these lines currently generates TAC and $PM_{2.5}$ emissions from locomotive exhaust. These rail lines are used primarily for Caltrain passenger service; however, there is some freight service by trains using diesel-fueled locomotives. Based on the current Caltrain schedule effective September 12, 2022 there are 104 trains that pass the project site during weekdays and 32 on weekends. In addition to the passenger trains there are about four freight trains that use the rail lines on a daily basis.[33]

Currently all of Caltrain's trains use diesel locomotives. The Peninsula Corridor Electrification Project is a key component of the Caltrain Modernization Program that would electrify the Caltrain Corridor from San Francisco to the Tamien Caltrain station in San José. As part of the program to

[31] Hexagon Transportation Consultants. File: *Figure 1 Existing Traffic Volumes.pdf*
[32] The Burden output from EMFAC2007, a previous version of CARB's EMFAC model, was used for this since the current web-based version of EMFAC2021 does not include Burden type output with hour by hour traffic volume information.
[33] U.S. Department of Transportation, Federal Railroad Administration. U.S. DOT Crossing Inventory Form for Crossing 922739G. Revision Date 1/28/2022.

modernize operation of the Caltrain rail corridor between San José and San Francisco, Caltrain is planning to phase in the change from using diesel locomotives to use of electric trains.[34] This plan was formally adopted on January 8, 2015[35] and electrified service is anticipated to begin in late 2024.[36]

Caltrain plans are that initial service between San José and San Francisco would use a mixed fleet of electric and diesel locomotives, with approximately 75 percent of the service being electric and 25 percent being diesel. After the initial implementation period, diesel locomotives would be replaced with electric trains over time as they reach the end of their service life. Caltrain's diesel-powered locomotives would continue to be used to provide service between the San José Diridon Station and Gilroy. It is expected that all of the San José to San Francisco fleet would be electric trains about five to eight years after initial electric service begins.[37]

Starting in late 2024 with Caltrain electrification, there would be 24 daily weekday trips and 4 daily weekend trips using trains with diesel locomotives[38]. On an annual average basis this would be an average of 18 daily trains using diesel locomotives. Use of these diesel trains by Caltrain between San Francisco and San Jose would be phased out over time and replaced by electric trains. All trains used for freight service were assumed to use diesel powered locomotives.

Rail Line Emissions

For this evaluation the rail exposure period was assumed to begin in 2023, coincident with the beginning of project construction. In calculating cancer risks from DPM emissions from rail line diesel locomotives a 5-year exposure period was used as this is the maximum length of time a child would be at the location of the construction MEI (YMCA Gateway Child Development Center). In this case, the exposure period at the construction MEI would be from 2023 through 2027.

For calculating emissions from Caltrain locomotives it was assumed that during the 2023 and 2024 construction period all trains would continue to use diesel locomotives. Along the rail line near the project site there would be an average of 83 daily trains using diesel locomotives on an annual average basis. Starting in 2025 when Caltrain electrification occurs there would be 24 daily weekday trips and 4 daily weekend trips using trains with diesel locomotives[39]. On an annual average basis there would be a total of 18 daily trains using diesel locomotives. Although these diesel locomotives would be replaced over time with electric locomotives, it was conservatively assumed for this evaluation that diesel emissions would remain at the 2025 levels in the future. All trains used for freight service were assumed to use diesel powered locomotives. In the vicinity of the project site all trains were assumed to be traveling at an average speed 40 mph.

[34] Caltrain, 2014. *Peninsula Corridor Electrification Project. Final Environmental Impact Report.* December 2014.
[35] Caltrain, 2015. *Peninsula Corridor Electrification Fact Sheet.* May 2015.
[36] Caltrain, 2021. *Caltrain Electrification Delayed to 2024*. June 3, 2021. See:
www.caltrain.com/about/MediaRelations/news/Caltrain_Electrification_Delayed_to_2024.html
[37] Caltrain 2015. *Short Range Transit Plan:FY2015-2024*. October 1, 2015.
[38] Caltrain 2015. *Short Range Transit Plan:FY2015-2024*. October 1, 2015.
[39] Caltrain 2015. *Short Range Transit Plan:FY2015-2024*. October 1, 2015.

DPM and $PM_{2.5}$ emissions from trains on the rail line were calculated using EPA emission factors for locomotives[40] and CARB adjustment factors to account for fuels used in California[41]. Caltrain's current locomotive fleet consists of twenty-three 3,200 horsepower (hp) locomotives of model year or overhaul date of 1999 or later, three 3,200 hp locomotives of model year 1998, and six 3,600 hp locomotives of model year 2003.[42] The current fleet average locomotive engine size is about 3,285 hp. In estimating diesel emissions for 2023 and 2024 prior to electrification a fleet average locomotive engine size of 3,285 hp was used. When electrification occurs, Caltrain will initially retain the six 3,600 hp locomotives and the three model year 1998 3,200 hp locomotives[43]. In estimating diesel locomotive emissions for the case of electrification, an average locomotive horsepower of 3,467 hp was used. Emissions from the freight trains were calculated assuming they would use two diesel locomotives with 2,300 hp engines (total of 4,600 hp) and would be traveling at 40 mph. Since the exposure duration used in calculating child cancer risks at the MEI location is 5 years, the passenger and freight train average DPM and $PM_{2.5}$ emissions were calculated based on average EPA emission factors for the periods 2023-2024 and 2025-2027.

Dispersion Modeling

Dispersion modeling of TAC and $PM_{2.5}$ emissions was conducted using the U.S. EPA AERMOD dispersion model, which is recommended by the BAAQMD for this type of analysis.[44] TAC and $PM_{2.5}$ emissions from traffic on the roadways within about 1,000 feet of the project site were evaluated with the model. Emissions from vehicle traffic and locomotives were modeled in AERMOD using a series of volume sources along a line (line volume sources), with line segments used to represent the travel lanes on the roadways and railways. The same meteorological data and off-site sensitive receptors used in the previous construction dispersion modeling were used in the highway, roadway, and railway modeling. Other inputs to the model included road geometry, hourly traffic emissions, and receptor locations and heights. Annual TAC and $PM_{2.5}$ concentrations for 2023 from traffic on the roadways were calculated using the model. Concentrations were calculated at the project MEIs with receptor heights of 3 feet (1 meter) to represent the breathing heights of children on the first floor of the nearby school.

Figure 2 shows the roadway and railway segments modeled and residential MEI receptor location used in the modeling. Table 6 lists the risks and hazards from the roadway. The emission rates and roadway calculations used in the analysis are shown in *Attachment 5*.

<u>BAAQMD Permitted Stationary Sources</u>

Permitted stationary sources of air pollution near the project site were identified using BAAQMD's *Permitted Stationary Sources 2020* GIS website,[45] 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,

[40] *Emission Factors for Locomotives*, USEPA 2009 (EPA-420-F-09-025)
[41] *Offroad Modeling, Change Technical Memo*, Changes to the Locomotive Inventory, CARB July 2006.
[42] Caltrain *Commute Fleets*. Available at: http://www.caltrain.com/about/statsandreports.html. Accessed January 4, 2022.
[43] Caltrain 2015. *Short Range Transit Plan:FY2015-2024*. October 1, 2015.
[44] BAAQMD. *Recommended Methods for Screening and Modeling Local Risks and Hazards*. May 2012
[45] BAAQMD,
https://baaqmd.maps.arcgis.com/apps/webappviewer/index.html?id=2387ae674013413f987b1071715daa65

seven are generators, one is a gasoline dispensing facility, and two have no data and were treated as a "generic case" for worst-case risk screening purposes. One source was identified as part of the existing site and would be demolished during construction. A Stationary Source Information Form (SSIF) containing the identified sources was prepared and submitted to BAAQMD. BAAQMD provided input and clarification about the stationary sources. The screening level risks and hazards provided by BAAQMD for the stationary sources were adjusted for distance using BAAQMD's *Distance Adjustment Multiplier Tool for Diesel Internal Combustion Engines, Gasoline Dispensing Facility, and Generic Equipment*. Community risk impacts from the stationary source upon the MEI are reported in Table 7.

Nearby Construction Projects

The City has entitled two nearby development projects that could conceivably be active consecutively with the proposed Project[46]. These include the 915 Airport Boulevard project that would construct a 5-story hotel with 115 rooms about 350 feet north of the proposed Project. The other project is located at 651 Gateway Boulevard about 800 feet southeast of the proposed Project that would renovate the exterior of the existing building. Neither project is downwind of the project site; therefore, dispersion conditions that would transport pollutants of contaminants to the Project site or the project MEI generally would not occur. Furthermore, both Projects are conditioned (through mitigation) to control emissions from construction activities to reduce nearby construction health risk impacts. There are other entitled developments in the area, but they are outside of this project's 1,000-foot influence area.

Conclusion AIR-3

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 have an exceedance with respect to community risk caused by project construction activities since the cancer risk exceeds the BAAQMD single-source thresholds. However, with the implementation of MM AIR-1a and MM AIR-1b, the cancer risk would be reduced below the BAAQMD single-source threshold. Annual $PM_{2.5}$ concentration, and hazard index do not exceed the BAAQMD single-source and cumulative-source thresholds.

[46] South San Francisco Development and Construction Map. 2022. See https://construction.ssf.net/# accessed November 3, 2022.

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 Impacts				
Total/Maximum Project Impacts (Years 0 – 30)	Unmitigated	**11.46**	0.05	<0.01
	Mitigated	2.15	0.02	<0.01
BAAQMD Single-Source Threshold		***6.0***	***0.3***	***1.0***
Exceed Threshold?	Unmitigated	***Yes***	*No*	*No*
	Mitigated	*No*	*No*	*No*
Cumulative Impacts				
Highway 101		2.29	0.12	<0.01
CalTrain Zone 1		4.50	<0.01	<0.01
Airport Boulevard		0.15	0.01	<0.01
Dubuque Avenue		0.16	0.02	<0.01
Genentech, Inc. (Facility ID #16024, Generator), MEI at 200 feet		0.80	<0.01	<0.01
Boston Properties (Facility ID #14010, Generator), MEI at 150 feet		3.52	<0.01	<0.01
Biotech Gateway – HCP c/o CBRE (Facility ID #20236, Generator), MEI at 950 feet		0.07	<0.01	<0.01
MacroGenics West, Inc (Facility ID #19179, Generator), MEI at 850 feet		2.38	<0.01	<0.01
Alexandria Real Estate Equities, Inc (Facility ID #17584, Generator), MEI at 530 feet		1.75	<0.01	<0.01
Lowes HIW Inc (Facility ID #18401, Generator), MEI at 1000+ feet		0.38	<0.01	<0.01
Health Plan of San Mateo (Facility ID #23311, Generator) MEI at 1000+ feet		0.06	<0.01	<0.01
611 Gateway Center LP (Facility ID #24794, No Data), MEI at 320 feet		1.23	0.22	<0.01
601 & 651 Gateway Boulevard (Facility ID #24795, No Data), MEI at 630 feet		5.49	0.09	0.01
Airport Boulevard Shell (Facility ID #111170_1, Gas Dispensing Facility), MEI at 1000+ feet		0.29	<0.01	<0.01
Cumulative Total	Unmitigated	34.53	<0.60	<0.15
	Mitigated	25.22	<0.57	<0.15
BAAQMD Cumulative Source Threshold		***100***	***0.8***	***10.0***
Exceed Threshold?	Unmitigated	*No*	*No*	*No*
	Mitigated	*No*	*No*	*No*

Mitigation Measure AQ-1 **- Implement General Plan MM AIR-1a** (see above)

Mitigation Measure AQ-2 **- Implement General Plan MM AIR-1b**

MM AIR-1b

The Project is located within 1,000 feet of sensitive receptors, therefore, a health risk assessment of project emissions was conducted. Cancer risk thresholds would be exceeded at the Gateway Child Development Center YMCA (i.e., school children). Additional measures to reduce construction period TAC emissions are required under MM AIR-1b. The Project would be required to implement a feasible plan to reduce DPM emissions by at least 50 percent such that

increased cancer risk and annual $PM_{2.5}$ concentrations from construction would be reduced below TAC significance levels as follows:

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

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

    b. Use of electrical or non-diesel fueled equipment.

2. Dewatering pumps shall be powered by electricity.

3. Use of electric portable equipment following the site preparation and grading phases.

4. Alternatively, the applicant may develop another construction operations plan demonstrating that the construction equipment used on-site would achieve a reduction in construction diesel particulate matter emissions by 50 percent or greater. Elements of the plan could include a combination of some of the following measures:

    - Implementation of No. 1 above to use Tier 4 or alternatively fueled equipment,
    - Installation of electric power lines during early construction phases to avoid use of diesel generators and compressors,
    - Use of electrically-powered equipment,
    - Forklifts and aerial lifts used for exterior and interior building construction shall be electric or propane/natural gas powered,
    - Change in construction build-out plans to lengthen phases, and
    - Implementation of different building techniques that result in less diesel equipment usage.

    Such a construction operations plan would be subject to review by an air quality expert and approved by the City prior to construction.

Effectiveness of Mitigation Measure AQ-1 and AQ-2 (MM AIR-1a and MM AIR-1b)

CalEEMod was used to compute emissions associated with this mitigation measure assuming that all equipment met U.S. EPA Tier 4 Interim engine standards. With these implemented, the project's construction cancer risk levels (assuming infant exposure) would be reduced by 81 percent to 2.12 chances per million. Assuming a lesser level of mitigation that achieves a 50-percent reduction in the project's cancer risk, increased cancer risks would be reduced to below 6

chances per million. As a result, the project's construction risks would be reduced below the BAAQMD single-source thresholds.

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.

Federal and Statewide GHG Emissions

The U.S. EPA reported that in 2022, total gross nationwide GHG emissions were 5,215.6 million metric tons (MMT) carbon dioxide equivalent (CO_2e).[47] These emissions were lower than peak levels of 7,416 MMT that were emitted in 2007. CARB updates the statewide GHG emission

[47] United States Environmental Protection Agency, 2022. *Draft Inventory of U.S. Greenhouse Gas Emissions and Sinks 1990-2020*. February. Web: https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks

inventory on an annual basis where the latest inventory includes 2000 through 2019 emissions.[48] In 2019, GHG emissions from statewide emitting activities were 418.2 MMT CO_2e. The 2019 emissions have decreased by 30 percent since peak levels in 2007 and are 7.2 MMT CO_2e lower than 2018 emissions level and almost 13 MMT CO_2e below the State's 2020 GHG limit of 431 MMT CO_2e. Per capita GHG emissions in California have dropped from a 2001 peak of 14.0 MT CO_2e per person to 10.5 MT CO_2e per person in 2019.

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.

[48] CARB. 2021. *California Greenhouse Gas Emission for 2000 to 2019*. Web: https://ww3.arb.ca.gov/cc/inventory/pubs/reports/2000_2019/ghg_inventory_trends_00-19.pdf

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 GHG 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*.[49] 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 has drafted a 2022 Scoping Plan Update to reflect the 2030 target set by Executive Order B-30-15 and codified by SB 32. The 2022 draft plan:

- Identifies a path to keep California on track to meet its SB 32 GHG reduction target of at least 40 percent below 1990 emissions by 2030.
- Identifies a technologically feasible, cost-effective path to achieve carbon neutrality by 2045 or earlier.
- Focuses on strategies for reducing California's dependency on petroleum to provide consumers with clean energy options that address climate change, improve air quality, and support economic growth and clean sector jobs.
- Integrates equity and protecting California's most impacted communities as a driving principle.
- Incorporates the contribution of natural and working lands to the state's GHG emissions, as well as its role in achieving carbon neutrality.
- Relies on the most up to date science, including the need to deploy all viable tools, including carbon capture and sequestration as well a direct air capture.
- Evaluates multiple options for achieving our GHG and carbon neutrality targets, as well as the public health benefits and economic impacts associated with each.

The draft Scoping Plan Update was published on May 10, 2022 and, once final, will lay out how the state can get to carbon neutrality by 2045 or earlier. It is also the first Scoping Plan that adds carbon neutrality as a science-based guide and touchstone beyond statutorily established emission reduction targets.[50]

The mid-term 2030 target is considered critical by CARB on the path to obtaining an even deeper GHG emissions target of 80 percent below 1990 levels by 2050, as directed in Executive Order S-3-05. The 2022 Draft 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 to not only obtain the statewide goals, but cost-effectively achieve carbon-neutrality by 2045 or earlier. In the draft 2022 Scoping Plan, CARB recommends:

[49] 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

[50] https://ww2.arb.ca.gov/our-work/programs/ab-32-climate-change-scoping-plan/2022-scoping-plan-documents

- VMT per capita reduced 12% below 2019 levels by 2030 and 22% below 2019 levels by 2045.
- 100% of Light-duty vehicle sales are zero emissions vehicles (ZEV) by 2035.
- 100% of medium duty/heavy duty vehicle sales are ZEV by 2040.
- 100% of passenger and other locomotive sales are ZEV by 2030.
- 100% of line haul locomotive sales are ZEV by 2035.
- All electric appliances in new residential and commercial building beginning 2026 (residential) and 2029 (commercial).
- 80% of residential appliance sales are electric by 2030 and 100% of residential appliance sales are electric by 2035.
- 80% of commercial appliance sales are electric by 2030 and 100% of commercial appliance sales are electric by 2045.

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.[51] 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 systems. For nonresidential developments, it is predicted that these buildings will use 30 percent less energy due to lightening upgrades.[52]

CEC studies have identified the most aggressive electrification scenario as putting the building sector on track to reach the carbon neutrality goal by 2045.[53] Installing new natural gas infrastructure in new buildings will interfere with this goal. To meet the State's goal, communities have been adopting "Reach" codes that prohibit natural gas connections in new and remodeled buildings.

Requirements for EV charging infrastructure are set forth in Title 24 of the California Code of Regulations and are regularly updated on a 3-year cycle. The CALGreen standards consist of a set of mandatory standards required for new development, as well as two more voluntary standards

[51] 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.
[52] See: https://www.energy.ca.gov/sites/default/files/2020-03/Title_24_2019_Building_Standards_FAQ_ada.pdf
[53] California Energy Commission. 2021. F*inal Commission Report: California Building Decarbonization Assessment. Publication Number CEC-400-2021-006-CMF*.August

known as Tier 1 and Tier 2. The CalGreen standards have recently been updated (2022 version) to require deployment of additional EV chargers in various building types, including multifamily residential and nonresidential land uses. They include requirements for both EV capable parking spaces and the installation of Level 2 EV supply equipment for multifamily residential and nonresidential buildings. The 2022 CALGreen standards include requirements for both EV readiness and the actual installation of EV chargers. The 2022 CALGreen standards include both mandatory requirements and more aggressive voluntary Tier 1 and Tier 2 provisions. Providing EV charging infrastructure that meets current CALGreen requirements will not be sufficient to power the anticipated more extensive level of EV penetration in the future that is needed to meet SB 30 climate goals.

SB 743 Transportation Impacts

Senate Bill 743 required lead agencies to abandon the old "level of service" metric for evaluating a project's transportation impacts, which was based solely on the amount of delay experienced by motor vehicles. In response, the Governor's Office of Planning and Research (OPR) developed a VMT metric that considered other factors such as reducing GHG emissions and developing multimodal transportation[54]. A VMT-per-capita metric was adopted into the CEQA Guidelines Section 15064.3 in November 2017. Given current baseline per-capita VMT levels computed by CARB in the 2030 Scoping Plan of 22.24 miles per day for light-duty vehicles and 24.61 miles per day for all vehicle types, the reductions needed to achieve the 2050 climate goal are 16.8 percent for light-duty vehicles and 14.3 percent for all vehicle types combined. Based on this analysis (as well as other factors), OPR recommended using a 15-percent reduction in per capita VMT as an appropriate threshold of significance for evaluating transportation impacts.

Advanced Clean Cars

The Advanced Clean Cars Program, originally adopted by CARB in 2012, was designed to bring together CARB's traditional passenger vehicle requirements to meet federal air quality standards and also support California's AB 32 goals to develop and implement programs to reduce GHG emissions back down to 1990 levels by 2020, a goal achieved in 2016 as a result of numerous emissions reduction programs.

This recent rule, *Advanced Clean Cars II (ACC II)* is phase two of the original rule. ACC II establishes a year-by-year process, starting in 2026, so all new cars and light trucks sold in California will be zero-emission vehicles by 2035, including plug-in hybrid electric vehicles. The regulation codifies the light-duty vehicle goals set out in Governor Newsom's Executive Order N-79-20. Currently, 16 percent of new light-duty vehicles sold in California are zero emissions or plug-in hybrids. By 2030, 68 percent of new vehicles sold in California would be zero emissions and 100 percent by 2035.

[54] Governor's Office of Planning and Research. 2018. *Technical Advisory on Evaluating Transportation Impacts in CEQA*. December.

City of South San Francisco Climate Action Plan

Also adopted in October 2022, the City of South San Francisco's Climate Action Plan (CAP) was developed alongside the October 2022 update to the City's General Plan[55]. The updated CAP extends the horizon year to 2040 and sets a long-term goal of carbon neutrality by 2045 to align with State targets. The updated CAP aims to achieve the following:

1. Achieve carbon neutrality by 2045, reduce emissions 40% by 2030, and 80% by 2040.
2. Equitably mitigate and address the impacts of climate change.
3. Realize the co-benefits of climate mitigation actions that help create a sustainable community.

To achieve these goals, the CAP includes various strategies and actions to reduce greenhouse gas emissions. The following are strategies and actions that may be implemented citywide which could indirectly apply to this proposed project:

BNC 1.1 **Improve the energy efficiency of new construction.** Provide a combination of financial and development process incentives (eg. Expedited permitting, FAR increase, etc.) to encourage new development to exceed Title 24 energy efficiency standard.

BNC 2.1 **All-Electric Reach Code for Nonresidential New Construction.** Implement residential all-electric reach code and adopt all-electric reach code for nonresidential new construction.

BE 1.3 **Energy Efficiency Programs.** Update zoning and building codes to require alternations or additions at least 50% the size of the original building to comply with minimum CALGreen requirements.

BE 2.4 **All-Electric Major Renovations.** Adopt an all-electric reach code for major renovations, alterations, additions.

TL 2.2 **TDM Program.** Implement, monitor, and enforce compliance with the City's TDM Ordinance.

TL 2.6 **Complete Streets Policy.** Ensure that all roadway and development projects are designed and evaluated to meet the needs of all street users, and that development projects contribute to multimodal improvements in proportion to their potential impacts on vehicle miles traveled. Incorporate bicycle and pedestrian improvements identified in the Active South City Plan.

WW 2.1 **Indoor Water Efficiency Standards.** Require high-efficiency fixtures in all new construction and major renovations, comparable to CalGreen Tier 1 or 2 standards.

[55] City of South San Francisco, URL: https://shapessf.com/wp-content/uploads/2022/11/SSFCAP_AdoptedResolution.pdf

BAAQMD GHG Significance Thresholds

On April 20, 2022, BAAQMD adopted new thresholds of significance for operational GHG emissions from land use projects for projects beginning the CEQA process. The following framework is how BAAQMD will determine GHG significance moving forward.[56] Note BAAQMD intends that the thresholds apply to projects that begin the CEQA process after adoption of the thresholds, unless otherwise directed by the lead agency. The new thresholds of significance are:

A. Projects must include, at a minimum, the following project design elements:
   a. Buildings
      i. The project will not include natural gas appliances or natural gas plumbing (in both residential and non-residential development).
      ii. The project will not result in any wasteful, inefficient, or unnecessary energy usage as determined by the analysis required under CEQA Section 21100(b)(3) and Section 15126.2(b) of the State CEQA Guidelines.
   b. Transportation
      i. Achieve a reduction in project-generated vehicle miles traveled (VMT) below the regional average consistent with the current version of the California Climate Change Scoping Plan (currently 15 percent) or meet a locally adopted Senate Bill 743 VMT target, reflecting the recommendations provided in the Governor's Office of Planning and Research's Technical Advisory on Evaluating Transportation Impacts in CEQA:
         1. Residential Projects: 15 percent below the existing VMT per capita
         2. Office Projects: 15 percent below the existing VMT per employee
         3. Retail Projects: no net increase in existing VMT
      ii. Achieve compliance with off-street electric vehicle requirements in the most recently adopted version of CALGreen Tier 2.

B. Be consistent with a local GHG reduction strategy that meets the criteria under State CEQA Guidelines Section 15183.5(b).

Any new land use project would have to include either section A or B from the above list, not both, to be considered in compliance with BAAQMD's GHG thresholds of significance. As shown in Impact GHG-2, the project is complying with section B from this list.

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.

[56] Justification Report: BAAQMD CEQA Thresholds for Evaluating the Significance of Climate Impacts from Land Use Project and Plans. Web: https://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa-thresholds-2022/justification-report-pdf.pdf?la=en

Emissions for the proposed project are discussed below and were analyzed using the methodology recommended in the BAAQMD CEQA Air Quality Guidelines.

CalEEMod Modeling

CalEEMod was used to predict GHG emissions from operation of the site assuming full build-out of the project. The project land use types and size and other project-specific information were input to the model, as described above within the construction period emissions. CalEEMod output is included in *Attachment 1*.

Construction GHG Emissions

GHG emissions associated with construction were computed at 6,735 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. Construction emissions have been amortized over the average 40-year life-span of a building and added to the operational emissions for this analysis.

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. As shown in Table 8, annual GHG emissions resulting from operation of the proposed project are predicted to be a net of 4,810 MT of CO_2e in 2028.

Table 8. Annual Project GHG Emissions (CO_2e) in Metric Tons

Source Category	Existing Use in 2022	Proposed Project in 2028	Net Increase
Construction (Amortized)	0.00	168.38	168.38
Area	0.00	0.04	0.04
Energy Consumption	149.83	1,187.05	1,037.22
Mobile	637.45	3,903.00	3,265.55
Stationary	0.00	281.69	281.69
Solid Waste Generation	4.34	34.39	30.05
Water Usage	76.02	271.50	195.48
Total (MT CO_{2e}/year)	868	5,678	4,810

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

For this impact to be considered less than significant, it must be consistent with a local GHG reduction strategy or meet the minimum project design elements recommended by BAAQMD. The City's CAP was developed alongside the October 2022 update to the City's General Plan.

The EIR provided the environmental review and subsequent public review process that would qualify the updated 2022 CAP under CEQA Guidelines Section 15183.5(b). Further, the CAP quantified GHG emissions in the South San Francisco area, established a level where emissions from activities in the South San Francisco area would not be cumulatively considerable, identified GHG emissions resulting from actions within the South San Francisco area, specified project-level measures to achieve the emissions level specified by the CAP, and established a set time-period to monitor the CAPs progress towards achieving the emissions level specified. As such, the City's CAP is considered a qualified GHG reduction strategy under CEQA Guidelines Section 15183.5(b)(1). Furthermore, the Project meets the project-level thresholds recommended by BAAQMD. The Project would be energy efficient and not utilize natural gas, include EV charging stations consistent with the requirements under Section 20.330.008 of the City's Municipal Code and the CalGreen Tier 2 requirements at the time of project application, and has VMT per employee of 12.4 after TDM plan implementation, more than 15% below the existing regional VMT per employee.

Conclusion GHG-1 and GHG-2

The project is considered to have less than significant impacts from GHG emissions because it is consistent with the newly adopted Climate Action Plan, a qualified plan under CEQA Guidelines Section 15183.5(b). Operational GHG emissions analyzed by the EIR were found to have less than significant impacts.

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 emissions. 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 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.[57] 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.[58] 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.[59] 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

[57] 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.
[58] CARB, 2015. *Risk Management Guidance for Stationary Sources of Air Toxics*. July 23.
[59] 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: 800 Dubuque

Complete ALL Portions in Yellow

See Equipment Type TAB for type, horsepower and load factor

Project Size	N/A	Dwelling Units	5.9	total project acres disturbed
	N/A	s.f. residential		
	N/A	s.f. retail		
	900,000	s.f. office/R&D		
	0	s.f. other, specify:		
	640000	s.f. parking garage	1420	spaces
	0	s.f. parking lot		spaces
Construction Days	8/1/2023	to	3/26/2027	
Construction Hours	7:00 am	to	3:30 pm	

Pile Driving? Y

Project include on-site GENERATOR OR FIRE PUMP during project OPERATION (not construction)? Y ____

IF YES (if BOTH separate values) -->

Kilowatts/Horsepower: __(6) total generators 11,000 total kW_____

Fuel Type: ____Diesel_____

Location in project (Plans Desired if Available): Various

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
	Site Preparation (includes demo and underground utilities)	**Start Date:**	**8/1/2023**	**Total phase:**	**120**			**Overall Import/Export Volumes**
		End Date:	**1/15/2024**					
3	Excavators	300	0.38	8	120	8	328320	**Demolition Volume**
1	Generators	50	0.74	8	120	8	35520	Square footage of buildings to be demolished
1	Compressors	49	0.6	8	120	8	28224	(*or* total tons to be hauled)
2	Backhoe	70	0.37	8	120	8	49728	**113,595** square feet *or*
1	Bulldozer (D6)	150	0.4	8	120	8	57600	**?** Hauling volume (tons)
1	Plate Compactors	8	0.43	8	120	8	3302.4	
1	Bobcat Loader	70	0.37	8	120	8	24864	
1	Sweeper	64	0.46	4	120	4	14131.2	
								Any pavement demolished and hauled? **_112_ tons**
	Grading (includes shoring and 4 levels of excavation)	**Start Date:**	**1/16/2024**	**Total phase:**	**234**			AL to get from estimating
		End Date:	**12/6/2024**					
3	Excavators	300	0.38	8	234	8	640224	
1	Backhoe	70	0.37	8	234	8	48485	
1	Bulldozer (D6)	150	0.4	8	234	8	112320	
1	Bobcat Loader	70	0.37	8	234	8	48484.8	**Soil Hauling Volume**
1	Sweeper	64	0.46	4	234	4	27555.84	Export volume = **331,000** cubic yards?
2	Grout Pump	40	0.74	8	234	8	110822	Import volume = **0** cubic yards?
5	Drill Rig/Tieback drill rig	200	0.5	8	234	8	936000	
1	Mobile Crane	150	0.29	8	234	8	81432	
1	Roller/Compactor	100	0.37	4	234	4	34632	
1	Dewatering pumps (electric)	N/A	N/A	24	563	24	N/A	Dewaterin
	Building Construction (includes all construction from bottom of excavation to finished building)	**Start Date:**	**12/7/2024**	**Total phase:**	**563**			
		End Date:	**2/3/2027**					**Cement Trucks? _8,400_ Total Round-Trips**
1	Mobile Crane	150	0.29	8	234	3.3250444	81432	
2	Sky Jack Lift	75	0.31	8	563	8	209436	
6	Spider Lift (electric)	N/A	N/A	8	563	8	N/A	Electric? (Y/N) __Y___ Otherwise assumed diesel
1	Compressor (electric)	N/A	N/A	8	563	8	N/A	Electric? (Y/N) __Y___ Otherwise assumed diesel
2	Tower Crane (electric)	N/A	N/A	8	563	8	N/A	Electric? (Y/N) __Y___ Otherwise assumed diesel
12	Welding Machine (electric)	N/A	N/A	8	563	8	N/A	Electric? (Y/N) __Y___ Otherwise assumed diesel
1	Backhoe	70	0.37	4	563	4	58327	
1	Forklift (electric)	N/A	N/A	8	563	8	N/A	Electric? (Y/N) __Y___ Otherwise assumed diesel
12	Scissor Lift (electric)	N/A	N/A	8	563	8	N/A	Electric? (Y/N) __Y___ Otherwise assumed diesel
6	Personnel Hoist (electric)	N/A	N/A	8	563	8	N/A	Electric? (Y/N) __Y___ Otherwise assumed diesel
1	Sweeper	64	0.46	4	563	4	66299	
	Paving (includes site improvements, hardscape, landscape)	**Start Date:**	**7/17/2026**	**Total phase:**	**181**			
		End Date:	**3/26/2027**					
1	Backhoe	70	0.37	8	181	8	37503	
1	Bobcat Loader	70	0.37	8	181	8	37503	
1	Asphalt Paver	175	0.36	8	181	8	91224	
1	Roller	140	0.38	8	181	8	77034	
1	Bulldozer (D6)	150	0.4	4	181	4	43440	
1	Plate Compactors	8	0.43	8	181	8	4981	
1	Sky Jack Lift	75	0.31	8	181	8	33666	
1	Sweeper	64	0.46	4	181	4	21315	
								Asphalt? __1,111 _ cubic yards or ____ round trips?
								1.6 tons of asphalt is a cubic yard
	Additional Phases	**Start Date:**		**Total phase:**				
		Start Date:						

Construction Criteria Air Pollutants							
Unmitigated	ROG	NOX	PM10 Exhaust	PM2.5 Exhaust	PM2.5 Fugitive	**CO2e**	
Year	Tons					MT	
Construction Equipment							
2023	0.15	1.34	0.06	0.05	0.01	247.69	
2024	0.49	4.64	0.18	0.16	0.40	1128.19	
2025	0.08	0.80	0.02	0.02	0.00	172.87	
2026	2.73	1.62	0.05	0.04	0.00	337.26	
2027	2.32	0.51	0.02	0.01	0.00	102.78	
EMFAC							
2023	0.07	0.85	0.05	0.02		592.81	
2024	0.15	1.93	0.11	0.04		1390.83	
2025	0.14	1.82	0.11	0.04		1355.81	
2026	0.13	1.72	0.11	0.04		1461.81	
2027	0.03	0.38	0.02	0.01		332.35	
Total Construction Emissions by Year							
2023	0.22	2.19	0.10	0.07		840.51	
2024	0.64	6.58	0.28	0.21		2519.02	
2025	0.22	2.62	0.13	0.06		1528.67	
2026	2.86	3.34	0.15	0.09		1799.08	
2027	2.35	0.89	0.04	0.02		435.13	
	Total Construction Emissions						
Tons	6.28	15.62	0.71	0.45		7122.40	
Pounds/Workdays	*Average Daily Emissions*					Workdays	
2023	3.97	40.15	1.90	1.35			**109**
2024	4.89	50.20	2.17	1.60			**262**
2025	1.67	20.09	0.96	0.47			**261**
2026	21.89	25.63	1.17	0.66			**261**
2027	76.94	29.04	1.32	0.80			**61**
Threshold - lbs/day	**54.0**	**54.0**	**82.0**	**54.0**			
	Total Construction Emissions						
Pounds	109.37	165.10	7.53	4.87		0.00	
Average	13.16	32.74	1.48	0.95		0.00	954.00
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	6.98	2.89	4.28	1.16			
	Existing Use Emissions						
Total	0.95	0.47	0.61	0.16			
	Net Annual Operational Emissions						
Tons/year	6.04	2.43	3.67	0.99			
Threshold - Tons/year	**10.0**	**10.0**	**15.0**	**10.0**			
	Average Daily Emissions						
Pounds Per Day	33.08	13.29	20.11	5.45			
Threshold - lbs/day	**54.0**	**54.0**	**82.0**	**54.0**			

Category	**CO2e**			
	Project	Existing	Project 2030	Existing
Area	0.04	0.00		
Energy	1187.05	149.83		
Mobile	3903.00	637.45		
Stationary	281.69			
Waste	34.39	4.34		
Water	271.50	76.02		
TOTAL	5677.68	867.64		
Net GHG Emissions		4810.04		

Traffic Consultant Trip Gen						CalEEMod Default		
Land Use		Size	Daily Trips	New Trips	Weekday Trip Gen	Weekday	Sat	Sun
Research & Development	ksf	900	9972	6582	***7.31***	11.26	1.9	1.11
TDM Reduction	34%		*-3390*			*Rev*	***1.23***	***0.72***
Existing								
Research & Development	ksf	113.595	947	947	***8.34***	11.26	1.9	1.11
						Rev	***1.41***	***0.82***

			Daily		AM Peak Hour						PM Peak Hour					
Land Use	Size	Unit	Rate	Trips	Rate	In%	Out%	In	Out	Total	Rate	In%	Out%	In	Out	Total
Proposed Uses																
Research & Development[1]	900	ksf	11.08	9,972	1.52	88%	12%	1,204	164	1,368	1.44	17%	83%	220	1,076	1,296
TDM reduction (34%) [2]				*(3,390)*				*(409)*	*(56)*	*(465)*				*(75)*	*(366)*	*(441)*
After TDM Reduction				6,582				795	108	903				145	710	855
Existing Uses [3]				*(947)*				*(66)*	*(22)*	*(88)*				*(17)*	*(23)*	*(40)*
Net Project Trips				**5,635**				**729**	**86**	**815**				**128**	**687**	**815**

Notes: 1 ksf =1,000 s.f.

[1] In order to represent a conservative analysis and for the project to have the flexibility of having a combination of office and R&D uses or 100% office use, peak hour trips were estimated using average rates for General Office Building (710) land use and daily trips were estimated using average daily trip rate for Research and Development Center (760) land use from Institute of Transportation Engineers, Trip Generation, 11th Edition.

[2] The project will be required to implement a TDM program consistent with the revised Chapter 20.400 of the Municipal Code, and would be required to achieve a maximum of 50 percent of employees commuting via driving alone. The TDM reduction assumes that 50% of the employees will drive alone and the rest of the employees will commute via transit, carpool, bike or walk.

[3] Based on driveway counts conducted on July 12, 2022. Growth factors of 1.29 and 1.22 were applied to the AM and PM peak hour driveway counts respectively to in order to reflect pre-COVID traffic levels. These adjustment factors were developed based on a comparison of the traffic volumes on the east leg of Oyster Point Boulevard/Dubuque Avenue intersection before (2019 count) and during the pandemic (2022 count) to estimate the changes in traffic levels in the East of 101 area. To estimate daily trips for existing uses, a ratio of 11.08/1.03 (ITE daily trip rate/AM peak hour trip rate for R&D landuse) was applied to the total AM peak hour driveway counts. The vacancy at the time of the counts is approximately consistent with the average vacancy for this type of use (per ITE). so no adjustment was made for vacancy.

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1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Research & Development	900.00	1000sqft	5.90	900,000.00	0
Enclosed Parking with Elevator	1,420.00	Space	0.00	640,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	70
Climate Zone	5			**Operational Year**	2028
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 -

Land Use - Total square footage and lot acreage provided in project construction sheet.

Construction Phase - Provided in construction worksheet. 6 months of arch coating added for ROG emissions calculations.

Off-road Equipment -

Off-road Equipment - Provided by construction worksheet. Electric lifts, electric air compressors, electric cranes, electric forklifts, electric welders = 0 HP and 0 Load Factor.

Off-road Equipment - Default equipment since no phase provided.

Off-road Equipment - Provided by construction worksheet.

Off-road Equipment - Provided by construction worksheet. Electric pump = 0 HP and 0 Load Factor.

Off-road Equipment - Provided by construction worksheet.

Trips and VMT - EMFAC2021 adjustment 0 trips, pavement demo = 112 tons, building const = 8,400 concrete truck round trips, paving = 1,111-cy asphalt.

Demolition - Existing building demo = 113,595-sqft.

Date: 11/22/2022 10:48 AM

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Grading - Grading = 331,000-cy exported.

Vehicle Trips - Provided trip gen with reduction adjustments.

Vehicle Emission Factors - EMFAC2021 vehicle emissions factors San Mateo County 2028.

Energy Use - No reach code passed for new non-residential.

Water And Wastewater - Wastewater treatment 100% aerobic - no septic tanks or lagoons.

Construction Off-road Equipment Mitigation - BMPs, tier 4 interim mitigation.

Fleet Mix - EMFAC2021 fleet mix San Mateo County 2028.

Stationary Sources - Emergency Generators and Fire Pumps - 6 11,000-kW total, 14,745.31-hp total diesel generators - 50hrs/yr

Stationary Sources - Emergency Generators and Fire Pumps EF - Emergency Generators and Fire Pumps EF - Tier 4/BACT emission factors for generators (NOx, PM10, PM2.5)

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	27.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
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	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	8.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	12.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim

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tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
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tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstructionPhase	NumDays	20.00	120.00
tblConstructionPhase	NumDays	20.00	234.00
tblConstructionPhase	NumDays	230.00	563.00
tblConstructionPhase	NumDays	20.00	181.00
tblConstructionPhase	NumDays	20.00	130.00
tblFleetMix	HHD	1.8670e-003	2.4360e-003
tblFleetMix	HHD	1.8670e-003	2.4360e-003
tblFleetMix	LDA	0.45	0.41
tblFleetMix	LDA	0.45	0.41
tblFleetMix	LDT1	0.08	0.04
tblFleetMix	LDT1	0.08	0.04
tblFleetMix	LDT2	0.24	0.30
tblFleetMix	LDT2	0.24	0.30
tblFleetMix	LHD1	0.03	0.03
tblFleetMix	LHD1	0.03	0.03
tblFleetMix	LHD2	6.8710e-003	7.0230e-003

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tblFleetMix	LHD2	6.8710e-003	7.0230e-003
tblFleetMix	MCY	0.03	0.02
tblFleetMix	MCY	0.03	0.02
tblFleetMix	MDV	0.15	0.17
tblFleetMix	MDV	0.15	0.17
tblFleetMix	MH	2.8140e-003	2.1040e-003
tblFleetMix	MH	2.8140e-003	2.1040e-003
tblFleetMix	MHD	0.01	8.4200e-003
tblFleetMix	MHD	0.01	8.4200e-003
tblFleetMix	OBUS	1.3840e-003	2.2460e-003
tblFleetMix	OBUS	1.3840e-003	2.2460e-003
tblFleetMix	SBUS	4.2400e-004	4.0200e-004
tblFleetMix	SBUS	4.2400e-004	4.0200e-004
tblFleetMix	UBUS	5.2200e-004	6.7900e-004
tblFleetMix	UBUS	5.2200e-004	6.7900e-004
tblGrading	AcresOfGrading	234.00	117.00
tblGrading	MaterialExported	0.00	331,000.00
tblLandUse	LandUseSquareFeet	568,000.00	640,000.00
tblLandUse	LotAcreage	20.66	5.90
tblLandUse	LotAcreage	12.78	0.00
tblOffRoadEquipment	HorsePower	231.00	0.00
tblOffRoadEquipment	HorsePower	89.00	0.00
tblOffRoadEquipment	HorsePower	46.00	0.00
tblOffRoadEquipment	HorsePower	63.00	0.00
tblOffRoadEquipment	HorsePower	78.00	0.00
tblOffRoadEquipment	HorsePower	84.00	0.00
tblOffRoadEquipment	LoadFactor	0.29	0.00
tblOffRoadEquipment	LoadFactor	0.20	0.00
tblOffRoadEquipment	LoadFactor	0.45	0.00

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tblOffRoadEquipment	LoadFactor	0.31	0.00
tblOffRoadEquipment	LoadFactor	0.48	0.00
tblOffRoadEquipment	LoadFactor	0.74	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	12.00
tblOffRoadEquipment	UsageHours	7.00	3.30
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	4.00
tblStationaryGeneratorsPumpsEF	NOX_EF	4.56	0.50
tblStationaryGeneratorsPumpsEF	NOX_EF	4.56	0.50
tblStationaryGeneratorsPumpsEF	NOX_EF	4.56	0.50
tblStationaryGeneratorsPumpsEF	NOX_EF	4.56	0.50
tblStationaryGeneratorsPumpsEF	NOX_EF	4.56	0.50
tblStationaryGeneratorsPumpsEF	PM10_EF	0.15	0.02
tblStationaryGeneratorsPumpsEF	PM10_EF	0.15	0.02
tblStationaryGeneratorsPumpsEF	PM10_EF	0.15	0.02
tblStationaryGeneratorsPumpsEF	PM10_EF	0.15	0.02
tblStationaryGeneratorsPumpsEF	PM10_EF	0.15	0.02
tblStationaryGeneratorsPumpsEF	PM2_5_EF	0.15	0.02
tblStationaryGeneratorsPumpsEF	PM2_5_EF	0.15	0.02
tblStationaryGeneratorsPumpsEF	PM2_5_EF	0.15	0.02
tblStationaryGeneratorsPumpsEF	PM2_5_EF	0.15	0.02

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tblStationaryGeneratorsPumpsEF	PM2_5_EF	0.15	0.02
tblStationaryGeneratorsPumpsUse	HorsePowerValue	0.00	3,753.40
tblStationaryGeneratorsPumpsUse	HorsePowerValue	0.00	3,753.40
tblStationaryGeneratorsPumpsUse	HorsePowerValue	0.00	3,753.40
tblStationaryGeneratorsPumpsUse	HorsePowerValue	0.00	1,340.50
tblStationaryGeneratorsPumpsUse	HorsePowerValue	0.00	1,340.50
tblStationaryGeneratorsPumpsUse	HorsePowerValue	0.00	804.30
tblStationaryGeneratorsPumpsUse	HoursPerYear	0.00	50.00
tblStationaryGeneratorsPumpsUse	HoursPerYear	0.00	50.00
tblStationaryGeneratorsPumpsUse	HoursPerYear	0.00	50.00
tblStationaryGeneratorsPumpsUse	HoursPerYear	0.00	50.00
tblStationaryGeneratorsPumpsUse	HoursPerYear	0.00	50.00
tblStationaryGeneratorsPumpsUse	HoursPerYear	0.00	50.00
tblStationaryGeneratorsPumpsUse	NumberOfEquipment	0.00	1.00
tblStationaryGeneratorsPumpsUse	NumberOfEquipment	0.00	1.00
tblStationaryGeneratorsPumpsUse	NumberOfEquipment	0.00	1.00
tblStationaryGeneratorsPumpsUse	NumberOfEquipment	0.00	1.00
tblStationaryGeneratorsPumpsUse	NumberOfEquipment	0.00	1.00
tblStationaryGeneratorsPumpsUse	NumberOfEquipment	0.00	1.00
tblTripsAndVMT	HaulingTripNumber	517.00	0.00
tblTripsAndVMT	HaulingTripNumber	41,375.00	0.00
tblTripsAndVMT	VendorTripNumber	252.00	0.00
tblTripsAndVMT	WorkerTripNumber	30.00	0.00
tblTripsAndVMT	WorkerTripNumber	45.00	0.00
tblTripsAndVMT	WorkerTripNumber	557.00	0.00
tblTripsAndVMT	WorkerTripNumber	25.00	0.00
tblTripsAndVMT	WorkerTripNumber	111.00	0.00
tblVehicleEF	HHD	0.03	0.24
tblVehicleEF	HHD	0.19	0.21

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tblVehicleEF	HHD	3.0000e-006	0.00
tblVehicleEF	HHD	5.40	4.64
tblVehicleEF	HHD	1.02	1.55
tblVehicleEF	HHD	0.04	0.02
tblVehicleEF	HHD	891.28	724.85
tblVehicleEF	HHD	1,480.38	1,615.27
tblVehicleEF	HHD	0.32	0.24
tblVehicleEF	HHD	0.14	0.12
tblVehicleEF	HHD	0.24	0.26
tblVehicleEF	HHD	3.0000e-006	0.00
tblVehicleEF	HHD	5.10	3.48
tblVehicleEF	HHD	2.86	2.12
tblVehicleEF	HHD	2.40	2.73
tblVehicleEF	HHD	3.1440e-003	2.4630e-003
tblVehicleEF	HHD	0.06	0.09
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	0.02	0.02
tblVehicleEF	HHD	3.0080e-003	2.3510e-003
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.7420e-003	8.6320e-003
tblVehicleEF	HHD	0.02	0.02
tblVehicleEF	HHD	5.0000e-006	4.4100e-004
tblVehicleEF	HHD	2.7100e-004	1.2900e-004
tblVehicleEF	HHD	0.36	0.28
tblVehicleEF	HHD	4.0000e-006	0.00
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	1.2600e-004	9.3100e-004
tblVehicleEF	HHD	1.5000e-005	2.0000e-006
tblVehicleEF	HHD	7.8960e-003	5.9300e-003

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tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	3.0000e-006	2.0000e-006
tblVehicleEF	HHD	5.0000e-006	4.4100e-004
tblVehicleEF	HHD	2.7100e-004	1.2900e-004
tblVehicleEF	HHD	0.43	0.55
tblVehicleEF	HHD	4.0000e-006	0.00
tblVehicleEF	HHD	0.22	0.24
tblVehicleEF	HHD	1.2600e-004	9.3100e-004
tblVehicleEF	HHD	1.6000e-005	2.0000e-006
tblVehicleEF	LDA	1.0040e-003	1.2470e-003
tblVehicleEF	LDA	0.03	0.05
tblVehicleEF	LDA	0.40	0.46
tblVehicleEF	LDA	1.80	2.32
tblVehicleEF	LDA	206.14	220.37
tblVehicleEF	LDA	43.85	57.42
tblVehicleEF	LDA	3.1120e-003	3.0940e-003
tblVehicleEF	LDA	0.02	0.02
tblVehicleEF	LDA	0.02	0.02
tblVehicleEF	LDA	0.13	0.19
tblVehicleEF	LDA	0.04	6.3670e-003
tblVehicleEF	LDA	9.8400e-004	9.1800e-004
tblVehicleEF	LDA	1.3790e-003	1.6460e-003
tblVehicleEF	LDA	0.02	2.2280e-003
tblVehicleEF	LDA	9.0600e-004	8.4400e-004
tblVehicleEF	LDA	1.2680e-003	1.5140e-003
tblVehicleEF	LDA	0.02	0.22
tblVehicleEF	LDA	0.07	0.06
tblVehicleEF	LDA	0.02	0.00
tblVehicleEF	LDA	3.5660e-003	4.5380e-003

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tblVehicleEF	LDA	0.03	0.17
tblVehicleEF	LDA	0.14	0.22
tblVehicleEF	LDA	2.0390e-003	2.1780e-003
tblVehicleEF	LDA	4.3400e-004	5.6800e-004
tblVehicleEF	LDA	0.02	0.22
tblVehicleEF	LDA	0.07	0.06
tblVehicleEF	LDA	0.02	0.00
tblVehicleEF	LDA	5.1800e-003	6.6150e-003
tblVehicleEF	LDA	0.03	0.17
tblVehicleEF	LDA	0.15	0.24
tblVehicleEF	LDT1	1.4820e-003	2.8080e-003
tblVehicleEF	LDT1	0.03	0.07
tblVehicleEF	LDT1	0.49	0.76
tblVehicleEF	LDT1	1.91	3.29
tblVehicleEF	LDT1	244.99	288.33
tblVehicleEF	LDT1	52.13	74.24
tblVehicleEF	LDT1	3.4700e-003	5.2590e-003
tblVehicleEF	LDT1	0.02	0.03
tblVehicleEF	LDT1	0.03	0.06
tblVehicleEF	LDT1	0.15	0.26
tblVehicleEF	LDT1	0.04	7.9810e-003
tblVehicleEF	LDT1	1.1460e-003	1.2280e-003
tblVehicleEF	LDT1	1.5780e-003	2.0320e-003
tblVehicleEF	LDT1	0.02	2.7930e-003
tblVehicleEF	LDT1	1.0540e-003	1.1300e-003
tblVehicleEF	LDT1	1.4500e-003	1.8690e-003
tblVehicleEF	LDT1	0.03	0.35
tblVehicleEF	LDT1	0.07	0.10
tblVehicleEF	LDT1	0.03	0.00

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tblVehicleEF	LDT1	5.6920e-003	0.01
tblVehicleEF	LDT1	0.06	0.28
tblVehicleEF	LDT1	0.15	0.32
tblVehicleEF	LDT1	2.4240e-003	2.8500e-003
tblVehicleEF	LDT1	5.1600e-004	7.3400e-004
tblVehicleEF	LDT1	0.03	0.35
tblVehicleEF	LDT1	0.07	0.10
tblVehicleEF	LDT1	0.03	0.00
tblVehicleEF	LDT1	8.3040e-003	0.02
tblVehicleEF	LDT1	0.06	0.28
tblVehicleEF	LDT1	0.17	0.35
tblVehicleEF	LDT2	1.5100e-003	1.5860e-003
tblVehicleEF	LDT2	0.04	0.06
tblVehicleEF	LDT2	0.50	0.54
tblVehicleEF	LDT2	2.32	2.62
tblVehicleEF	LDT2	252.30	291.96
tblVehicleEF	LDT2	54.02	73.80
tblVehicleEF	LDT2	3.6670e-003	3.8830e-003
tblVehicleEF	LDT2	0.02	0.03
tblVehicleEF	LDT2	0.03	0.03
tblVehicleEF	LDT2	0.16	0.22
tblVehicleEF	LDT2	0.04	7.7370e-003
tblVehicleEF	LDT2	1.1110e-003	1.0050e-003
tblVehicleEF	LDT2	1.4690e-003	1.6810e-003
tblVehicleEF	LDT2	0.02	2.7080e-003
tblVehicleEF	LDT2	1.0230e-003	9.2500e-004
tblVehicleEF	LDT2	1.3500e-003	1.5460e-003
tblVehicleEF	LDT2	0.03	0.17
tblVehicleEF	LDT2	0.07	0.05

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tblVehicleEF	LDT2	0.03	0.00
tblVehicleEF	LDT2	5.6150e-003	5.7420e-003
tblVehicleEF	LDT2	0.05	0.13
tblVehicleEF	LDT2	0.18	0.24
tblVehicleEF	LDT2	2.4960e-003	2.8860e-003
tblVehicleEF	LDT2	5.3500e-004	7.3000e-004
tblVehicleEF	LDT2	0.03	0.17
tblVehicleEF	LDT2	0.07	0.05
tblVehicleEF	LDT2	0.03	0.00
tblVehicleEF	LDT2	8.1560e-003	8.3650e-003
tblVehicleEF	LDT2	0.05	0.13
tblVehicleEF	LDT2	0.20	0.27
tblVehicleEF	LHD1	4.2250e-003	4.4750e-003
tblVehicleEF	LHD1	4.9800e-003	3.7050e-003
tblVehicleEF	LHD1	8.4150e-003	0.02
tblVehicleEF	LHD1	0.18	0.19
tblVehicleEF	LHD1	0.44	0.56
tblVehicleEF	LHD1	0.90	2.29
tblVehicleEF	LHD1	8.26	7.85
tblVehicleEF	LHD1	710.72	690.16
tblVehicleEF	LHD1	10.37	17.46
tblVehicleEF	LHD1	7.1300e-004	5.5200e-004
tblVehicleEF	LHD1	0.04	0.03
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	0.04	0.03
tblVehicleEF	LHD1	0.23	0.23
tblVehicleEF	LHD1	0.22	0.33
tblVehicleEF	LHD1	8.9400e-004	6.2600e-004
tblVehicleEF	LHD1	0.08	0.08

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tblVehicleEF	LHD1	9.8630e-003	9.3010e-003
tblVehicleEF	LHD1	6.2770e-003	7.2710e-003
tblVehicleEF	LHD1	2.1000e-004	1.2800e-004
tblVehicleEF	LHD1	8.5600e-004	5.9900e-004
tblVehicleEF	LHD1	0.03	0.03
tblVehicleEF	LHD1	2.4660e-003	2.3250e-003
tblVehicleEF	LHD1	5.9600e-003	6.9240e-003
tblVehicleEF	LHD1	1.9300e-004	1.1700e-004
tblVehicleEF	LHD1	9.3800e-004	0.07
tblVehicleEF	LHD1	0.04	0.02
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	6.2800e-004	0.00
tblVehicleEF	LHD1	0.07	0.04
tblVehicleEF	LHD1	0.14	0.10
tblVehicleEF	LHD1	0.04	0.08
tblVehicleEF	LHD1	8.0000e-005	7.6000e-005
tblVehicleEF	LHD1	6.9340e-003	6.7410e-003
tblVehicleEF	LHD1	1.0300e-004	1.7300e-004
tblVehicleEF	LHD1	9.3800e-004	0.07
tblVehicleEF	LHD1	0.04	0.02
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	6.2800e-004	0.00
tblVehicleEF	LHD1	0.08	0.05
tblVehicleEF	LHD1	0.14	0.10
tblVehicleEF	LHD1	0.04	0.09
tblVehicleEF	LHD2	2.5880e-003	2.4980e-003
tblVehicleEF	LHD2	5.0540e-003	4.0030e-003
tblVehicleEF	LHD2	4.7090e-003	8.4910e-003
tblVehicleEF	LHD2	0.13	0.14

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tblVehicleEF	LHD2	0.44	0.35
tblVehicleEF	LHD2	0.51	1.23
tblVehicleEF	LHD2	12.86	12.94
tblVehicleEF	LHD2	689.13	728.14
tblVehicleEF	LHD2	6.81	9.06
tblVehicleEF	LHD2	1.6210e-003	1.5880e-003
tblVehicleEF	LHD2	0.06	0.07
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.07	0.06
tblVehicleEF	LHD2	0.26	0.34
tblVehicleEF	LHD2	0.13	0.18
tblVehicleEF	LHD2	1.4560e-003	1.3990e-003
tblVehicleEF	LHD2	0.09	0.09
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	1.1100e-004	5.8000e-005
tblVehicleEF	LHD2	1.3930e-003	1.3390e-003
tblVehicleEF	LHD2	0.04	0.03
tblVehicleEF	LHD2	2.7010e-003	2.6410e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	1.0200e-004	5.4000e-005
tblVehicleEF	LHD2	4.6300e-004	0.04
tblVehicleEF	LHD2	0.02	9.8860e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	3.2200e-004	0.00
tblVehicleEF	LHD2	0.09	0.07
tblVehicleEF	LHD2	0.06	0.06
tblVehicleEF	LHD2	0.02	0.04
tblVehicleEF	LHD2	1.2300e-004	1.2400e-004

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tblVehicleEF	LHD2	6.6510e-003	7.0090e-003
tblVehicleEF	LHD2	6.7000e-005	9.0000e-005
tblVehicleEF	LHD2	4.6300e-004	0.04
tblVehicleEF	LHD2	0.02	9.8860e-003
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	3.2200e-004	0.00
tblVehicleEF	LHD2	0.11	0.08
tblVehicleEF	LHD2	0.06	0.06
tblVehicleEF	LHD2	0.02	0.04
tblVehicleEF	MCY	0.32	0.13
tblVehicleEF	MCY	0.25	0.15
tblVehicleEF	MCY	17.92	9.97
tblVehicleEF	MCY	9.35	7.60
tblVehicleEF	MCY	212.64	185.56
tblVehicleEF	MCY	59.12	41.28
tblVehicleEF	MCY	0.07	0.04
tblVehicleEF	MCY	0.02	6.0840e-003
tblVehicleEF	MCY	1.15	0.48
tblVehicleEF	MCY	0.27	0.10
tblVehicleEF	MCY	0.01	0.01
tblVehicleEF	MCY	2.2000e-003	2.0600e-003
tblVehicleEF	MCY	3.0480e-003	3.6830e-003
tblVehicleEF	MCY	5.0400e-003	4.2000e-003
tblVehicleEF	MCY	2.0520e-003	1.9230e-003
tblVehicleEF	MCY	2.8510e-003	3.4470e-003
tblVehicleEF	MCY	0.60	2.88
tblVehicleEF	MCY	0.49	3.54
tblVehicleEF	MCY	0.35	0.00
tblVehicleEF	MCY	2.14	0.82

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tblVehicleEF	MCY	0.39	3.69
tblVehicleEF	MCY	1.90	1.09
tblVehicleEF	MCY	2.1040e-003	1.8340e-003
tblVehicleEF	MCY	5.8500e-004	4.0800e-004
tblVehicleEF	MCY	0.60	0.07
tblVehicleEF	MCY	0.49	3.54
tblVehicleEF	MCY	0.35	0.00
tblVehicleEF	MCY	2.69	1.01
tblVehicleEF	MCY	0.39	3.69
tblVehicleEF	MCY	2.07	1.18
tblVehicleEF	MDV	1.4480e-003	1.6360e-003
tblVehicleEF	MDV	0.04	0.06
tblVehicleEF	MDV	0.48	0.54
tblVehicleEF	MDV	2.34	2.64
tblVehicleEF	MDV	302.50	347.83
tblVehicleEF	MDV	63.56	87.43
tblVehicleEF	MDV	4.7890e-003	4.4600e-003
tblVehicleEF	MDV	0.02	0.03
tblVehicleEF	MDV	0.03	0.04
tblVehicleEF	MDV	0.17	0.24
tblVehicleEF	MDV	0.04	7.7570e-003
tblVehicleEF	MDV	1.0940e-003	9.8600e-004
tblVehicleEF	MDV	1.4420e-003	1.6560e-003
tblVehicleEF	MDV	0.02	2.7150e-003
tblVehicleEF	MDV	1.0090e-003	9.0700e-004
tblVehicleEF	MDV	1.3260e-003	1.5220e-003
tblVehicleEF	MDV	0.04	0.18
tblVehicleEF	MDV	0.07	0.05
tblVehicleEF	MDV	0.04	0.00

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tblVehicleEF	MDV	5.4420e-003	6.1050e-003
tblVehicleEF	MDV	0.05	0.14
tblVehicleEF	MDV	0.19	0.27
tblVehicleEF	MDV	2.9890e-003	3.4370e-003
tblVehicleEF	MDV	6.2900e-004	8.6400e-004
tblVehicleEF	MDV	0.04	0.18
tblVehicleEF	MDV	0.07	0.05
tblVehicleEF	MDV	0.04	0.00
tblVehicleEF	MDV	7.8770e-003	8.8830e-003
tblVehicleEF	MDV	0.05	0.14
tblVehicleEF	MDV	0.21	0.29
tblVehicleEF	MH	4.5770e-003	5.8310e-003
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	0.29	0.40
tblVehicleEF	MH	1.65	1.99
tblVehicleEF	MH	1,349.53	1,661.12
tblVehicleEF	MH	15.57	20.41
tblVehicleEF	MH	0.05	0.07
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	0.87	1.04
tblVehicleEF	MH	0.22	0.26
tblVehicleEF	MH	0.13	0.04
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	2.3000e-004	2.6400e-004
tblVehicleEF	MH	0.06	0.02
tblVehicleEF	MH	3.2860e-003	3.3310e-003
tblVehicleEF	MH	9.5540e-003	0.01
tblVehicleEF	MH	2.1100e-004	2.4200e-004

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

tblVehicleEF	MH	0.19	14.21
tblVehicleEF	MH	0.02	3.78
tblVehicleEF	MH	0.09	0.00
tblVehicleEF	MH	0.03	0.04
tblVehicleEF	MH	4.0680e-003	0.09
tblVehicleEF	MH	0.07	0.09
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	1.5400e-004	2.0200e-004
tblVehicleEF	MH	0.19	14.21
tblVehicleEF	MH	0.02	3.78
tblVehicleEF	MH	0.09	0.00
tblVehicleEF	MH	0.04	0.06
tblVehicleEF	MH	4.0680e-003	0.09
tblVehicleEF	MH	0.08	0.10
tblVehicleEF	MHD	3.9050e-003	0.02
tblVehicleEF	MHD	1.0560e-003	9.8890e-003
tblVehicleEF	MHD	8.7640e-003	9.7490e-003
tblVehicleEF	MHD	0.38	0.65
tblVehicleEF	MHD	0.15	0.21
tblVehicleEF	MHD	0.92	1.08
tblVehicleEF	MHD	57.82	138.62
tblVehicleEF	MHD	988.39	1,180.59
tblVehicleEF	MHD	8.95	9.99
tblVehicleEF	MHD	8.1890e-003	0.02
tblVehicleEF	MHD	0.12	0.14
tblVehicleEF	MHD	8.0390e-003	7.4940e-003
tblVehicleEF	MHD	0.30	0.66
tblVehicleEF	MHD	1.30	0.70
tblVehicleEF	MHD	1.67	1.22

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

tblVehicleEF	MHD	1.5500e-004	9.6700e-004
tblVehicleEF	MHD	0.13	0.04
tblVehicleEF	MHD	6.2770e-003	7.2580e-003
tblVehicleEF	MHD	1.1400e-004	1.2300e-004
tblVehicleEF	MHD	1.4800e-004	9.2500e-004
tblVehicleEF	MHD	0.06	0.02
tblVehicleEF	MHD	5.9980e-003	6.9320e-003
tblVehicleEF	MHD	1.0400e-004	1.1300e-004
tblVehicleEF	MHD	2.2600e-004	0.02
tblVehicleEF	MHD	0.01	4.7930e-003
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	1.5800e-004	0.00
tblVehicleEF	MHD	0.01	0.02
tblVehicleEF	MHD	0.01	0.04
tblVehicleEF	MHD	0.04	0.05
tblVehicleEF	MHD	5.4900e-004	1.2780e-003
tblVehicleEF	MHD	9.4340e-003	0.01
tblVehicleEF	MHD	8.9000e-005	9.9000e-005
tblVehicleEF	MHD	2.2600e-004	0.02
tblVehicleEF	MHD	0.01	4.7930e-003
tblVehicleEF	MHD	0.02	0.04
tblVehicleEF	MHD	1.5800e-004	0.00
tblVehicleEF	MHD	0.01	0.03
tblVehicleEF	MHD	0.01	0.04
tblVehicleEF	MHD	0.05	0.06
tblVehicleEF	OBUS	6.7640e-003	6.8190e-003
tblVehicleEF	OBUS	1.9830e-003	9.0900e-003
tblVehicleEF	OBUS	0.01	9.0140e-003
tblVehicleEF	OBUS	0.66	0.50

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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	0.25	0.18
tblVehicleEF	OBUS	1.39	0.91
tblVehicleEF	OBUS	105.15	90.03
tblVehicleEF	OBUS	1,226.73	1,236.24
tblVehicleEF	OBUS	12.28	8.29
tblVehicleEF	OBUS	0.02	0.01
tblVehicleEF	OBUS	0.13	0.16
tblVehicleEF	OBUS	0.01	8.5290e-003
tblVehicleEF	OBUS	0.46	0.36
tblVehicleEF	OBUS	1.47	0.67
tblVehicleEF	OBUS	1.22	1.09
tblVehicleEF	OBUS	1.5300e-004	2.1800e-004
tblVehicleEF	OBUS	0.13	0.05
tblVehicleEF	OBUS	7.8700e-003	7.9020e-003
tblVehicleEF	OBUS	1.4500e-004	8.9000e-005
tblVehicleEF	OBUS	1.4600e-004	2.0900e-004
tblVehicleEF	OBUS	0.06	0.02
tblVehicleEF	OBUS	7.5160e-003	7.5540e-003
tblVehicleEF	OBUS	1.3400e-004	8.2000e-005
tblVehicleEF	OBUS	7.1800e-004	0.03
tblVehicleEF	OBUS	0.01	7.2060e-003
tblVehicleEF	OBUS	0.05	0.03
tblVehicleEF	OBUS	3.8900e-004	0.00
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.03	0.04
tblVehicleEF	OBUS	0.07	0.04
tblVehicleEF	OBUS	9.9700e-004	8.4600e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	1.2200e-004	8.2000e-005

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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	7.1800e-004	0.03
tblVehicleEF	OBUS	0.01	7.2060e-003
tblVehicleEF	OBUS	0.06	0.04
tblVehicleEF	OBUS	3.8900e-004	0.00
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.03	0.04
tblVehicleEF	OBUS	0.07	0.05
tblVehicleEF	SBUS	0.14	0.11
tblVehicleEF	SBUS	6.6470e-003	0.08
tblVehicleEF	SBUS	0.01	8.9030e-003
tblVehicleEF	SBUS	5.05	2.68
tblVehicleEF	SBUS	0.60	1.08
tblVehicleEF	SBUS	1.80	1.23
tblVehicleEF	SBUS	371.24	204.41
tblVehicleEF	SBUS	917.94	906.87
tblVehicleEF	SBUS	9.78	6.43
tblVehicleEF	SBUS	0.04	0.02
tblVehicleEF	SBUS	0.09	0.10
tblVehicleEF	SBUS	0.01	6.1650e-003
tblVehicleEF	SBUS	2.66	1.15
tblVehicleEF	SBUS	3.08	1.86
tblVehicleEF	SBUS	0.88	0.50
tblVehicleEF	SBUS	2.4440e-003	9.9400e-004
tblVehicleEF	SBUS	0.74	0.04
tblVehicleEF	SBUS	9.8530e-003	9.9480e-003
tblVehicleEF	SBUS	0.02	8.7430e-003
tblVehicleEF	SBUS	1.6300e-004	8.9000e-005
tblVehicleEF	SBUS	2.3380e-003	9.4900e-004
tblVehicleEF	SBUS	0.32	0.02

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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	2.4630e-003	2.4870e-003
tblVehicleEF	SBUS	0.02	8.3410e-003
tblVehicleEF	SBUS	1.5000e-004	8.2000e-005
tblVehicleEF	SBUS	7.8900e-004	0.05
tblVehicleEF	SBUS	9.3080e-003	0.01
tblVehicleEF	SBUS	0.61	0.31
tblVehicleEF	SBUS	4.3300e-004	0.00
tblVehicleEF	SBUS	0.07	0.06
tblVehicleEF	SBUS	0.01	0.04
tblVehicleEF	SBUS	0.07	0.05
tblVehicleEF	SBUS	3.5650e-003	1.8670e-003
tblVehicleEF	SBUS	8.8560e-003	8.4930e-003
tblVehicleEF	SBUS	9.7000e-005	6.4000e-005
tblVehicleEF	SBUS	7.8900e-004	0.05
tblVehicleEF	SBUS	9.3080e-003	0.01
tblVehicleEF	SBUS	0.89	0.49
tblVehicleEF	SBUS	4.3300e-004	0.00
tblVehicleEF	SBUS	0.09	0.14
tblVehicleEF	SBUS	0.01	0.04
tblVehicleEF	SBUS	0.08	0.06
tblVehicleEF	UBUS	1.67	0.60
tblVehicleEF	UBUS	0.01	4.5430e-003
tblVehicleEF	UBUS	12.61	6.86
tblVehicleEF	UBUS	0.82	0.89
tblVehicleEF	UBUS	1,627.29	1,017.30
tblVehicleEF	UBUS	8.93	5.32
tblVehicleEF	UBUS	0.27	0.15
tblVehicleEF	UBUS	7.4330e-003	7.1890e-003
tblVehicleEF	UBUS	0.68	0.23

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

tblVehicleEF	UBUS	0.11	0.05
tblVehicleEF	UBUS	0.08	0.15
tblVehicleEF	UBUS	0.03	0.06
tblVehicleEF	UBUS	4.9480e-003	4.3210e-003
tblVehicleEF	UBUS	6.2000e-005	2.5000e-005
tblVehicleEF	UBUS	0.03	0.05
tblVehicleEF	UBUS	7.8010e-003	0.01
tblVehicleEF	UBUS	4.7320e-003	4.1280e-003
tblVehicleEF	UBUS	5.7000e-005	2.3000e-005
tblVehicleEF	UBUS	7.9200e-004	0.01
tblVehicleEF	UBUS	0.01	3.3320e-003
tblVehicleEF	UBUS	6.2300e-004	0.00
tblVehicleEF	UBUS	0.02	0.05
tblVehicleEF	UBUS	5.8190e-003	0.01
tblVehicleEF	UBUS	0.07	0.02
tblVehicleEF	UBUS	0.01	7.9550e-003
tblVehicleEF	UBUS	8.8000e-005	5.3000e-005
tblVehicleEF	UBUS	7.9200e-004	0.01
tblVehicleEF	UBUS	0.01	3.3320e-003
tblVehicleEF	UBUS	6.2300e-004	0.00
tblVehicleEF	UBUS	1.71	0.65
tblVehicleEF	UBUS	5.8190e-003	0.01
tblVehicleEF	UBUS	0.07	0.02
tblVehicleTrips	ST_TR	1.90	1.23
tblVehicleTrips	SU_TR	1.11	0.72
tblVehicleTrips	WD_TR	11.26	7.31
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00

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

tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	0.1488	1.3364	1.6614	2.8300e-003	0.0508	0.0649	0.1157	7.6900e-003	0.0613	0.0690	0.0000	246.2476	246.2476	0.0577	0.0000	247.6910
2024	0.4919	4.6443	4.9617	0.0128	0.7905	0.1931	0.9835	0.3976	0.1800	0.5776	0.0000	1,120.1436	1,120.1436	0.3217	0.0000	1,128.1867
2025	0.0794	0.8015	1.1254	1.9800e-003	0.0000	0.0310	0.0310	0.0000	0.0295	0.0295	0.0000	172.0061	172.0061	0.0345	0.0000	172.8686
2026	2.7277	1.6237	2.2706	3.8500e-003	0.0000	0.0679	0.0679	0.0000	0.0636	0.0636	0.0000	335.1525	335.1525	0.0845	0.0000	337.2646
2027	2.3183	0.5065	0.7091	1.1700e-003	0.0000	0.0223	0.0223	0.0000	0.0207	0.0207	0.0000	102.0591	102.0591	0.0288	0.0000	102.7781
Maximum	**2.7277**	**4.6443**	**4.9617**	**0.0128**	**0.7905**	**0.1931**	**0.9835**	**0.3976**	**0.1800**	**0.5776**	**0.0000**	**1,120.1436**	**1,120.1436**	**0.3217**	**0.0000**	**1,128.1867**

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

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

Year	tons/yr										MT/yr					
2023	0.0648	1.1108	1.8658	2.8300e-003	0.0229	0.0156	0.0384	3.4600e-003	0.0156	0.0190	0.0000	246.2473	246.2473	0.0577	0.0000	247.6907
2024	0.2437	4.3784	7.4200	0.0128	0.3557	0.0404	0.3961	0.1789	0.0391	0.2180	0.0000	1,120.1422	1,120.1422	0.3217	0.0000	1,128.1854
2025	0.0497	0.8190	1.2796	1.9800e-003	0.0000	0.0215	0.0215	0.0000	0.0215	0.0215	0.0000	172.0059	172.0059	0.0345	0.0000	172.8684
2026	2.6548	1.5297	2.5323	3.8500e-003	0.0000	0.0350	0.0350	0.0000	0.0344	0.0344	0.0000	335.1521	335.1521	0.0845	0.0000	337.2642
2027	2.2920	0.4503	0.7782	1.1700e-003	0.0000	8.8600e-003	8.8600e-003	0.0000	8.5600e-003	8.5600e-003	0.0000	102.0589	102.0589	0.0288	0.0000	102.7780
Maximum	**2.6548**	**4.3784**	**7.4200**	**0.0128**	**0.3557**	**0.0404**	**0.3961**	**0.1789**	**0.0391**	**0.2180**	**0.0000**	**1,120.1422**	**1,120.1422**	**0.3217**	**0.0000**	**1,128.1854**

	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	**7.99**	**7.01**	**-29.34**	**0.00**	**55.00**	**68.01**	**59.04**	**55.00**	**66.46**	**60.35**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**8-1-2023**	**10-31-2023**	0.8954	0.7088
2	**11-1-2023**	**1-31-2024**	0.9736	0.8012
3	**2-1-2024**	**4-30-2024**	1.3550	1.2219
4	**5-1-2024**	**7-31-2024**	1.3851	1.2490
5	**8-1-2024**	**10-31-2024**	1.3851	1.2490
6	**11-1-2024**	**1-31-2025**	0.6812	0.6226
7	**2-1-2025**	**4-30-2025**	0.2146	0.2116
8	**5-1-2025**	**7-31-2025**	0.2218	0.2187
9	**8-1-2025**	**10-31-2025**	0.2218	0.2187
10	**11-1-2025**	**1-31-2026**	0.2218	0.2187
11	**2-1-2026**	**4-30-2026**	0.2146	0.2116
12	**5-1-2026**	**7-31-2026**	0.2989	0.2826
13	**8-1-2026**	**10-31-2026**	1.6662	1.5796

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14	**11-1-2026**	**1-31-2027**	3.1776	3.0870
15	**2-1-2027**	**4-30-2027**	1.7422	1.6907
		Highest	3.1776	3.0870

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	4.0409	1.9000e-004	0.0213	0.0000		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	0.0415	0.0415	1.1000e-004	0.0000	0.0442
Energy	0.1192	1.0840	0.9105	6.5000e-003		0.0824	0.0824		0.0824	0.0824	0.0000	1,180.0339	1,180.0339	0.0226	0.0216	1,187.0462
Mobile	2.2192	1.3803	15.4586	0.0418	4.1617	0.0228	4.1846	1.0374	0.0213	1.0586	0.0000	3,853.7691	3,853.7691	0.1703	0.1509	3,903.0021
Stationary	0.6049	0.4279	1.5423	2.9100e-003		0.0161	0.0161		0.0161	0.0161	0.0000	280.7047	280.7047	0.0394	0.0000	281.6885
Waste						0.0000	0.0000		0.0000	0.0000	13.8826	0.0000	13.8826	0.8204	0.0000	34.3934
Water						0.0000	0.0000		0.0000	0.0000	156.5659	0.0000	156.5659	0.5389	0.3405	271.5009
Total	**6.9842**	**2.8924**	**17.9327**	**0.0512**	**4.1617**	**0.1214**	**4.2831**	**1.0374**	**0.1198**	**1.1572**	**170.4484**	**5,314.5491**	**5,484.9975**	**1.5917**	**0.5130**	**5,677.6753**

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

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Category	tons/yr										MT/yr					
Area	4.0409	1.9000e-004	0.0213	0.0000		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	0.0415	0.0415	1.1000e-004	0.0000	0.0442
Energy	0.1192	1.0840	0.9105	6.5000e-003		0.0824	0.0824		0.0824	0.0824	0.0000	1,180.0339	1,180.0339	0.0226	0.0216	1,187.0462
Mobile	2.2192	1.3803	15.4586	0.0418	4.1617	0.0228	4.1846	1.0374	0.0213	1.0586	0.0000	3,853.7691	3,853.7691	0.1703	0.1509	3,903.0021
Stationary	0.6049	0.4279	1.5423	2.9100e-003		0.0161	0.0161		0.0161	0.0161	0.0000	280.7047	280.7047	0.0394	0.0000	281.6885
Waste						0.0000	0.0000		0.0000	0.0000	13.8826	0.0000	13.8826	0.8204	0.0000	34.3934
Water						0.0000	0.0000		0.0000	0.0000	156.5659	0.0000	156.5659	0.5389	0.3405	271.5009
Total	**6.9842**	**2.8924**	**17.9327**	**0.0512**	**4.1617**	**0.1214**	**4.2831**	**1.0374**	**0.1198**	**1.1572**	**170.4484**	**5,314.5491**	**5,484.9975**	**1.5917**	**0.5130**	**5,677.6753**

	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
1	Demolition	Demolition	8/1/2023	1/15/2024	5	120	
2	Grading	Grading	1/16/2024	12/6/2024	5	234	
3	Building Construction	Building Construction	12/7/2024	2/3/2027	5	563	
4	Paving	Paving	7/17/2026	3/26/2027	5	181	
5	Building Interior	Architectural Coating	9/26/2026	3/26/2027	5	130	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 117

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Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 1,350,000; Non-Residential Outdoor: 450,000; Striped Parking Area: 38,400

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Air Compressors	1	8.00	78	0.48
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Generator Sets	1	8.00	84	0.74
Demolition	Plate Compactors	1	8.00	8	0.43
Demolition	Rubber Tired Dozers	1	8.00	247	0.40
Demolition	Sweepers/Scrubbers	1	4.00	64	0.46
Demolition	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Grading	Bore/Drill Rigs	5	8.00	221	0.50
Grading	Cranes	1	8.00	231	0.29
Grading	Excavators	3	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Pumps	2	8.00	84	0.74
Grading	Pumps	1	24.00	0	0.00
Grading	Rollers	1	4.00	80	0.38
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Sweepers/Scrubbers	1	4.00	64	0.46
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Aerial Lifts	2	8.00	63	0.31
Building Construction	Aerial Lifts	24	8.00	0	0.00
Building Construction	Air Compressors	1	8.00	0	0.00
Building Construction	Cranes	1	3.30	231	0.29
Building Construction	Cranes	2	8.00	0	0.00

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

Building Construction	Forklifts	1	8.00	0	0.00
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Sweepers/Scrubbers	1	4.00	64	0.46
Building Construction	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Building Construction	Welders	12	8.00	0	0.00
Paving	Aerial Lifts	1	8.00	63	0.31
Paving	Pavers	1	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Plate Compactors	1	8.00	8	0.43
Paving	Rollers	1	8.00	80	0.38
Paving	Rubber Tired Dozers	1	4.00	247	0.40
Paving	Sweepers/Scrubbers	1	4.00	64	0.46
Paving	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Interior	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	12	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	18	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	46	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	10	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Interior	1	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

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

3.2 Demolition - 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					
Fugitive Dust					0.0508	0.0000	0.0508	7.6900e-003	0.0000	7.6900e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1488	1.3364	1.6614	2.8300e-003		0.0649	0.0649		0.0613	0.0613	0.0000	246.2476	246.2476	0.0577	0.0000	247.6910
Total	**0.1488**	**1.3364**	**1.6614**	**2.8300e-003**	**0.0508**	**0.0649**	**0.1157**	**7.6900e-003**	**0.0613**	**0.0690**	**0.0000**	**246.2476**	**246.2476**	**0.0577**	**0.0000**	**247.6910**

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**

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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 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					0.0229	0.0000	0.0229	3.4600e-003	0.0000	3.4600e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0648	1.1108	1.8658	2.8300e-003		0.0156	0.0156		0.0156	0.0156	0.0000	246.2473	246.2473	0.0577	0.0000	247.6907
Total	**0.0648**	**1.1108**	**1.8658**	**2.8300e-003**	**0.0229**	**0.0156**	**0.0384**	**3.4600e-003**	**0.0156**	**0.0190**	**0.0000**	**246.2473**	**246.2473**	**0.0577**	**0.0000**	**247.6907**

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**

3.2 Demolition - 2024

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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 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					5.1200e-003	0.0000	5.1200e-003	7.8000e-004	0.0000	7.8000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0145	0.1283	0.1679	2.9000e-004		5.9900e-003	5.9900e-003		5.6500e-003	5.6500e-003	0.0000	24.8558	24.8558	5.8100e-003	0.0000	25.0010
Total	**0.0145**	**0.1283**	**0.1679**	**2.9000e-004**	**5.1200e-003**	**5.9900e-003**	**0.0111**	**7.8000e-004**	**5.6500e-003**	**6.4300e-003**	**0.0000**	**24.8558**	**24.8558**	**5.8100e-003**	**0.0000**	**25.0010**

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

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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					
Fugitive Dust					2.3100e-003	0.0000	2.3100e-003	3.5000e-004	0.0000	3.5000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.3700e-003	0.1107	0.1882	2.9000e-004		1.4300e-003	1.4300e-003		1.4300e-003	1.4300e-003	0.0000	24.8558	24.8558	5.8100e-003	0.0000	25.0009
Total	**6.3700e-003**	**0.1107**	**0.1882**	**2.9000e-004**	**2.3100e-003**	**1.4300e-003**	**3.7400e-003**	**3.5000e-004**	**1.4300e-003**	**1.7800e-003**	**0.0000**	**24.8558**	**24.8558**	**5.8100e-003**	**0.0000**	**25.0009**

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 Grading - 2024

Unmitigated Construction On-Site

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule 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					
Fugitive Dust					0.7853	0.0000	0.7853	0.3968	0.0000	0.3968	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.4719	4.4602	4.7202	0.0124		0.1848	0.1848		0.1722	0.1722	0.0000	1,084.0855	1,084.0855	0.3137	0.0000	1,091.9269
Total	**0.4719**	**4.4602**	**4.7202**	**0.0124**	**0.7853**	**0.1848**	**0.9701**	**0.3968**	**0.1722**	**0.5690**	**0.0000**	**1,084.0855**	**1,084.0855**	**0.3137**	**0.0000**	**1,091.9269**

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

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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					
Fugitive Dust					0.3534	0.0000	0.3534	0.1786	0.0000	0.1786	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2340	4.2137	7.1484	0.0124		0.0375	0.0375		0.0362	0.0362	0.0000	1,084.0842	1,084.0842	0.3137	0.0000	1,091.9256
Total	**0.2340**	**4.2137**	**7.1484**	**0.0124**	**0.3534**	**0.0375**	**0.3909**	**0.1786**	**0.0362**	**0.2148**	**0.0000**	**1,084.0842**	**1,084.0842**	**0.3137**	**0.0000**	**1,091.9256**

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 Building Construction - 2024

Unmitigated Construction On-Site

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule 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					
Off-Road	5.5200e-003	0.0559	0.0736	1.3000e-004		2.3100e-003	2.3100e-003		2.2000e-003	2.2000e-003	0.0000	11.2023	11.2023	2.2600e-003	0.0000	11.2589
Total	**5.5200e-003**	**0.0559**	**0.0736**	**1.3000e-004**		**2.3100e-003**	**2.3100e-003**		**2.2000e-003**	**2.2000e-003**	**0.0000**	**11.2023**	**11.2023**	**2.2600e-003**	**0.0000**	**11.2589**

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

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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					
Off-Road	3.3200e-003	0.0540	0.0834	1.3000e-004		1.4700e-003	1.4700e-003		1.4700e-003	1.4700e-003	0.0000	11.2023	11.2023	2.2600e-003	0.0000	11.2589
Total	**3.3200e-003**	**0.0540**	**0.0834**	**1.3000e-004**		**1.4700e-003**	**1.4700e-003**		**1.4700e-003**	**1.4700e-003**	**0.0000**	**11.2023**	**11.2023**	**2.2600e-003**	**0.0000**	**11.2589**

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 Building Construction - 2025

Unmitigated Construction On-Site

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

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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					
Off-Road	0.0794	0.8015	1.1254	1.9800e-003		0.0310	0.0310		0.0295	0.0295	0.0000	172.0061	172.0061	0.0345	0.0000	172.8686
Total	**0.0794**	**0.8015**	**1.1254**	**1.9800e-003**		**0.0310**	**0.0310**		**0.0295**	**0.0295**	**0.0000**	**172.0061**	**172.0061**	**0.0345**	**0.0000**	**172.8686**

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					

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

Off-Road	0.0497	0.8190	1.2796	1.9800e-003		0.0215	0.0215		0.0215	0.0215	0.0000	172.0059	172.0059	0.0345	0.0000	172.8684
Total	**0.0497**	**0.8190**	**1.2796**	**1.9800e-003**		**0.0215**	**0.0215**		**0.0215**	**0.0215**	**0.0000**	**172.0059**	**172.0059**	**0.0345**	**0.0000**	**172.8684**

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 Building Construction - 2026

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	0.0794	0.8015	1.1254	1.9800e-003		0.0310	0.0310		0.0295	0.0295	0.0000	172.0061	172.0061	0.0345	0.0000	172.8686

800 Dubuque Ave, SSF - San Mateo County, Annual

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

Total	**0.0794**	**0.8015**	**1.1254**	**1.9800e-003**		**0.0310**	**0.0310**		**0.0295**	**0.0295**	**0.0000**	**172.0061**	**172.0061**	**0.0345**	**0.0000**	**172.8686**

Unmitigated Construction Off-Site

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

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0497	0.8190	1.2796	1.9800e-003		0.0215	0.0215		0.0215	0.0215	0.0000	172.0059	172.0059	0.0345	0.0000	172.8684
Total	**0.0497**	**0.8190**	**1.2796**	**1.9800e-003**		**0.0215**	**0.0215**		**0.0215**	**0.0215**	**0.0000**	**172.0059**	**172.0059**	**0.0345**	**0.0000**	**172.8684**

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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**

3.4 Building Construction - 2027

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	7.3000e-003	0.0737	0.1035	1.8000e-004		2.8500e-003	2.8500e-003		2.7100e-003	2.7100e-003	0.0000	15.8167	15.8167	3.1700e-003	0.0000	15.8960
Total	**7.3000e-003**	**0.0737**	**0.1035**	**1.8000e-004**		**2.8500e-003**	**2.8500e-003**		**2.7100e-003**	**2.7100e-003**	**0.0000**	**15.8167**	**15.8167**	**3.1700e-003**	**0.0000**	**15.8960**

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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	4.5700e-003	0.0753	0.1177	1.8000e-004		1.9800e-003	1.9800e-003		1.9800e-003	1.9800e-003	0.0000	15.8166	15.8166	3.1700e-003	0.0000	15.8959
Total	**4.5700e-003**	**0.0753**	**0.1177**	**1.8000e-004**		**1.9800e-003**	**1.9800e-003**		**1.9800e-003**	**1.9800e-003**	**0.0000**	**15.8166**	**15.8166**	**3.1700e-003**	**0.0000**	**15.8959**

Mitigated Construction Off-Site

800 Dubuque Ave, SSF - San Mateo County, Annual

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 Paving - 2026

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	0.0807	0.7827	1.0828	1.7700e-003		0.0351	0.0351		0.0324	0.0324	0.0000	154.3377	154.3377	0.0495	0.0000	155.5753
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0807**	**0.7827**	**1.0828**	**1.7700e-003**		**0.0351**	**0.0351**		**0.0324**	**0.0324**	**0.0000**	**154.3377**	**154.3377**	**0.0495**	**0.0000**	**155.5753**

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	0.0415	0.6741	1.1895	1.7700e-003		0.0133	0.0133		0.0127	0.0127	0.0000	154.3375	154.3375	0.0495	0.0000	155.5751
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0415**	**0.6741**	**1.1895**	**1.7700e-003**		**0.0133**	**0.0133**		**0.0127**	**0.0127**	**0.0000**	**154.3375**	**154.3375**	**0.0495**	**0.0000**	**155.5751**

Mitigated Construction Off-Site

800 Dubuque Ave, SSF - San Mateo County, Annual

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 Paving - 2027

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	0.0410	0.3979	0.5504	9.0000e-004		0.0179	0.0179		0.0164	0.0164	0.0000	78.4550	78.4550	0.0252	0.0000	79.0841
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0410**	**0.3979**	**0.5504**	**9.0000e-004**		**0.0179**	**0.0179**		**0.0164**	**0.0164**	**0.0000**	**78.4550**	**78.4550**	**0.0252**	**0.0000**	**79.0841**

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	0.0211	0.3427	0.6046	9.0000e-004		6.7700e-003	6.7700e-003		6.4600e-003	6.4600e-003	0.0000	78.4549	78.4549	0.0252	0.0000	79.0840
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0211**	**0.3427**	**0.6046**	**9.0000e-004**		**6.7700e-003**	**6.7700e-003**		**6.4600e-003**	**6.4600e-003**	**0.0000**	**78.4549**	**78.4549**	**0.0252**	**0.0000**	**79.0840**

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 Building Interior - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.5617					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.8900e-003	0.0395	0.0624	1.0000e-004		1.7800e-003	1.7800e-003		1.7800e-003	1.7800e-003	0.0000	8.8087	8.8087	4.8000e-004	0.0000	8.8207
Total	**2.5676**	**0.0395**	**0.0624**	**1.0000e-004**		**1.7800e-003**	**1.7800e-003**		**1.7800e-003**	**1.7800e-003**	**0.0000**	**8.8087**	**8.8087**	**4.8000e-004**	**0.0000**	**8.8207**

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	2.5617					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.8800e-003	0.0366	0.0632	1.0000e-004		1.4000e-004	1.4000e-004		1.4000e-004	1.4000e-004	0.0000	8.8087	8.8087	4.8000e-004	0.0000	8.8207
Total	**2.5636**	**0.0366**	**0.0632**	**1.0000e-004**		**1.4000e-004**	**1.4000e-004**		**1.4000e-004**	**1.4000e-004**	**0.0000**	**8.8087**	**8.8087**	**4.8000e-004**	**0.0000**	**8.8207**

Mitigated Construction Off-Site

800 Dubuque Ave, SSF - San Mateo County, Annual

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 Building Interior - 2027

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.2647					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.2100e-003	0.0349	0.0552	9.0000e-005		1.5700e-003	1.5700e-003		1.5700e-003	1.5700e-003	0.0000	7.7874	7.7874	4.2000e-004	0.0000	7.7980
Total	**2.2699**	**0.0349**	**0.0552**	**9.0000e-005**		**1.5700e-003**	**1.5700e-003**		**1.5700e-003**	**1.5700e-003**	**0.0000**	**7.7874**	**7.7874**	**4.2000e-004**	**0.0000**	**7.7980**

Unmitigated Construction Off-Site

Date: 11/22/2022 10:48 AM

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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	2.2647					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.6600e-003	0.0323	0.0559	9.0000e-005		1.2000e-004	1.2000e-004		1.2000e-004	1.2000e-004	0.0000	7.7874	7.7874	4.2000e-004	0.0000	7.7980
Total	**2.2664**	**0.0323**	**0.0559**	**9.0000e-005**		**1.2000e-004**	**1.2000e-004**		**1.2000e-004**	**1.2000e-004**	**0.0000**	**7.7874**	**7.7874**	**4.2000e-004**	**0.0000**	**7.7980**

Mitigated Construction Off-Site

800 Dubuque Ave, SSF - San Mateo County, Annual

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**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	2.2192	1.3803	15.4586	0.0418	4.1617	0.0228	4.1846	1.0374	0.0213	1.0586	0.0000	3,853.7691	3,853.7691	0.1703	0.1509	3,903.0021
Unmitigated	2.2192	1.3803	15.4586	0.0418	4.1617	0.0228	4.1846	1.0374	0.0213	1.0586	0.0000	3,853.7691	3,853.7691	0.1703	0.1509	3,903.0021

800 Dubuque Ave, SSF - San Mateo County, Annual

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

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Enclosed Parking with Elevator	0.00	0.00	0.00		
Research & Development	6,579.00	1,107.00	648.00	12,405,925	12,405,925
Total	6,579.00	1,107.00	648.00	12,405,925	12,405,925

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Enclosed Parking with Elevator	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
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
Enclosed Parking with Elevator	0.411757	0.041436	0.297526	0.170986	0.030624	0.007023	0.008420	0.002436	0.002246	0.000679	0.024361	0.000402	0.002104
Research & Development	0.411757	0.041436	0.297526	0.170986	0.030624	0.007023	0.008420	0.002436	0.002246	0.000679	0.024361	0.000402	0.002104

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					

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

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	0.1192	1.0840	0.9105	6.5000e-003		0.0824	0.0824		0.0824	0.0824	0.0000	1,180.0339	1,180.0339	0.0226	0.0216	1,187.0462
NaturalGas Unmitigated	0.1192	1.0840	0.9105	6.5000e-003		0.0824	0.0824		0.0824	0.0824	0.0000	1,180.0339	1,180.0339	0.0226	0.0216	1,187.0462

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Research & Development	2.2113e+007	0.1192	1.0840	0.9105	6.5000e-003		0.0824	0.0824		0.0824	0.0824	0.0000	1,180.0339	1,180.0339	0.0226	0.0216	1,187.0462
Total		**0.1192**	**1.0840**	**0.9105**	**6.5000e-003**		**0.0824**	**0.0824**		**0.0824**	**0.0824**	**0.0000**	**1,180.0339**	**1,180.0339**	**0.0226**	**0.0216**	**1,187.0462**

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					

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

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
Research & Development	2.2113e+007	0.1192	1.0840	0.9105	6.5000e-003		0.0824	0.0824		0.0824	0.0824	0.0000	1,180.0339	1,180.0339	0.0226	0.0216	1,187.0462
Total		**0.1192**	**1.0840**	**0.9105**	**6.5000e-003**		**0.0824**	**0.0824**		**0.0824**	**0.0824**	**0.0000**	**1,180.0339**	**1,180.0339**	**0.0226**	**0.0216**	**1,187.0462**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Enclosed Parking with Elevator	3.4816e+006	0.0000	0.0000	0.0000	0.0000
Research & Development	6.687e+006	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Enclosed Parking with Elevator	3.4816e+006	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

Research & Development	6.687e+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	4.0409	1.9000e-004	0.0213	0.0000		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	0.0415	0.0415	1.1000e-004	0.0000	0.0442
Unmitigated	4.0409	1.9000e-004	0.0213	0.0000		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	0.0415	0.0415	1.1000e-004	0.0000	0.0442

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	0.4826					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

Consumer Products	3.5563					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.9600e-003	1.9000e-004	0.0213	0.0000		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	0.0415	0.0415	1.1000e-004	0.0000	0.0442
Total	**4.0409**	**1.9000e-004**	**0.0213**	**0.0000**		**8.0000e-005**	**8.0000e-005**		**8.0000e-005**	**8.0000e-005**	**0.0000**	**0.0415**	**0.0415**	**1.1000e-004**	**0.0000**	**0.0442**

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	0.4826					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.5563					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.9600e-003	1.9000e-004	0.0213	0.0000		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	0.0415	0.0415	1.1000e-004	0.0000	0.0442
Total	**4.0409**	**1.9000e-004**	**0.0213**	**0.0000**		**8.0000e-005**	**8.0000e-005**		**8.0000e-005**	**8.0000e-005**	**0.0000**	**0.0415**	**0.0415**	**1.1000e-004**	**0.0000**	**0.0442**

7.0 Water Detail

7.1 Mitigation Measures Water

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

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	156.5659	0.5389	0.3405	271.5009
Unmitigated	156.5659	0.5389	0.3405	271.5009

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
Research & Development	442.525 / 0	156.5659	0.5389	0.3405	271.5009
Total		**156.5659**	**0.5389**	**0.3405**	**271.5009**

Mitigated

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

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

Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
Research & Development	442.525 / 0	156.5659	0.5389	0.3405	271.5009
Total		**156.5659**	**0.5389**	**0.3405**	**271.5009**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	13.8826	0.8204	0.0000	34.3934
Unmitigated	13.8826	0.8204	0.0000	34.3934

8.2 Waste by Land Use

Unmitigated

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

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

Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Research & Development	68.39	13.8826	0.8204	0.0000	34.3934
Total		**13.8826**	**0.8204**	**0.0000**	**34.3934**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Research & Development	68.39	13.8826	0.8204	0.0000	34.3934
Total		**13.8826**	**0.8204**	**0.0000**	**34.3934**

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	1	0	50	3753.4	0.73	Diesel

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

Emergency Generator	1	0	50	3753.4	0.73	Diesel
Emergency Generator	1	0	50	3753.4	0.73	Diesel
Emergency Generator	1	0	50	1340.5	0.73	Diesel
Emergency Generator	1	0	50	1340.5	0.73	Diesel
Emergency Generator	1	0	50	804.3	0.73	Diesel

Boilers

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

User Defined Equipment

Equipment Type	Number

10.1 Stationary Sources

Unmitigated/Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Equipment Type	tons/yr										MT/yr					
Emergency Generator - Diesel (750 - 9999 HP)	0.6049	0.4279	1.5423	2.9100e-003		0.0161	0.0161		0.0161	0.0161	0.0000	280.7047	280.7047	0.0394	0.0000	281.6885
Total	**0.6049**	**0.4279**	**1.5423**	**2.9100e-003**		**0.0161**	**0.0161**		**0.0161**	**0.0161**	**0.0000**	**280.7047**	**280.7047**	**0.0394**	**0.0000**	**281.6885**

11.0 Vegetation

800 Dubuque Ave, SSF - Existing - San Mateo County, Annual

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

800 Dubuque Ave, SSF - Existing

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1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Research & Development	113.60	1000sqft	2.61	113,595.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	70
Climate Zone	5			**Operational Year**	2022
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 -

Land Use - Provided in construction sheet - amount of square footage of existing buildings demo'ed.

Construction Phase - Existing run - no construction.

Off-road Equipment - Existing run - no construction.

Grading -

Vehicle Trips - Provided trip gen with reduction adjustments.

Vehicle Emission Factors - EMFAC2021 vehicle emissions factors San Mateo County 2022.

Fleet Mix - EMFAC2021 fleet mix San Mateo County 2022.

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	3.00	0.00
tblConstructionPhase	PhaseEndDate	11/7/2022	11/3/2022

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

tblFleetMix	HHD	2.2470e-003	2.7140e-003
tblFleetMix	LDA	0.49	0.50
tblFleetMix	LDT1	0.07	0.05
tblFleetMix	LDT2	0.22	0.25
tblFleetMix	LHD1	0.02	0.03
tblFleetMix	LHD2	5.8150e-003	5.4440e-003
tblFleetMix	MCY	0.03	0.02
tblFleetMix	MDV	0.14	0.14
tblFleetMix	MH	2.4690e-003	1.9850e-003
tblFleetMix	MHD	9.9900e-003	9.3450e-003
tblFleetMix	OBUS	1.5780e-003	2.4380e-003
tblFleetMix	SBUS	4.4000e-004	4.3700e-004
tblFleetMix	UBUS	6.3600e-004	8.2800e-004
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	7.00	0.00
tblVehicleEF	HHD	0.03	0.26
tblVehicleEF	HHD	0.17	0.28
tblVehicleEF	HHD	3.0000e-006	1.0000e-006
tblVehicleEF	HHD	4.86	4.44
tblVehicleEF	HHD	1.00	1.69
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	986.47	817.56
tblVehicleEF	HHD	1,722.89	1,847.10
tblVehicleEF	HHD	0.24	0.31
tblVehicleEF	HHD	0.16	0.13

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tblVehicleEF	HHD	0.28	0.30
tblVehicleEF	HHD	3.0000e-006	1.0000e-006
tblVehicleEF	HHD	5.83	4.43
tblVehicleEF	HHD	4.02	3.26
tblVehicleEF	HHD	2.10	2.39
tblVehicleEF	HHD	5.0230e-003	3.8270e-003
tblVehicleEF	HHD	0.06	0.10
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	2.0000e-006	6.0000e-006
tblVehicleEF	HHD	4.8060e-003	3.6570e-003
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.6930e-003	8.6220e-003
tblVehicleEF	HHD	0.03	0.02
tblVehicleEF	HHD	1.0000e-006	5.0000e-006
tblVehicleEF	HHD	3.0000e-006	9.9100e-004
tblVehicleEF	HHD	1.6300e-004	2.7700e-004
tblVehicleEF	HHD	0.36	0.29
tblVehicleEF	HHD	2.0000e-006	0.00
tblVehicleEF	HHD	0.09	0.05
tblVehicleEF	HHD	7.5000e-005	2.2870e-003
tblVehicleEF	HHD	1.5000e-005	4.0000e-006
tblVehicleEF	HHD	8.8510e-003	6.9760e-003
tblVehicleEF	HHD	0.01	0.02
tblVehicleEF	HHD	2.0000e-006	3.0000e-006
tblVehicleEF	HHD	3.0000e-006	9.9100e-004
tblVehicleEF	HHD	1.6300e-004	2.7700e-004
tblVehicleEF	HHD	0.42	0.58
tblVehicleEF	HHD	2.0000e-006	0.00

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tblVehicleEF	HHD	0.27	0.33
tblVehicleEF	HHD	7.5000e-005	2.2870e-003
tblVehicleEF	HHD	1.7000e-005	4.0000e-006
tblVehicleEF	LDA	2.0280e-003	2.3190e-003
tblVehicleEF	LDA	0.05	0.07
tblVehicleEF	LDA	0.56	0.66
tblVehicleEF	LDA	2.27	3.35
tblVehicleEF	LDA	248.55	259.69
tblVehicleEF	LDA	52.84	67.48
tblVehicleEF	LDA	4.3020e-003	4.5170e-003
tblVehicleEF	LDA	0.02	0.03
tblVehicleEF	LDA	0.04	0.04
tblVehicleEF	LDA	0.19	0.25
tblVehicleEF	LDA	0.04	6.4730e-003
tblVehicleEF	LDA	1.3710e-003	1.2840e-003
tblVehicleEF	LDA	1.8150e-003	2.1480e-003
tblVehicleEF	LDA	0.02	2.2660e-003
tblVehicleEF	LDA	1.2630e-003	1.1820e-003
tblVehicleEF	LDA	1.6690e-003	1.9750e-003
tblVehicleEF	LDA	0.03	0.27
tblVehicleEF	LDA	0.09	0.08
tblVehicleEF	LDA	0.03	0.00
tblVehicleEF	LDA	7.9940e-003	9.2860e-003
tblVehicleEF	LDA	0.03	0.21
tblVehicleEF	LDA	0.23	0.34
tblVehicleEF	LDA	2.4430e-003	2.5670e-003
tblVehicleEF	LDA	5.1900e-004	6.6700e-004
tblVehicleEF	LDA	0.03	0.27
tblVehicleEF	LDA	0.09	0.08

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tblVehicleEF	LDA	0.03	0.00
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.03	0.21
tblVehicleEF	LDA	0.25	0.37
tblVehicleEF	LDT1	3.2790e-003	6.2870e-003
tblVehicleEF	LDT1	0.06	0.11
tblVehicleEF	LDT1	0.78	1.36
tblVehicleEF	LDT1	2.37	5.61
tblVehicleEF	LDT1	289.50	330.05
tblVehicleEF	LDT1	61.76	87.64
tblVehicleEF	LDT1	5.4800e-003	9.5160e-003
tblVehicleEF	LDT1	0.03	0.04
tblVehicleEF	LDT1	0.06	0.13
tblVehicleEF	LDT1	0.21	0.39
tblVehicleEF	LDT1	0.04	8.0920e-003
tblVehicleEF	LDT1	1.7530e-003	1.9810e-003
tblVehicleEF	LDT1	2.2600e-003	3.0330e-003
tblVehicleEF	LDT1	0.02	2.8320e-003
tblVehicleEF	LDT1	1.6130e-003	1.8230e-003
tblVehicleEF	LDT1	2.0780e-003	2.7890e-003
tblVehicleEF	LDT1	0.05	0.54
tblVehicleEF	LDT1	0.12	0.16
tblVehicleEF	LDT1	0.05	0.00
tblVehicleEF	LDT1	0.01	0.03
tblVehicleEF	LDT1	0.07	0.45
tblVehicleEF	LDT1	0.27	0.57
tblVehicleEF	LDT1	2.8460e-003	3.2630e-003
tblVehicleEF	LDT1	6.0700e-004	8.6600e-004
tblVehicleEF	LDT1	0.05	0.54

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tblVehicleEF	LDT1	0.12	0.16
tblVehicleEF	LDT1	0.05	0.00
tblVehicleEF	LDT1	0.02	0.04
tblVehicleEF	LDT1	0.07	0.45
tblVehicleEF	LDT1	0.30	0.62
tblVehicleEF	LDT2	2.6450e-003	2.6020e-003
tblVehicleEF	LDT2	0.06	0.08
tblVehicleEF	LDT2	0.66	0.74
tblVehicleEF	LDT2	2.78	3.68
tblVehicleEF	LDT2	308.05	340.61
tblVehicleEF	LDT2	66.28	87.10
tblVehicleEF	LDT2	5.3110e-003	5.5370e-003
tblVehicleEF	LDT2	0.03	0.04
tblVehicleEF	LDT2	0.05	0.06
tblVehicleEF	LDT2	0.25	0.32
tblVehicleEF	LDT2	0.04	7.7140e-003
tblVehicleEF	LDT2	1.4790e-003	1.3870e-003
tblVehicleEF	LDT2	1.8730e-003	2.1920e-003
tblVehicleEF	LDT2	0.02	2.7000e-003
tblVehicleEF	LDT2	1.3620e-003	1.2760e-003
tblVehicleEF	LDT2	1.7220e-003	2.0160e-003
tblVehicleEF	LDT2	0.04	0.22
tblVehicleEF	LDT2	0.09	0.07
tblVehicleEF	LDT2	0.04	0.00
tblVehicleEF	LDT2	0.01	0.01
tblVehicleEF	LDT2	0.05	0.17
tblVehicleEF	LDT2	0.28	0.37
tblVehicleEF	LDT2	3.0280e-003	3.3670e-003
tblVehicleEF	LDT2	6.5200e-004	8.6100e-004

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tblVehicleEF	LDT2	0.04	0.22
tblVehicleEF	LDT2	0.09	0.07
tblVehicleEF	LDT2	0.04	0.00
tblVehicleEF	LDT2	0.02	0.01
tblVehicleEF	LDT2	0.05	0.17
tblVehicleEF	LDT2	0.31	0.41
tblVehicleEF	LHD1	5.3000e-003	5.8430e-003
tblVehicleEF	LHD1	7.2240e-003	7.3840e-003
tblVehicleEF	LHD1	0.01	0.02
tblVehicleEF	LHD1	0.19	0.21
tblVehicleEF	LHD1	0.62	0.87
tblVehicleEF	LHD1	1.08	2.43
tblVehicleEF	LHD1	8.84	8.65
tblVehicleEF	LHD1	796.65	802.84
tblVehicleEF	LHD1	12.03	20.18
tblVehicleEF	LHD1	7.1700e-004	5.7900e-004
tblVehicleEF	LHD1	0.04	0.04
tblVehicleEF	LHD1	0.03	0.04
tblVehicleEF	LHD1	0.05	0.04
tblVehicleEF	LHD1	0.52	0.56
tblVehicleEF	LHD1	0.31	0.47
tblVehicleEF	LHD1	7.9700e-004	5.8300e-004
tblVehicleEF	LHD1	0.08	0.08
tblVehicleEF	LHD1	9.6980e-003	9.2050e-003
tblVehicleEF	LHD1	8.2510e-003	0.01
tblVehicleEF	LHD1	2.4800e-004	2.2600e-004
tblVehicleEF	LHD1	7.6300e-004	5.5800e-004
tblVehicleEF	LHD1	0.03	0.03
tblVehicleEF	LHD1	2.4250e-003	2.3010e-003

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tblVehicleEF	LHD1	7.8460e-003	0.01
tblVehicleEF	LHD1	2.2800e-004	2.0800e-004
tblVehicleEF	LHD1	1.2870e-003	0.11
tblVehicleEF	LHD1	0.06	0.03
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	7.9700e-004	0.00
tblVehicleEF	LHD1	0.08	0.07
tblVehicleEF	LHD1	0.16	0.16
tblVehicleEF	LHD1	0.07	0.12
tblVehicleEF	LHD1	8.6000e-005	8.4000e-005
tblVehicleEF	LHD1	7.7840e-003	7.8580e-003
tblVehicleEF	LHD1	1.1900e-004	2.0000e-004
tblVehicleEF	LHD1	1.2870e-003	0.11
tblVehicleEF	LHD1	0.06	0.03
tblVehicleEF	LHD1	0.03	0.03
tblVehicleEF	LHD1	7.9700e-004	0.00
tblVehicleEF	LHD1	0.10	0.09
tblVehicleEF	LHD1	0.16	0.16
tblVehicleEF	LHD1	0.07	0.13
tblVehicleEF	LHD2	3.3550e-003	3.6130e-003
tblVehicleEF	LHD2	6.3020e-003	6.7180e-003
tblVehicleEF	LHD2	8.1370e-003	0.01
tblVehicleEF	LHD2	0.14	0.15
tblVehicleEF	LHD2	0.52	0.58
tblVehicleEF	LHD2	0.67	1.46
tblVehicleEF	LHD2	13.62	13.35
tblVehicleEF	LHD2	772.49	845.43
tblVehicleEF	LHD2	8.39	11.54
tblVehicleEF	LHD2	1.6520e-003	1.5390e-003

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tblVehicleEF	LHD2	0.07	0.08
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	0.09	0.08
tblVehicleEF	LHD2	0.57	0.73
tblVehicleEF	LHD2	0.19	0.28
tblVehicleEF	LHD2	1.3540e-003	1.2420e-003
tblVehicleEF	LHD2	0.09	0.09
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	1.3800e-004	1.2400e-004
tblVehicleEF	LHD2	1.2960e-003	1.1880e-003
tblVehicleEF	LHD2	0.04	0.03
tblVehicleEF	LHD2	2.6700e-003	2.6260e-003
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	1.2700e-004	1.1400e-004
tblVehicleEF	LHD2	7.5600e-004	0.07
tblVehicleEF	LHD2	0.04	0.02
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	4.6600e-004	0.00
tblVehicleEF	LHD2	0.10	0.10
tblVehicleEF	LHD2	0.10	0.10
tblVehicleEF	LHD2	0.04	0.07
tblVehicleEF	LHD2	1.3000e-004	1.2800e-004
tblVehicleEF	LHD2	7.4680e-003	8.1630e-003
tblVehicleEF	LHD2	8.3000e-005	1.1400e-004
tblVehicleEF	LHD2	7.5600e-004	0.07
tblVehicleEF	LHD2	0.04	0.02
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	4.6600e-004	0.00

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tblVehicleEF	LHD2	0.11	0.12
tblVehicleEF	LHD2	0.10	0.10
tblVehicleEF	LHD2	0.04	0.08
tblVehicleEF	MCY	0.33	0.16
tblVehicleEF	MCY	0.26	0.19
tblVehicleEF	MCY	19.02	12.33
tblVehicleEF	MCY	9.17	7.96
tblVehicleEF	MCY	213.08	188.69
tblVehicleEF	MCY	60.80	50.07
tblVehicleEF	MCY	0.07	0.04
tblVehicleEF	MCY	0.02	8.6710e-003
tblVehicleEF	MCY	1.15	0.56
tblVehicleEF	MCY	0.27	0.15
tblVehicleEF	MCY	0.01	0.01
tblVehicleEF	MCY	2.0940e-003	2.0070e-003
tblVehicleEF	MCY	3.3370e-003	4.0700e-003
tblVehicleEF	MCY	5.0400e-003	4.2000e-003
tblVehicleEF	MCY	1.9560e-003	1.8800e-003
tblVehicleEF	MCY	3.1380e-003	3.8360e-003
tblVehicleEF	MCY	0.62	3.59
tblVehicleEF	MCY	0.57	3.56
tblVehicleEF	MCY	0.38	0.00
tblVehicleEF	MCY	2.21	1.05
tblVehicleEF	MCY	0.44	3.72
tblVehicleEF	MCY	1.97	1.43
tblVehicleEF	MCY	2.1090e-003	1.8650e-003
tblVehicleEF	MCY	6.0200e-004	4.9500e-004
tblVehicleEF	MCY	0.62	0.08
tblVehicleEF	MCY	0.57	3.56

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tblVehicleEF	MCY	0.38	0.00
tblVehicleEF	MCY	2.75	1.26
tblVehicleEF	MCY	0.44	3.72
tblVehicleEF	MCY	2.14	1.56
tblVehicleEF	MDV	2.8920e-003	3.2010e-003
tblVehicleEF	MDV	0.07	0.10
tblVehicleEF	MDV	0.69	0.80
tblVehicleEF	MDV	3.04	3.95
tblVehicleEF	MDV	370.99	409.20
tblVehicleEF	MDV	79.06	104.08
tblVehicleEF	MDV	6.9690e-003	7.1680e-003
tblVehicleEF	MDV	0.03	0.04
tblVehicleEF	MDV	0.06	0.08
tblVehicleEF	MDV	0.29	0.40
tblVehicleEF	MDV	0.04	7.7630e-003
tblVehicleEF	MDV	1.5530e-003	1.4520e-003
tblVehicleEF	MDV	1.9790e-003	2.3430e-003
tblVehicleEF	MDV	0.02	2.7170e-003
tblVehicleEF	MDV	1.4320e-003	1.3380e-003
tblVehicleEF	MDV	1.8200e-003	2.1540e-003
tblVehicleEF	MDV	0.04	0.26
tblVehicleEF	MDV	0.10	0.08
tblVehicleEF	MDV	0.05	0.00
tblVehicleEF	MDV	0.01	0.01
tblVehicleEF	MDV	0.05	0.20
tblVehicleEF	MDV	0.34	0.48
tblVehicleEF	MDV	3.6430e-003	4.0430e-003
tblVehicleEF	MDV	7.7700e-004	1.0290e-003
tblVehicleEF	MDV	0.04	0.26

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tblVehicleEF	MDV	0.10	0.08
tblVehicleEF	MDV	0.05	0.00
tblVehicleEF	MDV	0.02	0.02
tblVehicleEF	MDV	0.05	0.20
tblVehicleEF	MDV	0.37	0.52
tblVehicleEF	MH	7.8210e-003	0.01
tblVehicleEF	MH	0.02	0.03
tblVehicleEF	MH	0.73	1.52
tblVehicleEF	MH	2.03	2.75
tblVehicleEF	MH	1,502.52	1,675.54
tblVehicleEF	MH	18.02	23.04
tblVehicleEF	MH	0.06	0.07
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.03	1.39
tblVehicleEF	MH	0.24	0.29
tblVehicleEF	MH	0.13	0.04
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	2.7100e-004	3.6600e-004
tblVehicleEF	MH	0.06	0.02
tblVehicleEF	MH	3.2730e-003	3.3160e-003
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	2.4900e-004	3.3600e-004
tblVehicleEF	MH	0.38	30.99
tblVehicleEF	MH	0.04	9.08
tblVehicleEF	MH	0.16	0.00
tblVehicleEF	MH	0.05	0.09
tblVehicleEF	MH	8.9160e-003	0.21
tblVehicleEF	MH	0.09	0.12

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tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	1.7800e-004	2.2800e-004
tblVehicleEF	MH	0.38	30.99
tblVehicleEF	MH	0.04	9.08
tblVehicleEF	MH	0.16	0.00
tblVehicleEF	MH	0.07	0.12
tblVehicleEF	MH	8.9160e-003	0.21
tblVehicleEF	MH	0.10	0.13
tblVehicleEF	MHD	3.9210e-003	0.01
tblVehicleEF	MHD	4.7020e-003	0.01
tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	0.38	0.65
tblVehicleEF	MHD	0.43	0.60
tblVehicleEF	MHD	1.26	1.48
tblVehicleEF	MHD	68.23	157.17
tblVehicleEF	MHD	1,119.63	1,289.87
tblVehicleEF	MHD	10.33	11.01
tblVehicleEF	MHD	9.7120e-003	0.02
tblVehicleEF	MHD	0.14	0.15
tblVehicleEF	MHD	8.1860e-003	7.8620e-003
tblVehicleEF	MHD	0.49	1.01
tblVehicleEF	MHD	1.73	1.59
tblVehicleEF	MHD	1.39	1.20
tblVehicleEF	MHD	9.9300e-004	3.1930e-003
tblVehicleEF	MHD	0.13	0.05
tblVehicleEF	MHD	0.03	0.02
tblVehicleEF	MHD	1.2700e-004	1.4400e-004
tblVehicleEF	MHD	9.5000e-004	3.0550e-003
tblVehicleEF	MHD	0.06	0.02

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tblVehicleEF	MHD	0.03	0.02
tblVehicleEF	MHD	1.1700e-004	1.3300e-004
tblVehicleEF	MHD	3.4300e-004	0.03
tblVehicleEF	MHD	0.02	8.8150e-003
tblVehicleEF	MHD	0.02	0.03
tblVehicleEF	MHD	2.1300e-004	0.00
tblVehicleEF	MHD	0.07	0.07
tblVehicleEF	MHD	0.02	0.07
tblVehicleEF	MHD	0.06	0.07
tblVehicleEF	MHD	6.4800e-004	1.4600e-003
tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	1.0200e-004	1.0900e-004
tblVehicleEF	MHD	3.4300e-004	0.03
tblVehicleEF	MHD	0.02	8.8150e-003
tblVehicleEF	MHD	0.03	0.05
tblVehicleEF	MHD	2.1300e-004	0.00
tblVehicleEF	MHD	0.08	0.09
tblVehicleEF	MHD	0.02	0.07
tblVehicleEF	MHD	0.06	0.07
tblVehicleEF	OBUS	6.7140e-003	8.1590e-003
tblVehicleEF	OBUS	5.0760e-003	8.2520e-003
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.58	0.46
tblVehicleEF	OBUS	0.49	0.31
tblVehicleEF	OBUS	1.56	1.18
tblVehicleEF	OBUS	107.54	92.23
tblVehicleEF	OBUS	1,354.47	1,344.38
tblVehicleEF	OBUS	13.26	10.27
tblVehicleEF	OBUS	0.02	0.01

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tblVehicleEF	OBUS	0.14	0.17
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.54	0.43
tblVehicleEF	OBUS	1.87	0.94
tblVehicleEF	OBUS	1.06	1.06
tblVehicleEF	OBUS	7.9200e-004	2.5800e-004
tblVehicleEF	OBUS	0.13	0.05
tblVehicleEF	OBUS	0.02	9.2440e-003
tblVehicleEF	OBUS	1.3600e-004	1.0300e-004
tblVehicleEF	OBUS	7.5800e-004	2.4700e-004
tblVehicleEF	OBUS	0.06	0.02
tblVehicleEF	OBUS	0.02	8.8370e-003
tblVehicleEF	OBUS	1.2500e-004	9.4000e-005
tblVehicleEF	OBUS	7.7900e-004	0.03
tblVehicleEF	OBUS	0.01	8.9140e-003
tblVehicleEF	OBUS	0.05	0.03
tblVehicleEF	OBUS	3.9500e-004	0.00
tblVehicleEF	OBUS	0.06	0.03
tblVehicleEF	OBUS	0.03	0.04
tblVehicleEF	OBUS	0.07	0.06
tblVehicleEF	OBUS	1.0200e-003	8.6700e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	1.3100e-004	1.0100e-004
tblVehicleEF	OBUS	7.7900e-004	0.03
tblVehicleEF	OBUS	0.01	8.9140e-003
tblVehicleEF	OBUS	0.06	0.05
tblVehicleEF	OBUS	3.9500e-004	0.00
tblVehicleEF	OBUS	0.07	0.05
tblVehicleEF	OBUS	0.03	0.04

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tblVehicleEF	OBUS	0.08	0.06
tblVehicleEF	SBUS	0.08	0.09
tblVehicleEF	SBUS	0.01	0.09
tblVehicleEF	SBUS	8.1020e-003	7.9980e-003
tblVehicleEF	SBUS	2.98	2.07
tblVehicleEF	SBUS	1.00	1.81
tblVehicleEF	SBUS	1.26	1.18
tblVehicleEF	SBUS	360.00	206.71
tblVehicleEF	SBUS	1,028.45	1,021.11
tblVehicleEF	SBUS	6.23	5.49
tblVehicleEF	SBUS	0.05	0.03
tblVehicleEF	SBUS	0.12	0.12
tblVehicleEF	SBUS	5.9500e-003	4.8570e-003
tblVehicleEF	SBUS	3.52	1.58
tblVehicleEF	SBUS	5.24	3.32
tblVehicleEF	SBUS	0.62	0.44
tblVehicleEF	SBUS	4.5830e-003	1.8680e-003
tblVehicleEF	SBUS	0.74	0.05
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.03	0.02
tblVehicleEF	SBUS	9.6000e-005	7.3000e-005
tblVehicleEF	SBUS	4.3850e-003	1.7860e-003
tblVehicleEF	SBUS	0.32	0.02
tblVehicleEF	SBUS	2.5990e-003	2.6000e-003
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	8.9000e-005	6.7000e-005
tblVehicleEF	SBUS	5.6200e-004	0.05
tblVehicleEF	SBUS	7.2750e-003	0.01
tblVehicleEF	SBUS	0.36	0.24

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tblVehicleEF	SBUS	2.5600e-004	0.00
tblVehicleEF	SBUS	0.11	0.10
tblVehicleEF	SBUS	0.01	0.04
tblVehicleEF	SBUS	0.05	0.05
tblVehicleEF	SBUS	3.4360e-003	1.8970e-003
tblVehicleEF	SBUS	9.8650e-003	9.5730e-003
tblVehicleEF	SBUS	6.2000e-005	5.4000e-005
tblVehicleEF	SBUS	5.6200e-004	0.05
tblVehicleEF	SBUS	7.2750e-003	0.01
tblVehicleEF	SBUS	0.51	0.38
tblVehicleEF	SBUS	2.5600e-004	0.00
tblVehicleEF	SBUS	0.14	0.20
tblVehicleEF	SBUS	0.01	0.04
tblVehicleEF	SBUS	0.05	0.05
tblVehicleEF	UBUS	0.84	0.16
tblVehicleEF	UBUS	0.01	7.7750e-003
tblVehicleEF	UBUS	5.26	2.06
tblVehicleEF	UBUS	0.82	0.83
tblVehicleEF	UBUS	1,802.99	1,395.58
tblVehicleEF	UBUS	9.26	5.76
tblVehicleEF	UBUS	0.28	0.20
tblVehicleEF	UBUS	7.0140e-003	0.01
tblVehicleEF	UBUS	3.45	2.45
tblVehicleEF	UBUS	0.09	0.08
tblVehicleEF	UBUS	0.08	0.11
tblVehicleEF	UBUS	0.03	0.03
tblVehicleEF	UBUS	7.7550e-003	6.8420e-003
tblVehicleEF	UBUS	5.0000e-005	1.5000e-005
tblVehicleEF	UBUS	0.03	0.04

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tblVehicleEF	UBUS	7.8010e-003	7.3410e-003
tblVehicleEF	UBUS	7.4180e-003	6.5410e-003
tblVehicleEF	UBUS	4.6000e-005	1.4000e-005
tblVehicleEF	UBUS	3.7600e-004	0.02
tblVehicleEF	UBUS	6.3660e-003	8.2350e-003
tblVehicleEF	UBUS	2.8300e-004	0.00
tblVehicleEF	UBUS	0.01	0.14
tblVehicleEF	UBUS	2.2390e-003	0.01
tblVehicleEF	UBUS	0.06	0.03
tblVehicleEF	UBUS	0.02	0.01
tblVehicleEF	UBUS	9.2000e-005	5.7000e-005
tblVehicleEF	UBUS	3.7600e-004	0.02
tblVehicleEF	UBUS	6.3660e-003	8.2350e-003
tblVehicleEF	UBUS	2.8300e-004	0.00
tblVehicleEF	UBUS	0.86	0.31
tblVehicleEF	UBUS	2.2390e-003	0.01
tblVehicleEF	UBUS	0.06	0.03
tblVehicleTrips	ST_TR	1.90	1.41
tblVehicleTrips	SU_TR	1.11	0.82
tblVehicleTrips	WD_TR	11.26	8.34

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

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

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Category	tons/yr										MT/yr					
Area	0.5030	1.0000e-005	1.0500e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0300e-003	2.0300e-003	1.0000e-005	0.0000	2.16E-03
Energy	0.0151	0.1368	0.1149	8.2000e-004		0.0104	0.0104		0.0104	0.0104	0.0000	148.9399	148.9399	2.8500e-003	2.7300e-003	149.825
Mobile	0.4297	0.3298	3.0222	6.8200e-003	0.5987	4.6500e-003	0.6034	0.1492	4.3300e-003	0.1535	0.0000	628.5220	628.5220	0.0340	0.0271	637.4487
Waste						0.0000	0.0000		0.0000	0.0000	1.7518	0.0000	1.7518	0.1035	0.0000	4.34
Water						0.0000	0.0000		0.0000	0.0000	17.7191	0.0000	17.7191	1.8199	0.0430	76.0229
Total	**0.9478**	**0.4666**	**3.1382**	**7.6400e-003**	**0.5987**	**0.0151**	**0.6138**	**0.1492**	**0.0147**	**0.1639**	**19.4709**	**777.4639**	**796.9349**	**1.9603**	**0.0728**	**867.6388**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.5030	1.0000e-005	1.0500e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0300e-003	2.0300e-003	1.0000e-005	0.0000	2.1600e-003
Energy	0.0151	0.1368	0.1149	8.2000e-004		0.0104	0.0104		0.0104	0.0104	0.0000	148.9399	148.9399	2.8500e-003	2.7300e-003	149.8250
Mobile	0.4297	0.3298	3.0222	6.8200e-003	0.5987	4.6500e-003	0.6034	0.1492	4.3300e-003	0.1535	0.0000	628.5220	628.5220	0.0340	0.0271	637.4487
Waste						0.0000	0.0000		0.0000	0.0000	1.7518	0.0000	1.7518	0.1035	0.0000	4.3400
Water						0.0000	0.0000		0.0000	0.0000	17.7191	0.0000	17.7191	1.8199	0.0430	76.0229
Total	**0.9478**	**0.4666**	**3.1382**	**7.6400e-003**	**0.5987**	**0.0151**	**0.6138**	**0.1492**	**0.0147**	**0.1639**	**19.4709**	**777.4639**	**796.9349**	**1.9603**	**0.0728**	**867.6388**

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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	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

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Research & Development	947.38	160.17	93.15	1,786,678	1,786,678
Total	947.38	160.17	93.15	1,786,678	1,786,678

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
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
Research & Development	0.495110	0.045708	0.246625	0.140491	0.026659	0.005444	0.009345	0.002714	0.002438	0.000828	0.022216	0.000437	0.001985

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

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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	0.0151	0.1368	0.1149	8.2000e-004		0.0104	0.0104		0.0104	0.0104	0.0000	148.9399	148.9399	2.8500e-003	2.7300e-003	149.8250
NaturalGas Unmitigated	0.0151	0.1368	0.1149	8.2000e-004		0.0104	0.0104		0.0104	0.0104	0.0000	148.9399	148.9399	2.8500e-003	2.7300e-003	149.8250

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					
Research & Development	2.79103e+006	0.0151	0.1368	0.1149	8.2000e-004		0.0104	0.0104		0.0104	0.0104	0.0000	148.9399	148.9399	2.8500e-003	2.7300e-003	149.8250
Total		**0.0151**	**0.1368**	**0.1149**	**8.2000e-004**		**0.0104**	**0.0104**		**0.0104**	**0.0104**	**0.0000**	**148.9399**	**148.9399**	**2.8500e-003**	**2.7300e-003**	**149.8250**

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					

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

Research & Development	2.79103e+006	0.0151	0.1368	0.1149	8.2000e-004		0.0104	0.0104		0.0104	0.0104	0.0000	148.9399	148.9399	2.8500e-003	2.7300e-003	149.8250
Total		**0.0151**	**0.1368**	**0.1149**	**8.2000e-004**		**0.0104**	**0.0104**		**0.0104**	**0.0104**	**0.0000**	**148.9399**	**148.9399**	**2.8500e-003**	**2.7300e-003**	**149.8250**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Research & Development	844011	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Research & Development	844011	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

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

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.5030	1.0000e-005	1.0500e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0300e-003	2.0300e-003	1.0000e-005	0.0000	2.1600e-003
Unmitigated	0.5030	1.0000e-005	1.0500e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0300e-003	2.0300e-003	1.0000e-005	0.0000	2.1600e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0592					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.4437					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.0000e-004	1.0000e-005	1.0500e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0300e-003	2.0300e-003	1.0000e-005	0.0000	2.1600e-003
Total	**0.5030**	**1.0000e-005**	**1.0500e-003**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0300e-003**	**2.0300e-003**	**1.0000e-005**	**0.0000**	**2.1600e-003**

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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	0.0592					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.4437					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.0000e-004	1.0000e-005	1.0500e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0300e-003	2.0300e-003	1.0000e-005	0.0000	2.1600e-003
Total	**0.5030**	**1.0000e-005**	**1.0500e-003**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0300e-003**	**2.0300e-003**	**1.0000e-005**	**0.0000**	**2.1600e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	17.7191	1.8199	0.0430	76.0229

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

Unmitigated	17.7191	1.8199	0.0430	76.0229

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Research & Development	55.8515 / 0	17.7191	1.8199	0.0430	76.0229
Total		**17.7191**	**1.8199**	**0.0430**	**76.0229**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Research & Development	55.8515 / 0	17.7191	1.8199	0.0430	76.0229
Total		**17.7191**	**1.8199**	**0.0430**	**76.0229**

8.0 Waste Detail

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

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	1.7518	0.1035	0.0000	4.3400
Unmitigated	1.7518	0.1035	0.0000	4.3400

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Research & Development	8.63	1.7518	0.1035	0.0000	4.3400
Total		**1.7518**	**0.1035**	**0.0000**	**4.3400**

Mitigated

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

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Research & Development	8.63	1.7518	0.1035	0.0000	4.3400
Total		**1.7518**	**0.1035**	**0.0000**	**4.3400**

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Attachment 3: EMFAC2021 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														
2023	0.0674	0.8518	1.0156	0.0057	0.2246	0.0458	0.2704	0.0338	0.0191	0.0529	569.9644	0.0626	0.0714	592.8141
2024	0.1493	1.9314	2.3119	0.0135	0.5373	0.1086	0.6459	0.0808	0.0450	0.1258	1337.3074	0.1440	0.1675	1390.8342
2025	0.1385	1.8198	2.1973	0.0131	0.5359	0.1074	0.6432	0.0806	0.0441	0.1247	1303.7241	0.1364	0.1633	1355.8061
2026	0.1294	1.7208	2.1061	0.0128	0.5359	0.1067	0.6426	0.0806	0.0435	0.1241	1405.7950	0.1428	0.1760	1461.8104
2027	0.0284	0.3793	0.4709	0.0029	0.1248	0.0247	0.1495	0.0188	0.0100	0.0288	319.6496	0.0314	0.0400	332.3474
Toxic Air Contaminants (1 Mile Trip Length)														
2023	0.0524	0.2029	0.3223	0.0007	0.0206	0.0041	0.0247	0.0031	0.0018	0.0049	65.1222	0.0117	0.0093	68.1717
2024	0.1170	0.4714	0.7330	0.0015	0.0494	0.0097	0.0590	0.0074	0.0042	0.0116	152.8887	0.0269	0.0217	160.0171
2025	0.1094	0.4542	0.6967	0.0015	0.0492	0.0095	0.0587	0.0074	0.0041	0.0115	149.2199	0.0256	0.0211	156.1482
2026	0.1030	0.4388	0.6674	0.0015	0.0492	0.0094	0.0586	0.0074	0.0040	0.0114	161.0637	0.0269	0.0227	168.5112
2027	0.0228	0.0986	0.1494	0.0003	0.0115	0.0022	0.0136	0.0017	0.0009	0.0026	36.6679	0.0060	0.0052	38.3573

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	28	0	3360	0	539.4	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT	36288	0	10788
Grading	43	0	10062	0	41,375	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT	108669.6	0	827500
Building Construction	557	252	313591	141876	16800	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT	3386783	1035695	336000
Paving	20	0	3620	0	267	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT	39096	0	5340
Building Interior	111	0	14430	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT	155844	0	0

Number of Days Per Year					
2023	8/1/23	12/31/23	153	109	
2024	1/1/24	12/31/24	366	262	
2025	1/1/25	12/31/25	365	261	
2026	1/1/26	12/31/2026	365	261	
2027	1/1/2027	3/26/2027	85	61	
			1334	**954**	***Total Workdays***

Phase	Start Date	End Date	Days/Week	Workdays
Demolition	8/1/2023	1/15/2024	5	120
Grading	1/16/2024	12/6/2024	5	234
Building Construction	12/7/2024	2/3/2027	5	563
Paving	7/17/2026	3/26/2027	5	181
Building Interior	9/26/2026	3/26/2027	5	130

Source: EMFAC2021 (v1.0.2) 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, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HOTSOAK and RUNLOSS, g/vehicle/day for IDLEX and DIURN. PHEV calculated based on total VMT.

Region	Calendar Y	Vehicle Cat	Model Yea	Speed	Fuel	Population	Total VMT	CVMT	EVMT	Trips	NOx_RUNEX	NOx_IDLEX	NOx_STREX	PM2.5_RU	PM2.5_IDL	PM2.5_STR	PM2.5_DIU	PM2.5_TIR	PM10_RUI	PM10_IDL	PM10_STR	PM10_DIU	PM10_TIR	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_HOTS	ROG_RUNL	ROG_DIUR	TOG_RUNEX	TOG_IDLEX	TOG_STREX	TOG_HOTS	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	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	3.367467	50.13908	2.567805	0.026697	0.041054	0	0.008861	0.031515	0.027904	0.04291	0	0.034444	0.090042	1868.7	8522.619	0	0.001942	0.155104	0	0.294414	1.342742	0	0.041821	3.339355	0	0	0	0	0.04761	3.801601	0	0	0	0	0	0.186789	0.159005	43.82276	0	0.017695	0.080704	0
San Mateo	2022	HHDT	Aggregate	Natural Ga	Natural Ga	144.1612	9768.638	9768.638	0	950.7524	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	0.734123	18.35301	67.58246	0	0	0	0
San Mateo	2022	LDA	Aggregate	Aggregate	Gasoline	240666.4	7995565	7995565	0	1130997	0.047702	0	0.275282	0.001241	0	0.002105	0.002	0.002347	0.00135	0	0.002289	0.008	0.006707	282.0072	0	72.08796	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	0.002788	0	0.000713
San Mateo	2022	LDA	Aggregate	Aggregate	Diesel	888.5395	22501.88	22501.88	0	3790.786	0.240012	0	0	0.015881	0	0	0.002	0.002391	0.016599	0	0	0.008	0.006831	236.5354	0	0	0.001267	0	0	0.037266	0	0	0.02727	0	0	0	0	0	0.031045	0	0	0	0	0	0.0031	0.330004	0	0	0.002241	0	0
San Mateo	2022	LDA	Aggregate	Aggregate	Electricity	14591.4	568258.7	0	568258.7	72996.66	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
San Mateo	2022	LDA	Aggregate	Aggregate	Plug-in Hyb	6271.758	249381.9	127562.4	121819.5	25933.72	0.003286	0	0.117199	0.000663	0	0.002168	0.002	0.001311	0.000722	0	0.002358	0.008	0.003747	138.0528	0	66.27115	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	0.206229	0	1.37819	0.001365	0	0.000655
San Mateo	2022	LDT1	Aggregate	Aggregate	Gasoline	24136.47	736196.1	736196.1	0	109571	0.134919	0	0.395074	0.001791	0	0.002798	0.002	0.002838	0.001948	0	0.003043	0.008	0.008107	331.1881	0	87.90421	0.00631	0	0.109218	0.009543	0	0.038745	0.028415	0	0.569782	0.157522	0.456069	2.467901	0.034149	0	0.623836	0.157522	0.456069	2.467901	0.036499	1.368916	0	5.624448	0.003274	0	0.000869
San Mateo	2022	LDT1	Aggregate	Aggregate	Diesel	8.510916	119.4982	119.4982	0	25.11455	1.690269	0	0	0.241464	0	0	0.002	0.00334	0.252382	0	0	0.008	0.009543	418.4363	0	0	0.014886	0	0	0.065925	0	0	0.320488	0	0	0	0	0	0.364855	0	0	0	0	0	0.0031	1.709562	0	0	0.003965	0	0
San Mateo	2022	LDT1	Aggregate	Aggregate	Electricity	61.93893	2054.9	0	2054.9	294.187	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
San Mateo	2022	LDT1	Aggregate	Aggregate	Plug-in Hyb	19.46092	849.1339	406.2744	442.8594	80.24761	0.003074	0	0.117199	0.000413	0	0.001456	0.002	0.001322	0.000449	0	0.001583	0.008	0.003777	129.1531	0	72.4859	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	0.193011	0	1.37819	0.001277	0	0.000717
San Mateo	2022	LDT2	Aggregate	Aggregate	Gasoline	128775.8	4489208	4489208	0	617258.5	0.062575	0	0.324659	0.001272	0	0.002033	0.002	0.002716	0.001384	0	0.002212	0.008	0.007761	343.7915	0	87.85962	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	0.003399	0	0.000869
San Mateo	2022	LDT2	Aggregate	Aggregate	Diesel	498.9179	17455.1	17455.1	0	2406.111	0.047726	0	0	0.005147	0	0	0.002	0.002738	0.00538	0	0	0.008	0.007822	317.6065	0	0	0.000624	0	0	0.050039	0	0	0.013436	0	0	0	0	0	0.015295	0	0	0	0	0	0.0031	0.124515	0	0	0.003009	0	0
San Mateo	2022	LDT2	Aggregate	Aggregate	Electricity	502.691	16536.35	0	16536.35	2591.33	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
San Mateo	2022	LDT2	Aggregate	Aggregate	Plug-in Hyb	938.5352	39780.13	19647.25	20132.88	3880.843	0.003173	0	0.117199	0.000533	0	0.001824	0.002	0.001316	0.00058	0	0.001984	0.008	0.003761	133.3142	0	78.34077	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	0.199208	0	1.37819	0.001318	0	0.000774
San Mateo	2022	LHDT1	Aggregate	Aggregate	Gasoline	10003.64	379521.5	379521.5	0	149039.3	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	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	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	0.172444	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	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	0.190222	0.33983	0.909745	0	0.007206	0.001981	0
San Mateo	2022	MCY	Aggregate	Aggregate	Gasoline	11775.11	70029.62	70029.62	0	23550.22	0.563376	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	0.082284	0	0.405736	0.001302	0	0.002201	0.002	0.002736	0.001416	0	0.002394	0.008	0.007817	414.086	0	106.4165	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	0.004094	0	0.001052
San Mateo	2022	MDV	Aggregate	Aggregate	Diesel	1048.144	37479.46	37479.46	0	5036.896	0.047538	0	0	0.004777	0	0	0.002	0.002777	0.004993	0	0	0.008	0.007934	413.8543	0	0	0.000486	0	0	0.065203	0	0	0.010456	0	0	0	0	0	0.011904	0	0	0	0	0	0.0031	0.180998	0	0	0.003921	0	0
San Mateo	2022	MDV	Aggregate	Aggregate	Electricity	497.8274	16375.41	0	16375.41	2565.598	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
San Mateo	2022	MDV	Aggregate	Aggregate	Plug-in Hyb	517.8537	21966.08	11106.12	10859.96	2141.325	0.003248	0	0.117199	0.000662	0	0.002216	0.002	0.001313	0.00072	0	0.00241	0.008	0.003752	136.4653	0	97.81049	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	0.203885	0	1.37819	0.001349	0	0.000967
San Mateo	2022	MH	Aggregate	Aggregate	Gasoline	751.6488	7043.926	7043.926	0	75.19494	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	3.401996	0	0	0.063019	0	0	0.004	0.015675	0.063868	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	0.604094	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	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	0.193605	0.190383	7.265304	0	0.01102	0.022042	0
San Mateo	2022	MHDT	Aggregate	Natural Ga	Natural Ga	40.6324	1873.257	1873.257	0	381.7521	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	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	0.334451	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	0.045248	0.746076	0.166832	0.02655	0.111811	1.875172	0.071862	1.088672	0.18266	0.02655	0.111811	1.875172	0.044917	1.079968	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	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	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	0.293719	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	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	0.981493	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	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	0.128799	0.214547	4.164591	0	0.010939	0.021372	0
San Mateo	2022	SBUS	Aggregate	Natural Ga	Natural Ga	5.747464	147.755	147.755	0	83.22328	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	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	0.052732	0	0.593554	0.000924	0	0.000101	0.002073	0.032333	0.001005	0	0.000011	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	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	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
San Mateo	2022	UBUS	Aggregate	Natural Ga	Natural Ga	34.62042	1174.257	1174.257	0	138.4817	0.063543	0	0	0.000296	0	0	0.008807	0.0385	0.00031	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 (v1.0.2) 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, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HOTSOAK and RUNLOSS, g/vehicle/day for IDLEX and DIURN. PHEV calculated based on total VMT.

Region	Calendar Y	Vehicle Cat	Model Yea	Speed	Fuel	Population	Total VMT	CVMT	EVMT	Trips	NOx_RUNEX	NOx_IDLEX	NOx_STREX	PM2.5_RU	PM2.5_IDL	PM2.5_STR	PM2.5_DIF	PM2.5_PM	PM10_RUI	PM10_IDL	PM10_STR	PM10_DIF	PM10_PM	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_HOTS	ROG_RUNL	ROG_DIUR	TOG_RUNEX	TOG_IDLEX	TOG_STREX	TOG_HOTS	TOG_RUNL	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	86.11225	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	0.045	33.28789	0	6.069294	0.022324	0	0.000539
San Mateo	2023	HHDT	Aggregate	Aggregate	Diesel	1295.72	119079.6	119079.6	0	14027.66	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	0	0	0	0	0	0	0	0	0	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
San Mateo	2023	HHDT	Aggregate	Aggregate	Natural Ga	157.5655	10602.72	10602.72	0	1067.368	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	1.445109	26.1537	0	0	0	0	0.73711	17.41229	66.41256	0	0	0	0
San Mateo	2023	LDA	Aggregate	Aggregate	Gasoline	2403178.8	7727537	7727537	0	1126355	0.042338	0	0.260506	0.001198	0	0.002031	0.002	0.002348	0.001303	0	0.002208	0.008	0.006708	276.584	0	70.47869	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	3.395649	0.002734	0	0.000697
San Mateo	2023	LDA	Aggregate	Aggregate	Diesel	833.7612	19906.52	19906.52	0	3528.191	0.213764	0	0	0.014362	0	0	0.002	0.002398	0.015012	0	0	0.008	0.006851	234.4981	0	0	0.001164	0	0	0.036945	0	0	0.02507	0	0	0	0	0	0.02854	0	0	0	0	0	0.0031	0.317118	0	0	0.002222	0	0
San Mateo	2023	LDA	Aggregate	Aggregate	Electricity	16299	630419.6	0	630419.6	81240.99	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
San Mateo	2023	LDA	Aggregate	Aggregate	Plug-in Hyb	6930.414	264587.6	131767.9	132819.8	28657.26	0.003199	0	0.117199	0.000615	0	0.002065	0.002	0.001318	0.000669	0	0.002246	0.008	0.003766	134.4061	0	65.24503	0.000415	0	0.042451	0.000556	0	0.020334	0.001345	0	0.176635	0.03705	0.032896	0.392427	0.001962	0	0.193393	0.03705	0.032896	0.392427	0.019696	0.200772	0	1.37819	0.001329	0	0.000645
San Mateo	2023	LDT1	Aggregate	Aggregate	Gasoline	24557.61	732297.8	732297.8	0	111855.3	0.11638	0	0.364578	0.001649	0	0.002601	0.002	0.002829	0.001794	0	0.002828	0.008	0.008082	324.4279	0	85.42907	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	0.003207	0	0.000845
San Mateo	2023	LDT1	Aggregate	Aggregate	Diesel	7.655601	101.9185	101.9185	0	22.20173	1.676086	0	0	0.239368	0	0	0.002	0.003332	0.250191	0	0	0.008	0.00952	418.152	0	0	0.014739	0	0	0.06588	0	0	0.317327	0	0	0	0	0	0.361255	0	0	0	0	0	0.0031	1.688168	0	0	0.003962	0	0
San Mateo	2023	LDT1	Aggregate	Aggregate	Electricity	74.62331	2574.77	0	2574.77	357.9526	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
San Mateo	2023	LDT1	Aggregate	Aggregate	Plug-in Hyb	34.67073	1451.31	668.3078	783.0024	143.3635	0.002958	0	0.117199	0.000383	0	0.001401	0.002	0.001331	0.000416	0	0.001524	0.008	0.003802	124.2993	0	70.89548	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	0.185749	0	1.37819	0.001229	0	0.000701
San Mateo	2023	LDT2	Aggregate	Aggregate	Gasoline	139222.3	4716888	4716888	0	668266.1	0.05408	0	0.29713	0.001207	0	0.001949	0.002	0.002716	0.001313	0	0.002119	0.008	0.007759	334.8986	0	85.30301	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	0.003311	0	0.000843
San Mateo	2023	LDT2	Aggregate	Aggregate	Diesel	541.6894	18280.98	18280.98	0	2609.031	0.042759	0	0	0.004694	0	0	0.002	0.002739	0.004906	0	0	0.008	0.007825	310.458	0	0	0.000594	0	0	0.048913	0	0	0.012791	0	0	0	0	0	0.014562	0	0	0	0	0	0.0031	0.121058	0	0	0.002942	0	0
San Mateo	2023	LDT2	Aggregate	Aggregate	Electricity	855.0521	26877.43	0	26877.43	4389.934	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
San Mateo	2023	LDT2	Aggregate	Aggregate	Plug-in Hyb	1293.229	52235.96	24959.1	27276.86	5347.502	0.00307	0	0.117199	0.000478	0	0.001688	0.002	0.001325	0.00052	0	0.001836	0.008	0.003785	128.97	0	76.74084	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	0.192704	0	1.37819	0.001275	0	0.000759
San Mateo	2023	LHDT1	Aggregate	Aggregate	Gasoline	10572.08	392533.1	392533.1	0	157508.2	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	57574.27	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	18343.59	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	24562.62	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	2507.354	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	374408	0.068743	0	0.362909	0.001222	0	0.002069	0.002	0.002734	0.001329	0	0.002251	0.008	0.00781	403.6262	0	103.3496	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	0.00399	0	0.001022
San Mateo	2023	MDV	Aggregate	Aggregate	Diesel	1107.903	37908.13	37908.13	0	5305.818	0.04176	0	0	0.004328	0	0	0.002	0.002738	0.004524	0	0	0.008	0.007965	406.2615	0	0	0.000449	0	0	0.064007	0	0	0.009665	0	0	0	0	0	0.011002	0	0	0	0	0	0.0031	0.175602	0	0	0.00385	0	0
San Mateo	2023	MDV	Aggregate	Aggregate	Electricity	906.5115	28548.82	0	28548.82	4657.021	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
San Mateo	2023	MDV	Aggregate	Aggregate	Plug-in Hyb	678.1174	27547.88	13448.47	14099.41	2804.015	0.003136	0	0.117199	0.000578	0	0.002002	0.002	0.001322	0.000628	0	0.002177	0.008	0.003776	131.7621	0	95.52682	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	0.196851	0	1.37819	0.001303	0	0.000944
San Mateo	2023	MH	Aggregate	Aggregate	Gasoline	774.8115	7442.976	7442.976	0	77.51215	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	0.661382	0	0.16244	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	32.85822	3.229197	0	0	0.055455	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	0	0.107288	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	15610.09	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	50462.49	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	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
San Mateo	2023	MHDT	Aggregate	Aggregate	Natural Ga	38.13508	1832.77	1832.77	0	342.2075	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	5133.267	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	10288.18	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	0.119123	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	59.28285	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	248.4515	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	2444.395	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	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
San Mateo	2023	SBUS	Aggregate	Aggregate	Natural Ga	6.023036	153.4041	153.4041	0	87.21356	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	245.0511	0.037017	0	0.578233	0.000989	0	0.000127	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	1367.385	2.897593	0	0	0.007619	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	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	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
San Mateo	2023	UBUS	Aggregate	Aggregate	Natural Ga	34.94319	1199.611	1199.611	0	139.7728	0.063405	0	0	0.000296	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	0	0	4.537297	0	0	0	0	0	0.97	52.53671	0	0	0	0	0

Source: EMFAC2021 (v1.0.2) 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, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HOTSOAK and RUNLOSS, g/vehicle/day for IDLEX and DIURN. PHEV calculated based on total VMT.

Region	Calendar Y	Vehicle Cat	Model Yea	Speed	Fuel	Population	Total VMT	CVMT	EVMT	Trips	NOx_RUNEX	NOx_IDLEX	NOx_STREX	PM2.5_RU	PM2.5_IDL	PM2.5_STR	PM2.5_DIU	PM2.5_TIR	PM2.5_BWR	PM2.5_TWR	PM10_RUN	PM10_IDL	PM10_STR	PM10_DIU	PM10_TIR	PM10_BWR	PM10_TWR	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_HOTS	ROG_RUNL	ROG_DIUR	TOG_RUNEX	TOG_IDLEX	TOG_STREX	TOG_HOTS	TOG_RUNL	TOG_DIUR	NH3_RUNEX	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	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	0.0445	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	2.758523	46.36193	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	0.19939	0.118425	47.19978	0	0.017395	0.077828	0
San Mateo	2024	HHDT	Aggregate	Aggregate	Electricity	4.22305	364.2879	0	364.2879	41.8342	0	0	0	0	0	0	0.008582	0.016829	0	0	0	0.034329	0.048082	0	0	0	0	0	0	0	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	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	0.173794	24.68622	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	0.038087	0	0.247841	0.001162	0	0.001964	0.002	0.002348	0.001263	0	0.002136	0.008	0.006709	270.9813	0	68.88096	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	0.637735	0	3.199778	0.002679	0	0.000681
San Mateo	2024	LDA	Aggregate	Aggregate	Diesel	770.443	17557.03	17557.03	0	3247.138	0.188593	0	0	0.01271	0	0	0.002	0.002404	0.013285	0	0	0.008	0.006869	232.2271	0	0	0.001054	0	0	0.036587	0	0	0.022696	0	0	0	0	0	0.025838	0	0	0	0	0	0.0031	0.304144	0	0	0.0022	0	0
San Mateo	2024	LDA	Aggregate	Aggregate	Electricity	17934.86	689392.1	0	689392.1	89072.05	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	0
San Mateo	2024	LDA	Aggregate	Aggregate	Plug-in Hyb	7500.936	275231.1	133857.4	141373.7	31016.37	0.003125	0	0.117199	0.000577	0	0.001988	0.002	0.001324	0.000628	0	0.002162	0.008	0.003783	131.2547	0	64.21414	0.000402	0	0.042117	0.000534	0	0.020029	0.001313	0	0.176635	0.037635	0.03379	0.393665	0.001916	0	0.193393	0.037635	0.03379	0.393665	0.0194	0.196055	0	1.37819	0.001298	0	0.000635
San Mateo	2024	LDT1	Aggregate	Aggregate	Gasoline	25010.05	728708.6	728708.6	0	1142830.1	0.101175	0	0.337766	0.001531	0	0.002433	0.002	0.002823	0.001665	0	0.002647	0.008	0.008066	317.5486	0	83.06159	0.004741	0	0.091509	0.007635	0	0.035447	0.020943	0	0.464929	0.13393	0.378571	2.119435	0.038557	0	0.509038	0.13393	0.378571	2.119435	0.03751	1.098083	0	4.642443	0.003139	0	0.000821
San Mateo	2024	LDT1	Aggregate	Aggregate	Diesel	6.907674	87.50597	87.50597	0	19.69868	1.656035	0	0	0.236493	0	0	0.002	0.003323	0.247186	0	0	0.008	0.009495	417.4053	0	0	0.014564	0	0	0.065762	0	0	0.313559	0	0	0	0	0	0.356966	0	0	0	0	0	0.0031	1.668132	0	0	0.003955	0	0
San Mateo	2024	LDT1	Aggregate	Aggregate	Electricity	91.59654	3278.131	0	3278.131	443.5442	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	0
San Mateo	2024	LDT1	Aggregate	Aggregate	Plug-in Hyb	54.25069	2174.893	971.2907	1203.602	224.3266	0.002869	0	0.117199	0.000364	0	0.001376	0.002	0.001338	0.000396	0	0.001496	0.008	0.003823	120.5464	0	69.35514	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	0.180131	0	1.37819	0.001192	0	0.000586
San Mateo	2024	LDT2	Aggregate	Aggregate	Gasoline	149536	4914901	4914901	0	718035.6	0.047837	0	0.275637	0.001155	0	0.001881	0.002	0.002719	0.001256	0	0.002046	0.008	0.007768	326.4023	0	82.90242	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	0.003227	0	0.00082
San Mateo	2024	LDT2	Aggregate	Aggregate	Diesel	582.1748	18954.02	18954.02	0	2798.233	0.039602	0	0	0.004525	0	0	0.002	0.002742	0.00473	0	0	0.008	0.007835	303.3367	0	0	0.000583	0	0	0.047791	0	0	0.012549	0	0	0	0	0	0.014287	0	0	0	0	0	0.0031	0.119356	0	0	0.002874	0	0
San Mateo	2024	LDT2	Aggregate	Aggregate	Electricity	1250.957	37598.89	0	37598.89	6394.245	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	0
San Mateo	2024	LDT2	Aggregate	Aggregate	Plug-in Hyb	1631.391	62724.85	29203.5	33521.35	6745.803	0.002991	0	0.117199	0.000445	0	0.001613	0.002	0.001331	0.000484	0	0.001754	0.008	0.003803	125.6641	0	75.33035	0.000385	0	0.042141	0.000512	0	0.020051	0.001257	0	0.176635	0.025289	0.023061	0.291714	0.001834	0	0.193393	0.025289	0.023061	0.291714	0.019538	0.187751	0	1.37819	0.001242	0	0.000745
San Mateo	2024	LHDT1	Aggregate	Aggregate	Gasoline	11110.29	401258.4	401258.4	0	165526.8	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	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	0.191039	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	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	0
San Mateo	2024	LHDT2	Aggregate	Aggregate	Gasoline	1289.385	44551.76	44551.76	0	19209.92	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	0.031883	0.5489	0.151593	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	0.758817	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	0.200587	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	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	0
San Mateo	2024	MCY	Aggregate	Aggregate	Gasoline	13263.89	76675.37	76675.37	0	26527.78	0.518793	0	0.126152	0.003881	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	0.058434	0	0.328591	0.001156	0	0.001958	0.002	0.002737	0.001258	0	0.002129	0.008	0.007819	393.5743	0	100.4473	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	0.003891	0	0.000993
San Mateo	2024	MDV	Aggregate	Aggregate	Diesel	1163.667	38157.5	38157.5	0	5552.1	0.037261	0	0	0.004001	0	0	0.002	0.002798	0.004182	0	0	0.008	0.007995	398.2713	0	0	0.000421	0	0	0.062748	0	0	0.009074	0	0	0	0	0	0.01033	0	0	0	0	0	0.0031	0.171126	0	0	0.003774	0	0
San Mateo	2024	MDV	Aggregate	Aggregate	Electricity	1347.217	40547.66	0	40547.66	6889.415	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	0
San Mateo	2024	MDV	Aggregate	Aggregate	Plug-in Hyb	894.3672	35015.17	16467.11	18548.06	3698.208	0.003021	0	0.117199	0.000509	0	0.001829	0.002	0.00133	0.000553	0	0.001989	0.008	0.0038	126.9296	0	92.90761	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	0.189627	0	1.37819	0.001255	0	0.000918
San Mateo	2024	MH	Aggregate	Aggregate	Gasoline	801.8479	7786.339	7786.339	0	80.21686	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	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	16077.84	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	5105.104	1.307284	13.57456	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	0.208724	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	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	0
San Mateo	2024	MHDT	Aggregate	Aggregate	Natural Ga	40.94682	1935.863	1935.863	0	369.2827	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	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	0.276687	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	0.835238	5.759378	1.510482	0.009497	0.003284	0	0.003	0.017376	0.009927	0.003413	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	0.217754	0.093918	5.633167	0	0.01176	0.011516	0
San Mateo	2024	OBUS	Aggregate	Aggregate	Electricity	0.873406	79.58076	0	79.58076	17.47512	0	0	0	0	0	0	0.003	0.00794	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	0
San Mateo	2024	OBUS	Aggregate	Aggregate	Natural Ga	7.797528	492.5585	492.5585	0	69.398	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	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	0.835223	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	4.696712	23.20536	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	0.139187	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	0	0	0	0	0	0	0.003	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	0
San Mateo	2024	SBUS	Aggregate	Aggregate	Natural Ga	6.288614	158.6097	158.6097	0	91.05913	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	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	0.036235	0	0.500251	0.001083	0	0.000148	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	0.375565	0	0	0.006827	0	0	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	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	0
San Mateo	2024	UBUS	Aggregate	Aggregate	Natural Ga	65.26114	4514.573	4514.573	0	261.0446	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 (v1.0.2) 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, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HOTSOAK and RUNLOSS, g/vehicle/day for IDLEX and DIURN. PHEV calculated based on total VMT.

Region	Calendar Y	Vehicle Cat	Model Yea	Speed	Fuel	Population	Total VMT	CVMT	EVMT	Trips	NOx_RUNEX	NOx_IDLEX	NOx_STREX	PM2.5_RU	PM2.5_IDL	PM2.5_STR	PM2.5_DIU	PM2.5_TIR	PM2.5_BW	PM10_RUN	PM10_IDL	PM10_STR	PM10_DIU	PM10_TIR	PM10_BW	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_HOTS	ROG_RUNL	ROG_DIUR	TOG_RUNEX	TOG_IDLEX	TOG_STREX	TOG_HOTS	TOG_RUNL	TOG_DIUR	NH3_RUNEX	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	3.993891	0	0.003022	0.001378	0	0.00069	0.005	0.031006	0.001498	0	0.000751	0.02	0.0885B9	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	0.845	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	2.632025	45.4127	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	0.201044	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	0	0	0	0	0	0	0	0.008517	0.017099	0	0	0	0.034067	0.048854	0	0	0	0	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	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	0.720658	15.82056	63.0407	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
San Mateo	2025	LDA	Aggregate	Aggregate	Gasoline	238618	7185689	7185689	0	1119872	0.034615	0	0.235851	0.001128	0	0.001911	0.002	0.002349	0.001227	0	0.002078	0.008	0.00671	265.0863	0	67.26068	0.001838	0	0.063866	0.004	0	0.030182	0.006975	0	0.296397	0.080623	0.207795	1.246636	0.016177	0	0.324517	0.080623	0.207795	1.246636	0.036819	0.602664	0	3.018989	0.002621	0	0.000665
San Mateo	2025	LDA	Aggregate	Aggregate	Diesel	710.5834	15407.46	15407.46	0	2988.022	0.166025	0	0	0.01142	0	0	0.002	0.00241	0.011937	0	0	0.008	0.006884	229.7322	0	0	0.00097	0	0	0.036194	0	0	0.020877	0	0	0	0	0	0.023767	0	0	0	0	0	0	0.0031	0.292415	0	0	0.002177	0	0
San Mateo	2025	LDA	Aggregate	Aggregate	Electricity	19564.98	745853.8	0	745853.8	96825.51	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	0
San Mateo	2025	LDA	Aggregate	Aggregate	Plug-in Hyb	8044.117	283509.4	134548.1	148961.4	33262.42	0.003049	0	0.117199	0.000543	0	0.001919	0.002	0.00133	0.000591	0	0.002087	0.008	0.0038	128.0771	0	63.14069	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	0.1913	0	1.37819	0.001266	0	0.000624
San Mateo	2025	LDT1	Aggregate	Aggregate	Gasoline	25473.09	722986.2	722986.2	0	116608.1	0.088465	0	0.313819	0.001428	0	0.002288	0.002	0.002819	0.001554	0	0.002489	0.008	0.008056	310.5241	0	80.75369	0.004138	0	0.083876	0.006908	0	0.033921	0.018105	0	0.421017	0.123314	0.343281	1.948219	0.036418	0	0.460961	0.123314	0.343281	1.948219	0.037997	0.996198	0	4.245316	0.00307	0	0.000798
San Mateo	2025	LDT1	Aggregate	Aggregate	Diesel	6.297196	75.91061	75.91061	0	17.6629	1.633241	0	0	0.233227	0	0	0.002	0.003314	0.243773	0	0	0.008	0.009467	416.405	0	0	0.014366	0	0	0.065605	0	0	0.309282	0	0	0	0	0	0.352097	0	0	0	0	0	0	0.0031	1.645498	0	0	0.003946	0	0
San Mateo	2025	LDT1	Aggregate	Aggregate	Electricity	114.3013	4207.979	0	4207.979	557.9394	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	0
San Mateo	2025	LDT1	Aggregate	Aggregate	Plug-in Hyb	78.69736	3019.599	1309.635	1709.964	325.4136	0.002786	0	0.117199	0.00035	0	0.001361	0.002	0.001345	0.000381	0	0.00148	0.008	0.003842	117.0671	0	67.81017	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	0.174923	0	1.37819	0.001157	0	0.00067
San Mateo	2025	LDT2	Aggregate	Aggregate	Gasoline	159673.6	5072144	5072144	0	766397.2	0.043155	0	0.259038	0.001111	0	0.001824	0.002	0.002725	0.001208	0	0.001983	0.008	0.007785	318.166	0	80.62425	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	0.003145	0	0.000797
San Mateo	2025	LDT2	Aggregate	Aggregate	Diesel	618.9276	19447.24	19447.24	0	2972.356	0.035316	0	0	0.004147	0	0	0.002	0.002746	0.004334	0	0	0.008	0.007845	295.9024	0	0	0.00056	0	0	0.04662	0	0	0.012057	0	0	0	0	0	0.013726	0	0	0	0	0	0	0.0031	0.116837	0	0	0.002804	0	0
San Mateo	2025	LDT2	Aggregate	Aggregate	Electricity	1700.502	48819.4	0	48819.4	8654.222	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	0
San Mateo	2025	LDT2	Aggregate	Aggregate	Plug-in Hyb	1989.466	72787.26	33032.95	39754.31	8226.444	0.002916	0	0.117199	0.00042	0	0.00156	0.002	0.001337	0.000457	0	0.001696	0.008	0.003821	122.4885	0	73.88529	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	0.182994	0	1.37819	0.001211	0	0.00073
San Mateo	2025	LHDT1	Aggregate	Aggregate	Gasoline	11613.82	405927.2	405927.2	0	173028.5	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	0.878137	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	0
San Mateo	2025	LHDT1	Aggregate	Aggregate	Electricity	157.5841	8786.546	0	8786.546	2203.775	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	2025	LHDT2	Aggregate	Aggregate	Gasoline	1342.429	45031.5	45031.5	0	20000.19	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	0.099506	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	0
San Mateo	2025	LHDT2	Aggregate	Aggregate	Diesel	2386.592	88314.97	88314.97	0	30020.32	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	0
San Mateo	2025	LHDT2	Aggregate	Aggregate	Electricity	40.48817	2145.224	0	2145.224	536.9131	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	2025	MCY	Aggregate	Aggregate	Gasoline	13994.78	78703.42	78703.42	0	27989.55	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	0.050748	0	0.301319	0.001104	0	0.001871	0.002	0.002743	0.0012	0	0.002035	0.008	0.007838	383.757	0	97.70306	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	0.003794	0	0.000966
San Mateo	2025	MDV	Aggregate	Aggregate	Diesel	1216.213	38222.55	38222.55	0	5783.756	0.033166	0	0	0.003666	0	0	0.002	0.002807	0.003832	0	0	0.008	0.008021	389.8225	0	0	0.000395	0	0	0.061417	0	0	0.008497	0	0	0	0	0	0.009674	0	0	0	0	0	0	0.0031	0.166794	0	0	0.003694	0	0
San Mateo	2025	MDV	Aggregate	Aggregate	Electricity	1824.97	52408.32	0	52408.32	9288.746	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	0
San Mateo	2025	MDV	Aggregate	Aggregate	Plug-in Hyb	1131.124	42471.44	19328.41	23143.04	4677.198	0.002924	0	0.117199	0.000462	0	0.001715	0.002	0.001337	0.000502	0	0.001865	0.008	0.003821	122.8274	0	90.54251	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	0.183493	0	1.37819	0.001214	0	0.000895
San Mateo	2025	MH	Aggregate	Aggregate	Gasoline	830.5401	8053.177	8053.177	0	83.08723	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	2.990063	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	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	0.323037	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	0
San Mateo	2025	MHDT	Aggregate	Aggregate	Diesel	4294.917	177557.8	177557.8	0	51845.95	1.188939	12.87917	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	0
San Mateo	2025	MHDT	Aggregate	Aggregate	Electricity	41.49574	2407.793	0	2407.793	583.4118	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	0
San Mateo	2025	MHDT	Aggregate	Aggregate	Natural Ga	44.4449	2054.281	2054.281	0	404.8873	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	0
San Mateo	2025	OBUS	Aggregate	Aggregate	Gasoline	252.722	13715.02	13715.02	0	5056.462	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	0
San Mateo	2025	OBUS	Aggregate	Aggregate	Diesel	1111.576	75305.13	75305.13	0	10889.45	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	0
San Mateo	2025	OBUS	Aggregate	Aggregate	Electricity	2.143949	185.5536	0	185.5536	42.89613	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	2025	OBUS	Aggregate	Aggregate	Natural Ga	9.18414	584.7868	584.7868	0	81.73885	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	0
San Mateo	2025	SBUS	Aggregate	Aggregate	Gasoline	71.37135	3679.781	3679.781	0	285.4854	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	0
San Mateo	2025	SBUS	Aggregate	Aggregate	Diesel	168.9397	3758.24	3758.24	0	2446.247	4.387797	22.39071	0.476886	0.020913	0.021713	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	0
San Mateo	2025	SBUS	Aggregate	Aggregate	Electricity	1.984894	78.89105	0	78.89105	17.7986	0	0	0	0	0	0	0.003	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	0
San Mateo	2025	SBUS	Aggregate	Aggregate	Natural Ga	6.552799	163.6295	163.6295	0	94.88454	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	0
San Mateo	2025	UBUS	Aggregate	Aggregate	Gasoline	61.62557	4190.344	4190.344	0	246.5023	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	0.375553	0	0	0.006827	0	0	0.002	0.008097	0.0385	0.007136	0	0	0.032387	0.11	1223.606	0	0	0.003145	0	0	0.19278	0	0	0.067717	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	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	0
San Mateo	2025	UBUS	Aggregate	Aggregate	Natural Ga	65.5154	4534.391	4534.391	0	262.0616	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	4.185261	0	0	0	0	0	0	0.97	46.51263	0	0	0	0	0

Source: EMFAC2021 (v1.0.2) Emission Rates
Region Type: County
Region: San Mateo
Calendar Year: 2026
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for CVMT and EVMT, trips/day for Trips, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HOTSOAK and RUNLOSS, g/vehicle/day for IDLEX and DIURN. PHEV calculated based on total VMT.

Region	Calendar Y	Vehicle Cat	Model Yea	Speed	Fuel	Population	Total VMT	CVMT	EVMT	Trips	NOx_RUNEX	NOx_IDLEX	NOx_STREX	PM2.5_RU	PM2.5_IDL	PM2.5_STR	PM2.5_PM	PM2.5_PM	PM10_RUI	PM10_IDLE	PM10_STR	PM10_PM	TOG_RUNEX	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_HOTS	ROG_RUNL	ROG_DIUR	TOG_RUNEX	TOG_IDLEX	TOG_STREX	TOG_HOTS	TOG_RUNL	TOG_DIUR	NH3_RUNEX	CO_RUNEX	CO_IDLEX	CO_STREX	SOx_RUNE	SOx_IDLEX	SOx_STREX
San Mateo	2026	HHDT	Aggregate	Aggregate	Gasoline	4.283898	504.3899	504.3899	0	85.71223	3.767128	0	0.001928	0.001363	0	0.000634	0.005	0.031039	0.001482	0	0.00069	0.02	0.088682	2206.809	0	51.03869	0.109196	0	9.88E-05	0.147264	0	0.0001	0.53602	0	0.000536	0.029322	0.212948	1.905434	0.782159	0	0.000587	0.029322	0.212948	1.905434	0.045	33.33714	0	4.679779	0.021817	0	0.000505
San Mateo	2026	HHDT	Aggregate	Aggregate	Diesel	1339.121	1195911.7	1195911.7	0	14836.49	2.513316	44.39177	3.042683	0.024334	0.030988	0	0.008607	0.030272	0.025434	0.032389	0	0.034426	0.086492	1752.991	8044.886	0	0.00116	0.158921	0	0.276185	1.267475	0	0.024964	3.421536	0	0	0	0	0.02842	3.895158	0	0	0	0	0	0.202556	0.108407	48.25142	0	0.0166	0.07618	0
San Mateo	2026	HHDT	Aggregate	Aggregate	Electricity	17.24092	1568.579	0	1568.579	167.6097	0	0	0	0	0	0	0	0.008499	0.017277	0	0	0	0.033994	0.049364	0	0	0	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	2026	HHDT	Aggregate	Aggregate	Natural Ga	190.6077	12388.44	12388.44	0	1253.654	1.199642	8.304539	0	0.001614	0.012208	0	0.009	0.06089	0.001755	0.013277	0	0.036	0.17397	1452.495	8216.396	0	2.557538	21.22587	0	0.296101	1.674966	0	0.054701	0.334996	0	0	0	0	2.630844	21.69869	0	0	0	0	0	0.713158	15.13386	61.6539	0	0	0	0
San Mateo	2026	LDA	Aggregate	Aggregate	Gasoline	238617.8	6969047	6969047	0	1118592	0.031815	0	0.225592	0.00108	0	0.001846	0.002	0.002349	0.000174	0	0.002007	0.008	0.00671	259.6018	0	65.74318	0.001674	0	0.060063	0.003806	0	0.029206	0.006262	0	0.277135	0.077036	0.201162	1.205717	0.099138	0	0.303428	0.077036	0.201162	1.205717	0.037625	0.572674	0	2.857953	0.002566	0	0.00065
San Mateo	2026	LDA	Aggregate	Aggregate	Diesel	645.0664	13511.27	13511.27	0	2704.797	0.144803	0	0	0.010068	0	0	0.002	0.002414	0.010523	0	0	0.008	0.006897	227.0711	0	0	0.000882	0	0	0.033775	0	0	0.01898	0	0	0	0	0	0.021607	0	0	0	0	0	0.0031	0.280265	0	0.002152	0	0	0
San Mateo	2026	LDA	Aggregate	Aggregate	Electricity	20627.64	751657.4	0	751657.4	101606	0	0	0	0	0	0	0.002	0.001531	0	0	0	0.008	0.004375	0	0	0	0	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	2026	LDA	Aggregate	Aggregate	Plug-in Hyb	8434.471	284060.2	132539.9	151520.3	34876.54	0.002998	0	0.117199	0.00051	0	0.001839	0.002	0.001334	0.000555	0	0.002	0.008	0.003813	125.9186	0	62.33942	0.00038	0	0.041451	0.000497	0	0.019409	0.00126	0	0.176635	0.037598	0.034095	0.388535	0.001838	0	0.193393	0.037598	0.034095	0.388535	0.018859	0.188068	0	1.37819	0.001245	0	0.000616
San Mateo	2026	LDT1	Aggregate	Aggregate	Gasoline	25945.79	717326.6	717326.6	0	118989.9	0.078016	0	0.293254	0.001334	0	0.002155	0.002	0.002818	0.001451	0	0.002344	0.008	0.008052	304.0076	0	78.61644	0.003639	0	0.077166	0.006309	0	0.032586	0.015756	0	0.382671	0.113653	0.314838	1.794906	0.222991	0	0.418976	0.113653	0.314838	1.794906	0.038437	0.911226	0	3.898361	0.003005	0	0.000777
San Mateo	2026	LDT1	Aggregate	Aggregate	Diesel	5.731399	66.09906	66.09906	0	15.81841	1.607443	0	0	0.22953	0	0	0.002	0.003303	0.239908	0	0	0.008	0.009438	415.2037	0	0	0.01414	0	0	0.065416	0	0	0.304424	0	0	0	0	0	0.346566	0	0	0	0	0	0.0031	1.619672	0	0.003934	0	0	0
San Mateo	2026	LDT1	Aggregate	Aggregate	Electricity	141.9822	5160.147	0	5160.147	697.0716	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
San Mateo	2026	LDT1	Aggregate	Aggregate	Plug-in Hyb	104.7443	3837.146	1635.987	2201.159	433.1175	0.002739	0	0.117199	0.00033	0	0.001308	0.002	0.001349	0.000359	0	0.001423	0.008	0.003854	115.0787	0	66.76301	0.000347	0	0.041425	0.000453	0	0.019385	0.001151	0	0.176635	0.02329	0.019927	0.265458	0.00168	0	0.193393	0.02329	0.019927	0.265458	0.017907	0.171942	0	1.37819	0.001138	0	0.00096
San Mateo	2026	LDT2	Aggregate	Aggregate	Gasoline	169697.7	5206694	5206694	0	813724.2	0.039564	0	0.246415	0.001061	0	0.001756	0.002	0.002732	0.001154	0	0.001909	0.008	0.007806	310.9212	0	78.61365	0.001836	0	0.062615	0.004145	0	0.031058	0.006772	0	0.280198	0.053684	0.140038	0.877766	0.099881	0	0.306782	0.053684	0.140038	0.877766	0.039596	0.591205	0	2.920622	0.003074	0	0.000777
San Mateo	2026	LDT2	Aggregate	Aggregate	Diesel	655.1696	19853.42	19853.42	0	3139.478	0.033548	0	0	0.004079	0	0	0.002	0.002751	0.004264	0	0	0.008	0.00786	289.3493	0	0	0.000555	0	0	0.045587	0	0	0.011952	0	0	0	0	0	0.013607	0	0	0	0	0	0.0031	0.11634	0	0.002742	0	0	0
San Mateo	2026	LDT2	Aggregate	Aggregate	Electricity	2139.962	58794.02	58794.02	0	58794.02	10836.18	0	0	0	0	0	0.002	0.001528	0	0	0	0.008	0.004364	0	0	0	0	0	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	2026	LDT2	Aggregate	Aggregate	Plug-in Hyb	2330.737	81093.05	36145.09	44947.96	9637.596	0.002864	0	0.117199	0.000395	0	0.001497	0.002	0.001342	0.000443	0	0.001628	0.008	0.003835	120.2973	0	72.79128	0.000362	0	0.041388	0.000473	0	0.01935	0.001204	0	0.176635	0.024917	0.022518	0.286085	0.001756	0	0.193393	0.024917	0.022518	0.286085	0.018711	0.179707	0	1.37819	0.001189	0	0.00072
San Mateo	2026	LHDT1	Aggregate	Aggregate	Gasoline	12091.27	409379.7	409379.7	0	180141.9	0.082078	0.031581	0.525207	0.001324	0	0.000197	0.002	0.0273	0.00144	0	0.000214	0.008	0.078	811.9901	114.3649	26.27179	0.004327	0.101211	0.026073	0.004771	0.00278	0.045144	0.020676	0.362188	0.125413	0.029477	0.164217	1.658906	0.03017	0.528503	0.137311	0.029477	0.164217	1.658906	0.044975	0.843514	3.767862	3.376982	0.008027	0.001131	0.00026
San Mateo	2026	LHDT1	Aggregate	Aggregate	Diesel	5774.561	207453.3	207453.3	0	72636.71	0.759826	1.425846	0	0.020834	0.026593	0	0.003	0.0273	0.021776	0.027795	0	0.012	0.078	618.0427	123.4649	0	0.005378	0.005098	0	0.097373	0.019452	0	0.11579	0.10976	0	0	0	0	0.131819	0.124954	0	0	0	0	0.199971	0.278839	0.909745	0	0.005856	0.00117	0
San Mateo	2026	LHDT1	Aggregate	Aggregate	Electricity	302.9677	15691.66	0	15691.66	4239.881	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
San Mateo	2026	LHDT2	Aggregate	Aggregate	Gasoline	1390.219	45322.23	45322.23	0	20712.2	0.089949	0.030134	0.521013	0.001251	0	0.000168	0.002	0.03185	0.001361	0	0.000183	0.008	0.091	916.2773	132.4121	24.82523	0.00347	0.095994	0.025248	0.005641	0.002576	0.043086	0.015364	0.345713	0.121706	0.030304	0.166922	1.734893	0.02242	0.504463	0.133253	0.030304	0.166922	1.734893	0.044997	0.721895	3.771186	3.317909	0.009058	0.001309	0.000245
San Mateo	2026	LHDT2	Aggregate	Aggregate	Diesel	2589.799	92139.39	92139.39	0	32576.42	0.594292	1.367929	0	0.019861	0.026777	0	0.003	0.03185	0.020759	0.027987	0	0.012	0.091	726.711	197.0583	0	0.00529	0.005098	0	0.114494	0.031047	0	0.113884	0.10976	0	0	0	0	0.129649	0.124954	0	0	0	0	0.206359	0.253765	0.909745	0	0.006886	0.001867	0
San Mateo	2026	LHDT2	Aggregate	Aggregate	Electricity	77.23784	3810.55	0	3810.55	1024.59	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	2026	MCY	Aggregate	Aggregate	Gasoline	14692.86	80438.96	80438.96	0	29385.71	0.495123	0	0.110033	0.001908	0	0.003479	0.001	0.0042	0.002043	0	0.003711	0.004	0.012	186.0574	0	43.36877	0.137447	0	0.160662	0.036006	0	0.006719	0.86185	0	1.169727	3.545629	3.697544	3.067415	1.052189	0	1.272239	3.545629	3.697544	3.067415	0.008984	10.37381	0	7.649946	0.001839	0	0.000429
San Mateo	2026	MDV	Aggregate	Aggregate	Gasoline	95415.04	2995462	2995462	0	456021.9	0.045043	0	0.280293	0.001049	0	0.001787	0.002	0.002752	0.001141	0	0.001943	0.008	0.007862	375.0476	0	95.27447	0.002014	0	0.069417	0.004439	0	0.032516	0.007733	0	0.326682	0.058677	0.159655	0.988966	0.011284	0	0.357675	0.058677	0.159655	0.988966	0.039732	0.608979	0	3.043816	0.003708	0	0.000942
San Mateo	2026	MDV	Aggregate	Aggregate	Diesel	1264.364	38163.09	38163.09	0	5993.722	0.029639	0	0	0.00336	0	0	0.002	0.002815	0.003512	0	0	0.008	0.008044	381.8352	0	0	0.000371	0	0	0.060158	0	0	0.007978	0	0	0	0	0	0.009083	0	0	0	0	0	0.0031	0.162819	0	0.003618	0	0	0
San Mateo	2026	MDV	Aggregate	Aggregate	Electricity	2288.176	62843.93	0	62843.93	11585.67	0	0	0	0	0	0	0.002	0.001528	0	0	0	0.008	0.004365	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
San Mateo	2026	MDV	Aggregate	Aggregate	Plug-in Hyb	1352.288	48514.48	21600.3	26914.18	5591.711	0.00286	0	0.117199	0.000424	0	0.001613	0.002	0.001343	0.000461	0	0.001754	0.008	0.003836	120.1646	0	88.85404	0.000363	0	0.041542	0.000476	0	0.019493	0.001202	0	0.176635	0.027524	0.02439	0.302424	0.001754	0	0.193393	0.027524	0.02439	0.302424	0.0187	0.179507	0	1.37819	0.001188	0	0.000878
San Mateo	2026	MH	Aggregate	Aggregate	Gasoline	860.1629	8288.685	8288.685	0	86.0507	0.23256	0	0.397384	0.001512	0	0.000384	0.003	0.015756	0.001645	0	0.000418	0.012	0.045017	1945.826	0	31.10578	0.008668	0	0.035239	0.017644	0	0.044254	0.033949	0	0.14164	7.387206	0.177323	2.704624	0.049538	0	0.155079	7.387206	0.177323	2.704624	0.044967	0.720477	0	3.190918	0.019236	0	0.000308
San Mateo	2026	MH	Aggregate	Aggregate	Diesel	411.7686	4016.353	4016.353	0	41.17686	2.902322	0	0	0.040701	0	0	0.004	0.015675	0.042542	0	0	0.016	0.044785	1086.443	0	0	0.004006	0	0	0.17117	0	0	0.086257	0	0	0	0	0	0.098197	0	0	0	0	0	0.198004	0.264984	0	0	0.010295	0	0
San Mateo	2026	MHDT	Aggregate	Aggregate	Gasoline	848.5573	48169.43	48169.43	0	16977.94	0.269412	0.081996	0.401399	0.001349	0	0.000495	0.003	0.015756	0.001467	0	0.000539	0.012	0.045017	1697.118	512.7637	43.45365	0.008779	0.269455	0.043465	0.015276	0.007246	0.033229	0.041527	1.019578	0.229834	0.024222	0.200008	1.911848	0.060596	1.487766	0.251639	0.024222	0.200008	1.911848	0.044997	0.830138	15.19618	5.005077	0.016778	0.005069	0.00043
San Mateo	2026	MHDT	Aggregate	Aggregate	Diesel	4345.03	177809.3	177809.3	0	52490.37	1.079543	12.1982	1.615228	0.011982	0.022721	0	0.003	0.015982	0.012524	0.023749	0	0.012	0.045664	1138.556	2209.16	0	0.001294	0.010675	0	0.17938	0.348054	0	0.027853	0.229832	0	0	0	0	0.031709	0.261646	0	0	0	0	0.211826	0.108771	7.505293	0	0.010781	0.020919	0
San Mateo	2026	MHDT	Aggregate	Aggregate	Electricity	76.01194	4276.512	0	4276.512	1058.544	0	0	0	0	0	0	0.003	0.007951	0	0	0	0.012	0.022717	0	0	0	0	0	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	2026	MHDT	Aggregate	Aggregate	Natural Ga	48.05658	2179.843	2179.843	0	442.254	0.112977	6.480284	0	0.001327	0.019663	0	0.003	0.016091	0.001443	0.021385	0	0.012	0.045974	991.4871	5407.178	0	0.778786	16.68583	0	0.202121	1.102289	0	0.011127	0.238408	0	0	0	0	0.794808	17.02911	0	0	0	0	1.06	3.063718	38.15558	0	0	0	0
San Mateo	2026	OBUS	Aggregate	Aggregate	Gasoline	250.2122	13078.36	13078.36	0	5006.245	0.228578	0.061817	0.359747	0.001067	0	0.000285	0.003	0.01568	0.00116	0	0.00031	0.012	0.044799	1687.446	365.3109	29.42229	0.006927	0.20465	0.03203	0.013867	0.005591	0.030955	0.031574	0.747709	0.159032	0.025716	0.122353	2.090543	0.046073	1.091056	0.17412	0.025716	0.122353	2.090543	0.044974	0.662703	5.783272	3.284676	0.016682	0.003611	0.000291
San Mateo	2026	OBUS	Aggregate	Aggregate	Diesel	1145.492	75611.47	75611.47	0	11233.17	0.7922	5.412165	1.482498	0.00906	0.003089	0	0.003	0.017403	0.00947	0.003228	0	0.012	0.049724	1214.431	1202.439	0	0.000896	0.014277	0	0.191334	0.189445	0	0.019283	0.307371	0	0	0	0	0.021953	0.349919	0	0	0	0	0.21794	0.09136	5.733335	0	0.0115	0.011386	0
San Mateo	2026	OBUS	Aggregate	Aggregate	Electricity	3.59381	297.3898	0	297.3898	71.90495	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	2026	OBUS	Aggregate	Aggregate	Natural Ga	10.41211	669.454	669.454	0	92.66776	0.14486	1.520375	0	0.001277	0.004306	0	0.003	0.016148	0.001389	0.004683	0	0.012	0.046137	977.2919	1192.33	0	0.814665	4.026517	0	0.199227	0.243064	0	0.01164	0.057531	0	0	0	0	0.831426	4.109356	0	0	0	0	1.06	3.321327	8.269436	0	0	0	0
San Mateo	2026	SBUS	Aggregate	Aggregate	Gasoline	75.66977	3792.283	3792.283	0	302.6791	0.689408	0.850076	0.614008	0.001104	0	0.000723	0.002	0.015721	0.001201	0	0.000787	0.008	0.044917	775.7798	2481.854	58.67483	0.015917	2.447247	0.082067	0.033238	0.080267	0.056021	0.077973	10.62297	0.474628	0.118813	0.369995	1.975658	0.113778	15.50102	0.519658	0.118813	0.369995	1.975658	0.045	1.98957	82.12826	11.72979	0.007669	0.024536	0.00058
San Mateo	2026	SBUS	Aggregate	Aggregate	Diesel	168.4764	3737.054	3737.054	0	2439.538	4.092097	21.5298	0.494851	0.019631	0.01977	0	0.003	0.015721	0.020519	0.020664	0	0.012	0.044917	1133.73	2214.261	0	0.002862	0.008051	0	0.17862	0.348858	0	0.06162	0.173331	0	0	0	0	0.07015	0.197325	0	0	0	0	0.149335	0.189386	4.685291	0	0.010736	0.020968	0
San Mateo	2026	SBUS	Aggregate	Aggregate	Electricity	3.281397	127.7057	0	127.7057	29.50964	0	0	0	0	0	0	0.002	0.002326	0.00786	0	0	0	0.009303	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	2026	SBUS	Aggregate	Aggregate	Natural Ga	6.807777	168.2676	168.2676	0	98.5766	0.49789	5.22911	0	0.003378	0.012354	0	0.003	0.015721	0.003674	0.013436	0	0.012	0.044917	1228.474	4102.954	0	3.247338	14.74074	0	0.250432	0.836414	0	0.046398	0.210616	0	0	0	0	3.314147	15.044	0	0	0	0	1.06	10.75802	22.99417	0	0	0	0
San Mateo	2026	UBUS	Aggregate	Aggregate	Gasoline	61.80696	4202.678	4202.678	0	247.2278	0.033837	0	0.38239	0.001186	0	0.000163	0.002	0.002073	0.032333	0.00129	0	0.000177	0.00829	0.092379	954.5156	0	39.0065	0.001796	0	0.036113	0.004527	0	0.057552	0.005058	0	0.130834	0.029473	0.090867	0.345962	0.007381	0	0.143246	0.029473	0.090867	0.345962	0.045	0.558823	0	6.549286	0.009436	0	0.000386
San Mateo	2026	UBUS	Aggregate	Aggregate	Diesel	278.8478	21575.87	21575.87	0	1115.391	0.37554	0	0	0.006827	0	0	0.002	0.008097	0.0385	0.007135	0	0	0.032386	0.11	1223.487	0	0	0.053145	0	0	0.192761	0	0	0.067715	0	0	0	0	0.077089	0	0	0	0	0	0.22	0.07719	0	0	0.011593	0	0
San Mateo	2026	UBUS	Aggregate	Aggregate	Electricity	37.55556	3889.774	0	3889.774	150.2222	0	0	0	0	0	0	0.002	0.007371	0.01925	0	0	0	0.029483	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	2026	UBUS	Aggregate	Aggregate	Natural Ga	65.76966	4554.21	4554.21	0	263.0787	0.055441	0	0	0.000272	0	0	0.007743	0.0385	0.000285	0	0	0	0.030972	0.11	1262.837	0	0	4.101249	0	0	0.257438	0	0	0.058599	0	0	0	0	4.185626	0	0	0	0	0	0.97	46.51887	0	0	0	0	0

Source: EMFAC2021 (v1.0.2) Emission Rates
Region Type: County
Region: San Mateo
Calendar Year: 2027
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for CVMT and EVMT, trips/day for Trips, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HOTSOAK and RUNLOSS, g/vehicle/day for IDLEX and DIURN. PHEV calculated based on total VMT.

Region	Calendar Y	Vehicle Cat	Model Yea	Speed	Fuel	Population	Total VMT	CVMT	EVMT	Trips	NOx_RUNEX	NOx_IDLEX	NOx_STREX	PM2.5_RU	PM2.5_IDL	PM2.5_STR	PM2.5_PM	PM2.5_PM	PM10_RUI	PM10_IDL	PM10_STR	PM10_PM	PM10_PM	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_HOTS	ROG_RUNL	ROG_DIUR	TOG_RUNEX	TOG_IDLEX	TOG_STREX	TOG_HOTS	TOG_RUNL	TOG_DIUR	NH3_RUNEX	CO_RUNEX	CO_IDLEX	CO_STREX	SOx_RUNE	SOx_IDLEX	SOx_STREX
San Mateo	2027	HHDT	Aggregate	Aggregate	Gasoline	4.22201	465.9735	465.9735	0	84.47398	3.784401	0	0.001809	0.00137	0	0.000612	0.005	0.031101	0.00149	0	0.000666	0.02	0.088859	2187.915	0	50.77401	0.10848	0	9.38E-05	0.147815	0	9.4E-05	0.529357	0	0.000508	0.02999	0.222639	2.054582	0.772437	0	0.000556	0.02999	0.222639	2.054582	0.045	33.09537	0	4.725369	0.021613	0	0.000502
San Mateo	2027	HHDT	Aggregate	Aggregate	Diesel	1346.151	1193746.9	1193746.9	0	15003.58	2.407204	43.42964	3.064838	0.024107	0.029271	0	0.008607	0.030209	0.025197	0.030595	0	0.034429	0.086312	1721.1	7957.443	0	0.001113	0.159723	0	0.27116	1.253698	0	0.023958	3.438793	0	0	0	0	0.027275	3.914804	0	0	0	0	0	0.203961	0.103951	48.72467	0	0.016298	0.073352	0
San Mateo	2027	HHDT	Aggregate	Aggregate	Electricity	27.72379	2533.074	0	2533.074	269.7516	0	0	0	0	0	0	0	0.008486	0.017473	0	0	0	0.033946	0.049922	0	0	0	0	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	2027	HHDT	Aggregate	Aggregate	Natural Ga	199.6437	12874.54	12874.54	0	1300.878	1.084345	7.803952	0	0.001553	0.012198	0	0.009	0.061541	0.001689	0.013266	0	0.036	0.175831	1433.526	8133.569	0	2.341828	20.00939	0	0.292234	1.658081	0	0.049129	0.313051	0	0	0	0	2.407859	20.45199	0	0	0	0	0	0.706678	14.49829	60.40274	0	0	0	0
San Mateo	2027	LDA	Aggregate	Aggregate	Gasoline	238471.3	6787745	6787745	0	1118595	0.029537	0	0.217198	0.001019	0	0.001761	0.002	0.002348	0.001108	0	0.001916	0.008	0.00671	254.8128	0	64.38911	0.001542	0	0.056785	0.00365	0	0.02841	0.00568	0	0.260517	0.07439	0.198496	1.18951	0.038288	0	0.285234	0.07439	0.198496	1.18951	0.038281	0.547784	0	2.718673	0.002519	0	0.000637
San Mateo	2027	LDA	Aggregate	Aggregate	Diesel	577.8306	11859.15	11859.15	0	2430.953	0.125063	0	0	0.008723	0	0	0.002	0.002417	0.009117	0	0	0.008	0.006905	224.26	0	0	0.000794	0	0	0.035332	0	0	0.01709	0	0	0	0	0	0.019456	0	0	0	0	0	0.0031	0.267761	0	0	0.002125	0	0
San Mateo	2027	LDA	Aggregate	Aggregate	Electricity	21755.83	763478.8	0	763478.8	106722.5	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
San Mateo	2027	LDA	Aggregate	Aggregate	Plug-in Hyb	8813.935	285623.3	131294.8	154328.5	36445.62	0.002953	0	0.117199	0.000473	0	0.001738	0.002	0.001338	0.000514	0	0.00189	0.008	0.003824	124.0518	0	61.66268	0.000372	0	0.041171	0.000483	0	0.019149	0.001241	0	0.176635	0.03859	0.038322	0.416371	0.001811	0	0.193393	0.03859	0.038322	0.416371	0.018683	0.185275	0	1.37819	0.001226	0	0.00061
San Mateo	2027	LDT1	Aggregate	Aggregate	Gasoline	26419.18	713999.1	713999.1	0	121334.5	0.069103	0	0.27581	0.001241	0	0.002022	0.002	0.002818	0.001349	0	0.002199	0.008	0.008051	298.1151	0	76.68438	0.003215	0	0.071337	0.005799	0	0.031456	0.01376	0	0.349477	0.105239	0.292408	1.687165	0.020078	0	0.382633	0.105239	0.292408	1.687165	0.03886	0.838518	0	3.597733	0.002947	0	0.000758
San Mateo	2027	LDT1	Aggregate	Aggregate	Diesel	1.374283	18.5258	18.5258	0	4.138205	0.988299	0	0	0.1471	0	0	0.002	0.003155	0.153751	0	0	0.008	0.009016	377.4379	0	0	0.011093	0	0	0.059465	0	0	0.238825	0	0	0	0	0	0.271887	0	0	0	0	0	0.0031	1.735378	0	0	0.003576	0	0
San Mateo	2027	LDT1	Aggregate	Aggregate	Electricity	175.6332	6297.196	0	6297.196	865.6909	0	0	0	0	0	0	0.002	0.00153	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	2027	LDT1	Aggregate	Aggregate	Plug-in Hyb	134.7957	4749.74	2001.346	2748.394	557.3801	0.002707	0	0.117199	0.000303	0	0.001221	0.002	0.001352	0.00033	0	0.001328	0.008	0.003862	113.7277	0	66.0325	0.000341	0	0.041159	0.000442	0	0.019137	0.001138	0	0.176635	0.023077	0.019848	0.265427	0.001166	0	0.193393	0.023077	0.019848	0.265427	0.017697	0.169916	0	1.37819	0.001124	0	0.000653
San Mateo	2027	LDT2	Aggregate	Aggregate	Gasoline	179414.4	5337772	5337772	0	859058.8	0.036713	0	0.236885	0.001002	0	0.001674	0.002	0.002741	0.00109	0	0.00182	0.008	0.00783	304.7363	0	76.89745	0.001725	0	0.059485	0.003982	0	0.030367	0.006284	0	0.264449	0.051332	0.135343	0.845955	0.00917	0	0.289538	0.051332	0.135343	0.845955	0.040019	0.572376	0	2.798095	0.003013	0	0.00076
San Mateo	2027	LDT2	Aggregate	Aggregate	Diesel	689.4223	20263.35	20263.35	0	3297.619	0.031701	0	0	0.003958	0	0	0.002	0.002756	0.004137	0	0	0.008	0.007875	283.5314	0	0	0.000547	0	0	0.04467	0	0	0.011786	0	0	0	0	0	0.013417	0	0	0	0	0	0.0031	0.115725	0	0	0.002687	0	0
San Mateo	2027	LDT2	Aggregate	Aggregate	Electricity	2621.122	69186.62	0	69186.62	13210.51	0	0	0	0	0	0	0.002	0.001529	0	0	0	0.008	0.004367	0	0	0	0	0	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	2027	LDT2	Aggregate	Aggregate	Plug-in Hyb	2686.495	89530.08	39333.03	50197.05	11108.66	0.002822	0	0.117199	0.000367	0	0.001415	0.002	0.001346	0.000399	0	0.001539	0.008	0.003845	118.5678	0	71.91759	0.000355	0	0.041086	0.000459	0	0.01907	0.001186	0	0.176635	0.025013	0.022284	0.283634	0.001731	0	0.193393	0.025013	0.022284	0.283634	0.018444	0.177113	0	1.37819	0.001172	0	0.000711
San Mateo	2027	LHDT1	Aggregate	Aggregate	Gasoline	12519.56	410499.8	410499.8	0	186522.8	0.072401	0.030667	0.505801	0.001305	0	0.000184	0.002	0.0273	0.001419	0	0.0002	0.008	0.078	802.6261	113.4583	26.05478	0.003836	0.098555	0.025023	0.004246	0.002719	0.043775	0.018096	0.351746	0.119942	0.027725	0.156123	1.578557	0.026406	0.513267	0.131322	0.027725	0.156123	1.578557	0.044987	0.808003	3.769346	3.38625	0.007935	0.001122	0.000258
San Mateo	2027	LHDT1	Aggregate	Aggregate	Diesel	6121.922	212564.8	212564.8	0	77006.08	0.667178	1.348518	0	0.019684	0.026527	0	0.003	0.0273	0.020574	0.027726	0	0.012	0.078	615.5765	122.1868	0	0.005114	0.005098	0	0.096984	0.019251	0	0.110092	0.10976	0	0	0	0	0.125333	0.124954	0	0	0	0	0	0.203121	0.261855	0.909745	0	0.005833	0.001158	0
San Mateo	2027	LHDT1	Aggregate	Aggregate	Electricity	519.4144	25488.91	0	25488.91	7271.182	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
San Mateo	2027	LHDT2	Aggregate	Aggregate	Gasoline	1431.729	45337.82	45337.82	0	21330.63	0.077643	0.029036	0.498496	0.001227	0	0.000155	0.002	0.03185	0.001334	0	0.000168	0.008	0.091	905.6598	131.3222	24.61878	0.002978	0.092887	0.023985	0.004985	0.002508	0.041598	0.012914	0.333181	0.114904	0.028288	0.158472	1.660759	0.018844	0.486177	0.125806	0.028288	0.158472	1.660759	0.045	0.687204	3.773249	3.317151	0.008953	0.001298	0.000243
San Mateo	2027	LHDT2	Aggregate	Aggregate	Diesel	2777.037	94986.53	94986.53	0	34931.64	0.539543	1.299818	0	0.019303	0.02677	0	0.003	0.03185	0.020176	0.02798	0	0.012	0.091	722.452	195.305	0	0.005137	0.005098	0	0.113823	0.03077	0	0.110593	0.10976	0	0	0	0	0.125902	0.124954	0	0	0	0	0	0.208358	0.246416	0.909745	0	0.006846	0.001851	0
San Mateo	2027	LHDT2	Aggregate	Aggregate	Electricity	131.984	6178.283	0	6178.283	1750.724	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	2027	MCY	Aggregate	Aggregate	Gasoline	15361.78	81910.47	81910.47	0	30723.56	0.487065	0	0.103341	0.001915	0	0.003454	0.001	0.0042	0.002051	0	0.003688	0.004	0.012	185.7732	0	42.22847	0.134785	0	0.155421	0.035689	0	0.006376	0.837827	0	1.124359	3.543525	3.694561	2.980616	1.026866	0	1.223091	3.543525	3.694561	2.980616	0.009015	10.14745	0	7.620964	0.001837	0	0.000417
San Mateo	2027	MDV	Aggregate	Aggregate	Gasoline	100853.9	3072334	3072334	0	481493.9	0.040639	0	0.264467	0.000989	0	0.001695	0.002	0.002761	0.001075	0	0.001844	0.008	0.007889	367.608	0	93.19698	0.001858	0	0.065023	0.004199	0	0.031612	0.007009	0	0.302374	0.055687	0.152422	0.944599	0.010227	0	0.331061	0.055687	0.152422	0.944599	0.040108	0.585727	0	2.900745	0.003634	0	0.000921
San Mateo	2027	MDV	Aggregate	Aggregate	Diesel	1306.722	38182.61	38182.61	0	6183.555	0.025409	0	0	0.002915	0	0	0.002	0.002822	0.003047	0	0	0.008	0.008064	374.4434	0	0	0.000339	0	0	0.058994	0	0	0.007306	0	0	0	0	0	0.008318	0	0	0	0	0	0.0031	0.158269	0	0	0.003548	0	0
San Mateo	2027	MDV	Aggregate	Aggregate	Electricity	2770.892	73029.24	0	73029.24	13959.05	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	2027	MDV	Aggregate	Aggregate	Plug-in Hyb	1580.566	54464.83	23853.74	30611.09	6535.639	0.002814	0	0.117199	0.000387	0	0.001503	0.002	0.001347	0.000421	0	0.001634	0.008	0.003848	118.2012	0	87.58088	0.000355	0	0.041243	0.000462	0	0.019216	0.001183	0	0.176635	0.027198	0.0246	0.30315	0.001726	0	0.193393	0.027198	0.0246	0.30315	0.018395	0.176568	0	1.37819	0.001169	0	0.000866
San Mateo	2027	MH	Aggregate	Aggregate	Gasoline	889.7275	8482.343	8482.343	0	89.00834	0.205598	0	0.394341	0.001477	0	0.000374	0.003	0.015756	0.001606	0	0.000407	0.012	0.045017	1945.602	0	30.91944	0.007677	0	0.034481	0.016471	0	0.044506	0.029111	0	0.136554	6.497034	0.156813	2.414317	0.042478	0	0.149509	6.497034	0.156813	2.414317	0.044981	0.592155	0	3.084243	0.019234	0	0.000306
San Mateo	2027	MH	Aggregate	Aggregate	Diesel	438.9117	4153.858	4153.858	0	43.89117	2.832054	0	0	0.037464	0	0	0.004	0.015675	0.039158	0	0	0.016	0.044785	1086.701	0	0	0.003935	0	0	0.17121	0	0	0.084726	0	0	0	0	0	0.096455	0	0	0	0	0	0.20065	0.258294	0	0	0.010297	0	0
San Mateo	2027	MHDT	Aggregate	Aggregate	Gasoline	867.5241	48390.56	48390.56	0	17357.42	0.227578	0.078989	0.386341	0.001347	0	0.000485	0.003	0.015756	0.001465	0	0.000528	0.012	0.045017	1680.333	507.7545	42.67241	0.007475	0.271014	0.042102	0.013626	0.007061	0.032711	0.034686	1.021219	0.219918	0.022149	0.184846	1.785685	0.050614	1.490161	0.240782	0.022149	0.184846	1.785685	0.045	0.678531	15.21525	4.76187	0.016612	0.00502	0.000422
San Mateo	2027	MHDT	Aggregate	Aggregate	Diesel	4381.456	17745.11	17745.1	0	52965.25	0.98012	11.57543	1.609464	0.01032	0.018608	0	0.003	0.015983	0.010787	0.019449	0	0.012	0.045664	1131.943	2189.732	0	0.001114	0.010178	0	0.178338	0.344993	0	0.023977	0.219127	0	0	0	0	0.027296	0.24946	0	0	0	0	0	0.213081	0.098415	7.494036	0	0.010719	0.020735	0
San Mateo	2027	MHDT	Aggregate	Aggregate	Electricity	127.7802	7032.616	0	7032.616	1769.648	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
San Mateo	2027	MHDT	Aggregate	Aggregate	Natural Ga	51.5504	2296.644	2296.644	0	479.4474	0.107496	6.432876	0	0.001352	0.019879	0	0.003	0.016088	0.001471	0.021621	0	0.012	0.045965	986.2486	5381.374	0	0.780237	16.43266	0	0.201053	1.097028	0	0.011148	0.23479	0	0	0	0	0.796289	16.77073	0	0	0	0	0	1.06	3.061376	38.67694	0	0	0	0
San Mateo	2027	OBUS	Aggregate	Aggregate	Gasoline	248.2101	12473.77	12473.77	0	4966.188	0.211311	0.060192	0.357193	0.00109	0	0.000259	0.003	0.01568	0.001186	0	0.000315	0.012	0.044799	1671.441	362.8494	29.18588	0.006456	0.203928	0.031666	0.013066	0.005413	0.030606	0.029254	0.747798	0.15748	0.025953	0.127029	2.17	0.042687	1.091184	0.172421	0.025953	0.127029	2.17	0.044975	0.611503	5.783803	3.243094	0.016524	0.003587	0.000289
San Mateo	2027	OBUS	Aggregate	Aggregate	Diesel	1179.467	75909.96	75909.96	0	11575.44	0.775196	5.241419	1.466802	0.008873	0.002989	0	0.003	0.017435	0.009274	0.003124	0	0.012	0.049814	1200.115	1193.83	0	0.000878	0.014362	0	0.189079	0.188088	0	0.018903	0.309216	0	0	0	0	0.021519	0.352019	0	0	0	0	0	0.218013	0.090292	5.765682	0	0.011364	0.011305	0
San Mateo	2027	OBUS	Aggregate	Aggregate	Electricity	5.720233	456.3866	0	456.3866	114.4504	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	2027	OBUS	Aggregate	Aggregate	Natural Ga	11.58861	747.5342	747.5342	0	103.1386	0.129807	1.513364	0	0.001349	0.004473	0	0.003	0.016148	0.001467	0.004865	0	0.012	0.046137	963.6185	1186.95	0	0.822922	3.939956	0	0.19644	0.241968	0	0.011758	0.056294	0	0	0	0	0.839853	4.021014	0	0	0	0	0	1.06	3.343572	8.646482	0	0	0	0
San Mateo	2027	SBUS	Aggregate	Aggregate	Gasoline	79.46692	3883.503	3883.503	0	317.9877	0.632481	0.822307	0.600742	0.001079	0	0.000721	0.002	0.015721	0.001174	0	0.000784	0.008	0.044917	769.995	2465.835	57.55214	0.014081	2.448145	0.080367	0.03084	0.078539	0.055535	0.068887	10.63221	0.464416	0.112849	0.357376	1.946706	0.100519	15.51596	0.508477	0.112849	0.357376	1.946706	0.045	1.780147	82.19044	11.21377	0.007612	0.024377	0.000569
San Mateo	2027	SBUS	Aggregate	Aggregate	Diesel	167.5641	3706.878	3706.878	0	2426.328	3.793477	20.61416	0.5128	0.018391	0.017915	0	0.003	0.015721	0.019223	0.018725	0	0.012	0.044917	1128.583	2201.776	0	0.002731	0.008003	0	0.177809	0.346891	0	0.058797	0.172299	0	0	0	0	0.066936	0.196149	0	0	0	0	0	0.15435	0.182463	4.828329	0	0.010687	0.02085	0
San Mateo	2027	SBUS	Aggregate	Aggregate	Electricity	5.310741	202.8314	0	202.8314	47.87691	0	0	0	0	0	0	0.002	0.002333	0.00786	0	0	0	0.009332	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	2027	SBUS	Aggregate	Aggregate	Natural Ga	7.053679	172.5017	172.5017	0	102.1373	0.481743	5.219695	0	0.003378	0.012579	0	0	0.003	0.015721	0.003674	0.01368	0	0.012	0.044917	1220.305	4108.986	0	3.202788	14.62449	0	0.248767	0.837644	0	0.045762	0.208955	0	0	0	0	3.26868	14.92537	0	0	0	0	0	1.06	10.54837	23.50051	0	0	0	0
San Mateo	2027	UBUS	Aggregate	Aggregate	Gasoline	61.98533	4214.564	4214.564	0	247.9413	0.036041	0	0.380804	0.001186	0	0.000163	0.002	0.002072	0.032332	0.00129	0	0.000177	0.00829	0.092377	954.3343	0	38.82137	0.001768	0	0.036766	0.004675	0	0.057249	0.004986	0	0.133306	0.032636	0.102703	0.407958	0.007275	0	0.145953	0.032636	0.102703	0.407958	0.045	0.565023	0	6.43097	0.009435	0	0.000384
San Mateo	2027	UBUS	Aggregate	Aggregate	Diesel	279.2472	21607.25	21607.25	0	1116.989	0.375529	0	0	0.006826	0	0	0.008	0.0385	0.007135	0	0	0.032385	0.11	1223.405	0	0	0.607145	0	0	0.192748	0	0	0.067714	0	0	0	0	0	0.077087	0	0	0	0	0	0.22	0.077188	0	0	0.011592	0	0
San Mateo	2027	UBUS	Aggregate	Aggregate	Electricity	38.11938	3934.273	0	3934.273	152.4775	0	0	0	0	0	0	0.007	0.007377	0.01925	0	0	0	0.029507	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	2027	UBUS	Aggregate	Aggregate	Natural Ga	65.93105	4566.887	4566.887	0	263.7242	0.055445	0	0	0.000272	0	0	0.007	0.0385	0.000285	0	0	0.030974	0.11	1262.884	0	0	4.101438	0	0	0.257447	0	0	0.058601	0	0	0	0	0	4.185818	0	0	0	0	0	0.97	46.52216	0	0	0	0	0

Source: EMFAC2021 (v1.0.2) Emission Rates
Region Type: County
Region: San Mateo
Calendar Year: 2028
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for CVMT and EVMT, trips/day for Trips, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HOTSOAK and RUNLOSS, g/vehicle/day for IDLEX and DIURN. PHEV calculated based on total VMT.

Region	Calendar Y	Vehicle Cat	Model Yea	Speed	Fuel	Population	Total VMT	CVMT	EVMT	Trips	NOx_RUNEX	NOx_IDLEX	NOx_STREX	PM2.5_RU	PM2.5_IDL	PM2.5_STR	PM2.5_DIA	PM2.5_TIR	PM2.5_BRA	PM10_RUI	PM10_IDL	PM10_STR	PM10_DIA	PM10_TIR	PM10_BRA	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_HOTS	ROG_RUNL	ROG_DIUR	TOG_RUNEX	TOG_IDLEX	TOG_STREX	TOG_HOTS	TOG_RUNL	TOG_DIUR	NH3_RUNEX	CO_RUNEX	CO_IDLEX	CO_STREX	SOx_RUNE	SOx_IDLEX	SOx_STREX
San Mateo	2028	HHDT	Aggregate	Aggregate	Gasoline	4.087369	426.9851	426.9851	0	81.78009	3.785923	0	0.000743	0.001359	0	0.000569	0.005	0.031153	0.001478	0	0.000618	0.02	0.089009	2169.605	0	49.72279	0.109696	0	8.65E-05	0.148497	0	4.84E-05	0.532974	0	0.000469	0.02665	0.192885	1.828464	0.777714	0	0.000513	0.02665	0.192885	1.828464	0.045	33.60705	0	4.299787	0.021449	0	0.000492
San Mateo	2028	HHDT	Aggregate	Aggregate	Diesel	1348.7	118863.6	118863.6	0	15118.87	2.305759	42.54712	3.062001	0.02389	0.027666	0	0.008609	0.030151	0.02497	0.028917	0	0.034435	0.086144	1688.482	7871.283	0	0	0	0.001068	0.160574	0	0.266021	1.240124	0	0.022983	3.457113	0	0	0	0	0.026165	3.93566	0	0	0	0	0.20529	0.099669	49.19936	0	0.015989	0.074536	0
San Mateo	2028	HHDT	Aggregate	Aggregate	Electricity	42.61913	3900.691	0	3900.691	410.6363	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	2028	HHDT	Aggregate	Aggregate	Natural Ga	207.2611	13277.54	13277.54	0	1340.296	0.986115	7.372316	0	0.001507	0.012221	0	0.009	0.062091	0.001639	0.013292	0	0.036	0.177403	1416.611	8063.993	0	2.149289	18.9597	0	0.288785	1.643898	0	0.04445	0.294554	0	0	0	0	2.209162	19.37671	0	0	0	0	0.701215	13.92351	59.3483	0	0	0	0
San Mateo	2028	LDA	Aggregate	Aggregate	Gasoline	238224	6625086	6625096	0	1117181	0.027731	0	0.210074	0.000951	0	0.001665	0.002	0.002348	0.000194	0	0.00181	0.008	0.00671	2505.221	0	63.1731	0.001433	0	0.053849	0.003522	0	0.027728	0.005198	0	0.245617	0.071362	0.19449	1.165638	0.007584	0	0.268919	0.071362	0.19449	1.165638	0.038871	0.527215	0	2.594942	0.002477	0	0.000625
San Mateo	2028	LDA	Aggregate	Aggregate	Diesel	518.2623	10422.73	10422.73	0	2185.907	0.108554	0	0	0.007604	0	0	0.002	0.002418	0.007948	0	0	0.008	0.00691	221.3861	0	0	0.000725	0	0	0.034879	0	0	0	0.015608	0	0	0	0	0	0.017769	0	0	0	0	0.0031	0.255789	0	0	0.002098	0	0
San Mateo	2028	LDA	Aggregate	Aggregate	Electricity	22943.23	778703.3	0	778703.3	112146.2	0	0	0	0	0	0	0.002	0.001532	0	0	0	0.008	0.004379	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
San Mateo	2028	LDA	Aggregate	Aggregate	Plug-in Hyb	9174.453	287067.5	130150.4	156917.1	37936.36	0.002913	0	0.117199	0.000434	0	0.00163	0.002	0.001342	0.000472	0	0.001773	0.008	0.003833	122.3509	0	61.04893	0.000364	0	0.040915	0.00047	0	0.018911	0.001224	0	0.176635	0.039127	0.042399	0.443788	0.001786	0	0.193393	0.039127	0.042399	0.443788	0.018519	0.182732	0	1.37819	0.00121	0	0.000604
San Mateo	2028	LDT1	Aggregate	Aggregate	Gasoline	26871.73	710860.9	710860.9	0	123556	0.061142	0	0.260378	0.001145	0	0.001889	0.002	0.002819	0.001246	0	0.002054	0.008	0.008053	292.8336	0	74.93146	0.002858	0	0.066199	0.005353	0	0.03047	0.012073	0	0.320302	0.098602	0.279171	1.625538	0.017617	0	0.350691	0.098602	0.279171	1.625538	0.039234	0.777188	0	3.333143	0.002895	0	0.000741
San Mateo	2028	LDT1	Aggregate	Aggregate	Diesel	1.279991	17.08643	17.08643	0	3.850863	0.926773	0	0	0.137922	0	0	0.002	0.003128	0.144159	0	0	0.008	0.008938	374.9032	0	0	0.010417	0	0	0.059066	0	0	0.224274	0	0	0	0	0	0.255321	0	0	0	0	0.0031	1.631356	0	0	0.003552	0	0
San Mateo	2028	LDT1	Aggregate	Aggregate	Electricity	215.382	7602.43	0	7602.43	1064.315	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	2028	LDT1	Aggregate	Aggregate	Plug-in Hyb	168.7717	5738.6	2397.775	3340.825	697.8708	0.002684	0	0.117199	0.000274	0	0.00112	0.002	0.001354	0.000298	0	0.001218	0.008	0.003869	112.7738	0	65.50656	0.000336	0	0.040926	0.000434	0	0.018921	0.001128	0	0.176635	0.0229	0.019715	0.264869	0.001646	0	0.193393	0.0229	0.019715	0.264869	0.017549	0.168483	0	1.37819	0.001115	0	0.000548
San Mateo	2028	LDT2	Aggregate	Aggregate	Gasoline	188791.4	5454076	5454076	0	902311	0.034414	0	0.229703	0.000938	0	0.001582	0.002	0.002749	0.00102	0	0.001721	0.008	0.007856	299.4341	0	75.41282	0.001635	0	0.056817	0.003851	0	0.029851	0.005886	0	0.25108	0.049035	0.130934	0.815973	0.008588	0	0.274901	0.049035	0.130934	0.815973	0.040367	0.558186	0	2.697318	0.00296	0	0.000746
San Mateo	2028	LDT2	Aggregate	Aggregate	Diesel	721.4435	20620.51	20620.51	0	3444.651	0.030404	0	0	0.003874	0	0	0.002	0.002761	0.00405	0	0	0.008	0.00789	278.3943	0	0	0.000543	0	0	0.043861	0	0	0.011695	0	0	0	0	0	0.013314	0	0	0	0	0.0031	0.115462	0	0	0.002638	0	0
San Mateo	2028	LDT2	Aggregate	Aggregate	Electricity	3148.148	80104.27	0	80104.27	15796.57	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	0
San Mateo	2028	LDT2	Aggregate	Aggregate	Plug-in Hyb	3055.991	97890.29	42500.25	55390.04	12636.52	0.002789	0	0.117199	0.000337	0	0.001324	0.002	0.001349	0.000367	0	0.001439	0.008	0.003854	117.1712	0	71.20282	0.000348	0	0.040816	0.000448	0	0.01882	0.001172	0	0.176635	0.025087	0.022531	0.285181	0.001711	0	0.193393	0.025087	0.022531	0.285181	0.018229	0.175018	0	1.37819	0.001158	0	0.000704
San Mateo	2028	LHDT1	Aggregate	Aggregate	Gasoline	12894.54	409468.1	409468.1	0	192109.4	0.064108	0.029866	0.488744	0.00129	0	0.000174	0.002	0.0273	0.001403	0	0.000189	0.008	0.078	794.8073	112.6645	25.85055	0.003419	0.096188	0.024141	0.003805	0.002663	0.042539	0.0159	0.342597	0.115396	0.026106	0.148763	1.503764	0.023201	0.499917	0.126344	0.026106	0.148763	1.503764	0.045	0.777673	3.770584	3.391678	0.007857	0.001114	0.000256
San Mateo	2028	LHDT1	Aggregate	Aggregate	Diesel	6434.479	215842.1	215842.1	0	80937.65	0.593324	1.283254	0	0.018835	0.026477	0	0.003	0.0273	0.019687	0.027674	0	0.012	0.078	613.5743	121.1087	0	0.004903	0.005098	0	0.096669	0.019081	0	0.105551	0.10976	0	0	0	0	0.120162	0.124954	0	0	0	0	0.020569	0.24918	0.909745	0	0.005814	0.001148	0
San Mateo	2028	LHDT1	Aggregate	Aggregate	Electricity	815.9233	38136.82	0	38136.82	11425.03	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	2028	LHDT2	Aggregate	Aggregate	Gasoline	1466.531	45093.53	45093.53	0	21849.12	0.067968	0.028072	0.478763	0.001212	0	0.000145	0.002	0.03185	0.001318	0	0.000157	0.008	0.091	896.8671	130.3704	24.43935	0.002634	0.090113	0.022894	0.004463	0.002446	0.040267	0.011246	0.322167	0.109059	0.026654	0.152607	1.608504	0.016409	0.470106	0.119406	0.026654	0.152607	1.608504	0.045	0.664739	3.774704	3.316521	0.008866	0.001289	0.000242
San Mateo	2028	LHDT2	Aggregate	Aggregate	Diesel	2946.348	96950.8	96950.8	0	37061.35	0.496841	1.243506	0	0.018964	0.026767	0	0.003	0.03185	0.019821	0.027977	0	0.012	0.091	718.9999	193.8475	0	0.00502	0.005098	0	0.113279	0.030541	0	0.108083	0.10976	0	0	0	0	0.123045	0.124954	0	0	0	0	0.209959	0.2419	0.909745	0	0.006813	0.001837	0
San Mateo	2028	LHDT2	Aggregate	Aggregate	Electricity	206.8476	9233.104	0	9233.104	2743.645	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	2028	MCY	Aggregate	Aggregate	Gasoline	16024.84	83191.06	83191.06	0	32049.68	0.480774	0	0.097717	0.001923	0	0.003447	0.001	0.0042	0.00206	0	0.003683	0.004	0.012	185.5578	0	41.2827	0.132675	0	0.151107	0.035446	0	0.006084	0.818771	0	1.08739	3.541021	3.687565	2.884103	1.006867	0	1.183043	3.541021	3.687565	2.884103	0.00904	9.971326	0	7.601536	0.001834	0	0.000408
San Mateo	2028	MDV	Aggregate	Aggregate	Gasoline	106046.8	3139229	3139229	0	505616.6	0.037084	0	0.252753	0.000922	0	0.001593	0.002	0.002771	0.001003	0	0.001732	0.008	0.007918	361.2163	0	91.37377	0.00172	0	0.061312	0.004005	0	0.03096	0.006353	0	0.281783	0.052632	0.145505	0.901798	0.00927	0	0.308517	0.052632	0.145505	0.901798	0.040421	0.566677	0	2.776662	0.003571	0	0.000903
San Mateo	2028	MDV	Aggregate	Aggregate	Diesel	1344.624	38138.7	38138.7	0	6350.78	0.022126	0	0	0.002553	0	0	0.002	0.002828	0.002669	0	0	0.008	0.00808	367.7263	0	0	0.000316	0	0	0.057935	0	0	0.006813	0	0	0	0	0	0.007757	0	0	0	0	0.0031	0.154195	0	0	0.003484	0	0
San Mateo	2028	MDV	Aggregate	Aggregate	Electricity	3273.507	83057.65	0	83057.65	16411.37	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	2028	MDV	Aggregate	Aggregate	Plug-in Hyb	1812.403	60147.57	26000.4	34147.16	7494.288	0.002777	0	0.117199	0.00035	0	0.001388	0.002	0.00135	0.000381	0	0.00151	0.008	0.003858	116.664	0	86.55979	0.000348	0	0.040976	0.00045	0	0.018968	0.001167	0	0.176635	0.027415	0.02651	0.316449	0.001703	0	0.193393	0.027415	0.02651	0.316449	0.018156	0.174266	0	1.37819	0.001153	0	0.000856
San Mateo	2028	MH	Aggregate	Aggregate	Gasoline	918.1328	8640.917	8640.917	0	91.85001	0.182853	0	0.391887	0.001446	0	0.000365	0.003	0.015756	0.001573	0	0.000397	0.012	0.045017	1945.394	0	30.76138	0.006797	0	0.033875	0.015497	0	0.044709	0.024735	0	0.132426	5.693158	0.137911	2.141844	0.036093	0	0.14499	5.693158	0.137911	2.141844	0.045	0.473286	0	2.993366	0.019232	0	0.000304
San Mateo	2028	MH	Aggregate	Aggregate	Diesel	465.6535	4277.963	4277.963	0	46.56535	2.773275	0	0	0.034738	0	0	0.004	0.015675	0.036308	0	0	0.016	0.044785	1086.92	0	0	0.003879	0	0	0.171245	0	0	0.083504	0	0	0	0	0	0.095063	0	0	0	0	0.202893	0.252824	0	0	0.010299	0	0
San Mateo	2028	MHDT	Aggregate	Aggregate	Gasoline	882.2879	48208.29	48208.29	0	17652.82	0.192737	0.075927	0.365526	0.001346	0	0.000477	0.003	0.015756	0.001464	0	0.000519	0.012	0.045017	1665.814	503.224	41.97811	0.00648	0.272074	0.040965	0.012105	0.006866	0.031489	0.029453	1.02262	0.211628	0.020138	0.169219	1.647752	0.042978	1.492204	0.231706	0.020138	0.169219	1.647752	0.045	0.560554	15.23151	4.548122	0.016468	0.004975	0.000415
San Mateo	2028	MHDT	Aggregate	Aggregate	Diesel	4396.245	176136.6	176136.6	0	53168.12	0.894905	11.00751	1.58431	0.008976	0.015354	0	0.003	0.015983	0.009382	0.016048	0	0.012	0.045665	1125.346	2171.217	0	0.000968	0.009787	0	0.177299	0.342076	0	0.020831	0.210721	0	0	0	0	0.023715	0.239889	0	0	0	0	0.214104	0.08991	7.487192	0	0.010656	0.02056	0
San Mateo	2028	MHDT	Aggregate	Aggregate	Electricity	205.6395	11169.03	0	11169.03	2839.827	0	0	0	0	0	0	0.003	0.007952	0	0	0	0.012	0.022719	0	0	0	0	0	0	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	2028	MHDT	Aggregate	Aggregate	Natural Ga	54.70168	2394.418	2394.418	0	514.2228	0.103085	6.38744	0	0.001372	0.020029	0	0.003	0.016084	0.001492	0.021784	0	0.012	0.045955	981.6838	5353.703	0	0.780893	16.21102	0	0.200123	1.091387	0	0.011157	0.231624	0	0	0	0	0.796958	16.54454	0	0	0	0	1.06	3.059145	39.04826	0	0	0	0
San Mateo	2028	OBUS	Aggregate	Aggregate	Gasoline	244.3586	11852.4	11852.4	0	4889.127	0.189256	0.058492	0.348522	0.001102	0	0.000286	0.003	0.01568	0.001198	0	0.000311	0.012	0.044799	1656.69	360.4769	28.94764	0.005671	0.203559	0.031483	0.012019	0.005247	0.029789	0.024998	0.748329	0.156944	0.025167	0.126217	2.177423	0.036477	1.091959	0.171834	0.025167	0.126217	2.177423	0.045	0.520195	5.786979	3.194706	0.016378	0.003564	0.000286
San Mateo	2028	OBUS	Aggregate	Aggregate	Diesel	1211.393	76199.48	76199.48	0	11894.78	0.759172	5.051633	1.425614	0.008693	0.002895	0	0.003	0.017466	0.009086	0.003026	0	0.012	0.049902	1185.134	1184.015	0	0.000861	0.014413	0	0.186718	0.186542	0	0.018529	0.310316	0	0	0	0	0.021094	0.353271	0	0	0	0	0.21809	0.089377	5.786939	0	0.011223	0.011212	0
San Mateo	2028	OBUS	Aggregate	Aggregate	Electricity	8.935831	691.3658	0	691.3658	178.7881	0	0	0	0	0	0	0.003	0.00794	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	2028	OBUS	Aggregate	Aggregate	Natural Ga	12.72738	821.4822	821.4822	0	113.2737	0.117916	1.507582	0	0.001405	0.004611	0	0.003	0.016148	0.001529	0.005015	0	0.012	0.046137	950.7451	1180.472	0	0.829445	3.868569	0	0.193816	0.240647	0	0.011851	0.055274	0	0	0	0	0.846509	3.948158	0	0	0	0	1.06	3.361144	8.957434	0	0	0	0
San Mateo	2028	SBUS	Aggregate	Aggregate	Gasoline	82.76405	3950.797	3950.797	0	331.0562	0.573197	0.792827	0.582796	0.001058	0	0.000719	0.002	0.015721	0.001151	0	0.000782	0.008	0.044917	764.9791	2451.955	56.61559	0.012554	2.448346	0.078437	0.028355	0.076641	0.054315	0.061351	10.64152	0.452518	0.104317	0.332084	1.837104	0.089523	15.52808	0.495451	0.104317	0.332084	1.837104	0.045	1.593965	82.24088	10.79588	0.007563	0.02424	0.00056
San Mateo	2028	SBUS	Aggregate	Aggregate	Diesel	166.0168	3662.699	3662.699	0	2403.923	3.486175	19.62238	0.524341	0.017155	0.016119	0	0.003	0.015721	0.01793	0.016848	0	0.012	0.044917	1123.427	2188.308	0	0.002589	0.007973	0	0.176996	0.344769	0	0.055749	0.17165	0	0	0	0	0.063466	0.195411	0	0	0	0	0.159444	0.174936	4.978986	0	0.010638	0.020722	0
San Mateo	2028	SBUS	Aggregate	Aggregate	Electricity	8.410812	315.9164	0	315.9164	76.16352	0	0	0	0	0	0	0.002342	0.00786	0	0	0	0.009369	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	2028	SBUS	Aggregate	Aggregate	Natural Ga	7.283353	176.1298	176.1298	0	105.463	0.467367	5.211463	0	0.003378	0.012775	0	0.003	0.015721	0.003674	0.013894	0	0.012	0.044917	1213.033	4114.256	0	3.163125	14.52286	0	0.247285	0.838718	0	0.045195	0.207503	0	0	0	0	3.228201	14.82164	0	0	0	0	1.06	10.36172	23.94323	0	0	0	0
San Mateo	2028	UBUS	Aggregate	Aggregate	Gasoline	62.16369	4226.45	4226.45	0	248.6548	0.033873	0	0.3307	0.001202	0	0.000164	0.002	0.002072	0.032331	0.001307	0	0.000179	0.00829	0.092375	932.6347	0	38.1862	0.001598	0	0.032638	0.004398	0	0.051649	0.004432	0	0.116715	0.023934	0.090544	0.316913	0.006466	0	0.127788	0.023934	0.090544	0.316913	0.045	0.558751	0	6.359155	0.00922	0	0.000378
San Mateo	2028	UBUS	Aggregate	Aggregate	Diesel	260.7992	19902.79	19902.79	0	1043.197	0.374953	0	0	0.006816	0	0	0.008	0.0385	0.007124	0	0	0.032342	0.11	1245.48	0	0	0.003141	0	0	0.196226	0	0	0.067634	0	0	0	0	0	0.076996	0	0	0	0	0.22	0.077071	0	0	0.011802	0	0
San Mateo	2028	UBUS	Aggregate	Aggregate	Electricity	53.31881	5326.696	0	5326.696	213.2752	0	0	0	0	0	0	0.007594	0.01925	0	0	0	0.030377	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	2028	UBUS	Aggregate	Aggregate	Natural Ga	70.30426	4967.469	4967.469	0	281.217	0.055732	0	0	0.000273	0	0	0.007781	0.0385	0.000286	0	0	0.031125	0.11	1265.998	0	0	4.113837	0	0	0.258082	0	0	0.058779	0	0	0	0	0	4.198472	0	0	0	0	0.97	46.7387	0	0	0	0	0

CalEEMod EMFAC2021 Emission Factors Input — Year 2022

Season	EmissionType	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
A	CH4_IDLEX	0	0	0	0	0.005843	0.003613	0.014892	0.260799534	0.008159	0	0	0.08628	0
A	CH4_RUNEX	0.002319	0.006287	0.002602	0.003201	0.007384	0.006718	0.012528	0.279686949	0.008252	0.161010459	0.159449	0.085895	0.013708
A	CH4_STREX	0.071825	0.108853	0.080541	0.095514	0.024032	0.014498	0.011865	6.77534E-07	0.01134	0.007774918	0.191389	0.007998	0.027902
A	CO_IDLEX	0	0	0	0	0.205796	0.152528	0.654892	4.440944093	0.463936	0	0	2.073163	0
A	CO_RUNEX	0.663688	1.363815	0.738237	0.80289	0.87107	0.575388	0.595575	1.692340791	0.306637	2.059527265	12.33015	1.812081	1.518033
A	CO_STREX	3.345366	5.605019	3.681168	3.95481	2.432982	1.458578	1.477853	0.034745524	1.180982	0.826814725	7.963377	1.184587	2.749322
A	CO2_NBIO_IDLEX	0	0	0	0	8.646179	13.35354	157.1739	817.5579223	92.23189	0	0	206.7122	0
A	CO2_NBIO_RUNEX	259.6914	330.0495	340.6104	409.1994	802.8379	845.4343	1289.87	1847.097548	1344.381	1395.583774	188.692	1021.106	1675.54
A	CO2_NBIO_STREX	67.47888	87.63773	87.09938	104.0838	20.18243	11.54073	11.00803	0.314163972	10.26522	5.758558013	50.07102	5.489121	23.04082
A	NOX_IDLEX	0	0	0	0	0.04149	0.082396	1.013523	4.433588742	0.427804	0	0	1.577129	0
A	NOX_RUNEX	0.04387	0.134644	0.061774	0.080621	0.556519	0.729856	1.587068	3.256305124	0.937984	2.453214755	0.563376	3.319508	1.392781
A	NOX_STREX	0.254825	0.393724	0.320782	0.395298	0.465797	0.284748	1.203563	2.389547531	1.064922	0.082629307	0.148145	0.436452	0.288521
A	PM10_IDLEX	0	0	0	0	0.000583	0.001242	0.003193	0.00382705	0.000258	0	0	0.001868	0
A	PM10_PMBW	0.006473	0.008092	0.007714	0.007763	0.078	0.091	0.045537	0.095966343	0.048875	0.108503795	0.012	0.045856	0.044944
A	PM10_PMTW	0.008	0.008	0.008	0.008	0.009205	0.010503	0.012	0.034489957	0.012	0.029362212	0.004	0.010401	0.013263
A	PM10_RUNEX	0.001284	0.001981	0.001387	0.001452	0.011044	0.017883	0.019459	0.025838358	0.009244	0.006841902	0.002007	0.015063	0.022185
A	PM10_STREX	0.002148	0.003033	0.002192	0.002343	0.000226	0.000124	0.000144	5.80933E-06	0.000103	1.53331E-05	0.00407	7.3E-05	0.000366
A	PM25_IDLEX	0	0	0	0	0.000558	0.001188	0.003055	0.0036571	0.000247	0	0	0.001786	0
A	PM25_PMBW	0.002266	0.002832	0.0027	0.002717	0.0273	0.03185	0.015938	0.03358822	0.017106	0.037976328	0.0042	0.01605	0.01573
A	PM25_PMTW	0.002	0.002	0.002	0.002	0.002301	0.002626	0.003	0.008622489	0.003	0.007340553	0.001	0.0026	0.003316
A	PM25_RUNEX	0.001182	0.001823	0.001276	0.001338	0.010525	0.017087	0.018606	0.024714035	0.008837	0.006541322	0.00188	0.014384	0.021174
A	PM25_STREX	0.001975	0.002789	0.002016	0.002154	0.000208	0.000114	0.000133	5.34147E-06	9.43E-05	1.40982E-05	0.003836	6.72E-05	0.000336
A	ROG_DIURN	0.26835	0.541709	0.221107	0.258579	0.106699	0.067526	0.033927	0.000990911	0.031466	0.020632524	3.591267	0.04821	30.99292
A	ROG_HTSK	0.083501	0.156968	0.067318	0.076201	0.029577	0.018923	0.008815	0.000277007	0.008914	0.008235262	3.559039	0.013387	9.081418
A	ROG_IDLEX	0	0	0	0	0.023151	0.017296	0.030931	0.292803386	0.033214	0	0	0.240147	0
A	ROG_RESTL	0	0	0	0	0	0	0	0	0	0	0	0	0
A	ROG_RUNEX	0.009286	0.028352	0.010231	0.013474	0.073796	0.101087	0.067756	0.047888834	0.033424	0.1357341	1.054922	0.095821	0.086389
A	ROG_RUNLS	0.211767	0.454429	0.169917	0.203112	0.157593	0.099695	0.072571	0.00228653	0.037539	0.013372663	3.722371	0.038841	0.212214
A	ROG_STREX	0.341077	0.56784	0.37384	0.477508	0.117993	0.071836	0.06656	3.67766E-06	0.056012	0.030119815	1.43267	0.046513	0.121931
A	SO2_IDLEX	0	0	0	0	8.44E-05	0.000128	0.00146	0.006976097	0.000867	0	0	0.001897	0
A	SO2_RUNEX	0.002567	0.003263	0.003367	0.004043	0.007858	0.008163	0.012283	0.016379507	0.012786	0.012831163	0.001865	0.009573	0.016424
A	SO2_STREX	0.000667	0.000866	0.000861	0.001029	0.0002	0.000114	0.000109	3.10583E-06	0.000101	5.69292E-05	0.000495	5.43E-05	0.000228
A	TOG_DIURN	0.26835	0.541709	0.221107	0.258579	0.106699	0.067526	0.033927	0.000990911	0.031466	0.020632524	0.079785	0.04821	30.99292
A	TOG_HTSK	0.083501	0.156968	0.067318	0.076201	0.029577	0.018923	0.008815	0.000277007	0.008914	0.008235262	3.559039	0.013387	9.081418
A	TOG_IDLEX	0	0	0	0	0.033059	0.023687	0.050034	0.581792813	0.045587	0	0	0.379854	0
A	TOG_RESTL	0	0	0	0	0	0	0	0	0	0	0	0	0
A	TOG_RUNEX	0.013526	0.041328	0.014909	0.019588	0.092109	0.11899	0.089867	0.333972521	0.046122	0.310020775	1.259821	0.199994	0.11607
A	TOG_RUNLS	0.211767	0.454429	0.169917	0.203112	0.157593	0.099695	0.072571	0.00228653	0.037539	0.013372663	3.722371	0.038841	0.212214
A	TOG_STREX	0.373434	0.621711	0.409307	0.522807	0.129188	0.078652	0.072875	4.02657E-06	0.061326	0.032977406	1.557156	0.050926	0.133499
A	N2O_IDLEX	0	0	0	0	0.000579	0.001539	0.02402	0.13255086	0.013678	0	0	0.025995	0
A	N2O_RUNEX	0.004517	0.009516	0.005537	0.007168	0.036138	0.078716	0.152285	0.295493031	0.166825	0.202933551	0.038859	0.124283	0.072767
A	N2O_STREX	0.031132	0.03862	0.036088	0.038726	0.038447	0.022541	0.007862	7.71952E-07	0.010804	0.010808291	0.008671	0.004857	0.029453

CalEEMod EMFAC2021 Fleet Mix Input — Year 2022

FleetMixLandUseSubType	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Research & Development	0.49511	0.045708	0.246625	0.140491	0.026659	0.005444	0.009345	0.002714	0.002438	0.000828	0.022216	0.000437	0.001985

CalEEMod EMFAC2021 Emission Factors Input — Year 2028

Season	EmissionType	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
A	CH4_IDLEX	0	0	0	0	0.004475	0.002498	0.015771	0.244589156	0.006819	0	0	0.106197	0
A	CH4_RUNEX	0.001247	0.002808	0.001586	0.001636	0.003705	0.004003	0.009889	0.210385046	0.00909	0.595659616	0.132675	0.076022	0.005831
A	CH4_STREX	0.048613	0.065494	0.05543	0.058423	0.016303	0.008491	0.009749	4.17389E-07	0.009014	0.004543104	0.151107	0.008903	0.022479
A	CO_IDLEX	0	0	0	0	0.19149	0.139468	0.653726	4.640025913	0.500022	0	0	2.676938	0
A	CO_RUNEX	0.460643	0.764226	0.542025	0.540657	0.561033	0.353178	0.210941	1.546629378	0.175707	6.857789564	9.971326	1.081134	0.400282
A	CO_STREX	2.324869	3.293847	2.623919	2.63916	2.290464	1.230054	1.082402	0.020743608	0.914696	0.885179045	7.601536	1.225412	1.986345
A	CO2_NBIO_IDLEX	0	0	0	0	7.846213	12.94056	138.6188	724.8498733	90.034	0	0	204.4141	0
A	CO2_NBIO_RUNEX	220.3739	288.3348	291.9577	347.8262	690.1582	728.1358	1180.586	1615.273795	1236.239	1017.304249	185.5578	906.8736	1661.119
A	CO2_NBIO_STREX	57.41998	74.24031	73.80262	87.42518	17.45737	9.064233	9.99032	0.239879315	8.288181	5.315426302	41.2827	6.426288	20.41271
A	NOX_IDLEX	0	0	0	0	0.03038	0.062892	0.658013	3.475268353	0.360331	0	0	1.152442	0
A	NOX_RUNEX	0.024111	0.060057	0.033364	0.035363	0.232595	0.338676	0.70264	2.116091531	0.672011	0.228990266	0.480774	1.864861	1.040647
A	NOX_STREX	0.188378	0.257362	0.22345	0.240121	0.330058	0.177567	1.222614	2.730957724	1.092842	0.04603264	0.097717	0.498324	0.260049
A	PM10_IDLEX	0	0	0	0	0.000626	0.001399	0.000967	0.002463221	0.000218	0	0	0.000994	0
A	PM10_PMBW	0.006367	0.007981	0.007737	0.007757	0.075758	0.088223	0.044459	0.094010231	0.048979	0.14979202	0.012	0.044042	0.044941
A	PM10_PMTW	0.008	0.008	0.008	0.008	0.009301	0.010564	0.012	0.03452676	0.012	0.056781734	0.004	0.009948	0.013325
A	PM10_RUNEX	0.000918	0.001228	0.001005	0.000986	0.007271	0.013096	0.007258	0.021912582	0.007902	0.004320657	0.00206	0.008743	0.013075
A	PM10_STREX	0.001646	0.002032	0.001681	0.001656	0.000128	5.84E-05	0.000123	2.98369E-06	8.89E-05	2.48804E-05	0.003683	8.88E-05	0.000264
A	PM25_IDLEX	0	0	0	0	0.000599	0.001339	0.000925	0.002350605	0.000209	0	0	0.000949	0
A	PM25_PMBW	0.002228	0.002793	0.002708	0.002715	0.026515	0.030878	0.015561	0.032903581	0.017143	0.052427207	0.0042	0.015415	0.015729
A	PM25_PMTW	0.002	0.002	0.002	0.002	0.002325	0.002641	0.003	0.00863169	0.003	0.014195433	0.001	0.002487	0.003331
A	PM25_RUNEX	0.000844	0.00113	0.000925	0.000907	0.006924	0.012515	0.006932	0.020958537	0.007554	0.004127766	0.001923	0.008341	0.012471
A	PM25_STREX	0.001514	0.001869	0.001546	0.001522	0.000117	5.37E-05	0.000113	2.7434E-06	8.18E-05	2.28766E-05	0.003447	8.17E-05	0.000242
A	ROG_DIURN	0.22195	0.348907	0.165834	0.179532	0.068163	0.040042	0.019599	0.00044088	0.031159	0.011028389	2.884103	0.052131	14.20722
A	ROG_HTSK	0.063971	0.09734	0.047701	0.050044	0.01763	0.009886	0.004793	0.000128569	0.007206	0.003331603	3.541021	0.011841	3.77788
A	ROG_IDLEX	0	0	0	0	0.018012	0.01351	0.024824	0.27865587	0.032764	0	0	0.312261	0
A	ROG_RESTL	0	0	0	0	0	0	0	0	0	0	0	0	0
A	ROG_RUNEX	0.004538	0.011865	0.005742	0.006105	0.044152	0.07262	0.021503	0.026010681	0.019181	0.048130302	0.818771	0.056077	0.044196
A	ROG_RUNLS	0.172428	0.275347	0.126771	0.13766	0.100462	0.0566	0.040272	0.00093054	0.036138	0.012603449	3.687565	0.037694	0.091515
A	ROG_STREX	0.221434	0.316772	0.244902	0.268343	0.077929	0.040449	0.050365	2.26167E-06	0.044936	0.016246414	1.08739	0.051364	0.087876
A	SO2_IDLEX	0	0	0	0	7.64E-05	0.000124	0.001278	0.005930253	0.000846	0	0	0.001867	0
A	SO2_RUNEX	0.002178	0.00285	0.002886	0.003437	0.006741	0.007009	0.011227	0.013993365	0.011715	0.007955402	0.001834	0.008493	0.016274
A	SO2_STREX	0.000568	0.000734	0.00073	0.000864	0.000173	8.96E-05	9.88E-05	2.37145E-06	8.19E-05	5.25484E-05	0.000408	6.35E-05	0.000202
A	TOG_DIURN	0.22195	0.348907	0.165834	0.179532	0.068163	0.040042	0.019599	0.00044088	0.031159	0.011028389	0.070259	0.052131	14.20722
A	TOG_HTSK	0.063971	0.09734	0.047701	0.050044	0.01763	0.009886	0.004793	0.000128569	0.007206	0.003331603	3.541021	0.011841	3.77788
A	TOG_IDLEX	0	0	0	0	0.025487	0.017952	0.044168	0.550040886	0.04363	0	0	0.488774	0
A	TOG_RESTL	0	0	0	0	0	0	0	0	0	0	0	0	0
A	TOG_RUNEX	0.006615	0.017312	0.008365	0.008883	0.053412	0.083749	0.034287	0.240160079	0.030537	0.651171439	1.006867	0.142462	0.055621
A	TOG_RUNLS	0.172428	0.275347	0.126771	0.13766	0.100462	0.0566	0.040272	0.00093054	0.036138	0.012603449	3.687565	0.037694	0.091515
A	TOG_STREX	0.242442	0.346826	0.268137	0.293802	0.085322	0.044286	0.055143	2.47624E-06	0.049199	0.017787779	1.183043	0.056237	0.096213
A	N2O_IDLEX	0	0	0	0	0.000552	0.001588	0.021161	0.118765975	0.013488	0	0	0.023894	0
A	N2O_RUNEX	0.003094	0.005259	0.003883	0.00446	0.033798	0.073929	0.135731	0.260264408	0.162224	0.151235705	0.035446	0.099175	0.067071
A	N2O_STREX	0.024967	0.030146	0.029087	0.029477	0.028727	0.014935	0.007494	2.33716E-07	0.008529	0.007189405	0.006084	0.006165	0.029668

CalEEMod EMFAC2021 Fleet Mix Input — Year 2028

FleetMixLandUseSubType	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Enclosed Parking with Elevator	0.411757	0.041436	0.297526	0.170986	0.030624	0.007023	0.00842	0.002436	0.002246	0.000679	0.024361	0.000402	0.002104
Research & Development	0.411757	0.041436	0.297526	0.170986	0.030624	0.007023	0.00842	0.002436	0.002246	0.000679	0.024361	0.000402	0.002104

Attachment 4: Project Construction Emissions and Health Risk Calculations

800 Dubuque Ave, South San Francisco, CA

DPM Construction Emissions and Modeling Emission Rates - Unmitigated

Construction Year	Activity	DPM (ton/year)	Source Type	No. Sources	DPM Emissions (lb/yr)	DPM Emissions (lb/hr)	DPM Emissions (g/s)	Emissions per Point Source (g/s)
2023	Construction	0.0620	Point	467	123.9	0.03994	5.03E-03	1.08E-05
2024	Construction	0.1853	Point	467	370.5	0.11943	1.50E-02	3.22E-05
2025	Construction	0.0279	Point	467	55.9	0.01800	2.27E-03	4.86E-06
2026	Construction	0.0554	Point	467	110.9	0.03574	4.50E-03	9.64E-06
2027	Construction	0.0179	Point	467	35.7	0.01151	1.45E-03	3.11E-06
Total		***0.3484***			***696.9***	***0.2246***	***0.0283***	

Emissions assumed to be evenly distributed over each construction areas

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

800 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 $g/s/m^2$
2023	Construction	CON_FUG	0.0107	21.4	0.00691	8.70E-04	23,245	3.74E-08
2024	Construction	CON_FUG	0.4048	809.7	0.26097	3.29E-02	23,245	1.41E-06
2025	Construction	CON_FUG	0.0072	14.4	0.00465	5.86E-04	23,245	2.52E-08
2026	Construction	CON_FUG	0.0072	14.4	0.00465	5.86E-04	23,245	2.52E-08
2027	Construction	CON_FUG	0.0017	3.4	0.00108	1.36E-04	23,245	5.87E-09
Total			***0.4316***	***863.3***	***0.2783***	***0.0351***		

Construction Hours

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

DPM Construction Emissions and Modeling Emission Rates - With Mitigation

Construction Year	Activity	DPM (ton/year)	Source Type	No. Sources	DPM Emissions (lb/yr)	DPM Emissions (lb/hr)	DPM Emissions (g/s)	Emissions per Point Source (g/s)
2023	Construction	0.0094	Point	467	18.7	0.00604	7.61E-04	1.63E-06
2024	Construction	0.0328	Point	467	65.5	0.02112	2.66E-03	5.70E-06
2025	Construction	0.0241	Point	467	48.3	0.01555	1.96E-03	4.20E-06
2026	Construction	0.0298	Point	467	59.7	0.01923	2.42E-03	5.19E-06
2027	Construction	0.0065	Point	467	12.9	0.00416	5.24E-04	1.12E-06
Total		***0.1026***			***205.1***	***0.0661***	***0.0083***	

Emissions assumed to be evenly distributed over each construction areas

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

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

Construction Year	Activity	Area Source	PM2.5 Emissions (ton/year)	PM2.5 Emissions (lb/yr)	PM2.5 Emissions (lb/hr)	PM2.5 Emissions (g/s)	Modeled Area (m^2)	PM2.5 Emission Rate $g/s/m^2$
2023	Construction	CON_FUG	0.0065	13.0	0.00418	5.27E-04	23,245	2.27E-08
2024	Construction	CON_FUG	0.1861	372.3	0.11999	1.51E-02	23,245	6.50E-07
2025	Construction	CON_FUG	0.0072	14.4	0.00465	5.86E-04	23,245	2.52E-08
2026	Construction	CON_FUG	0.0072	14.4	0.00465	5.86E-04	23,245	2.52E-08
2027	Construction	CON_FUG	0.0017	3.4	0.00108	1.36E-04	23,245	5.87E-09
Total			***0.2087***	***417.4***	***0.1345***	***0.0170***		

Construction Hours

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

800 Dubuque Avenue, South San Francisco, CA
Construction Health Impact Summary

Maximum Impacts at MEI Location - Without Mitigation

Emissions Year	Maximum Concentrations: Exhaust PM10/DPM ($\mu g/m^3$)	Maximum Concentrations: Fugitive PM2.5 ($\mu g/m^3$)	Cancer Risk (per million) Infant/Child	Hazard Index (-)	Maximum Annual PM2.5 Concentration ($\mu g/m^3$)
2023	0.0048	0.0010	2.63	0.00	0.01
2024	0.0145	0.0370	7.84	0.00	0.05
2025	0.0022	0.0007	0.15	0.00	0.00
2026	0.0043	0.0007	0.31	0.00	0.00
2027	0.0014	0.0002	0.10	0.00	0.00
Total	-	-	**11.03**		-
Maximum	0.0145	0.0370	**-**	**0.00**	**0.05**

Maximum Impacts at MEI Location - With Mitigation

Emissions Year	Maximum Concentrations: Exhaust PM10/DPM ($\mu g/m^3$)	Maximum Concentrations: Fugitive PM2.5 ($\mu g/m^3$)	Cancer Risk (per million) Infant/Child	Hazard Index (-)	Maximum Annual PM2.5 Concentration ($\mu g/m^3$)
2023	0.0007	0.0006	0.40	0.00	0.00
2024	0.0026	0.0170	1.39	0.00	0.02
2025	0.0019	0.0007	0.13	0.00	0.00
2026	0.0023	0.0007	0.16	0.00	0.00
2027	0.0005	0.0002	0.04	0.00	0.00
Total	-	-	**2.12**	-	-
Maximum	0.0026	0.0170	**-**	**0.00**	**0.02**

- Tier 4 interim engines, and BMPs as Mitigation Measures.
- Electrified dewatering pumps, lifts, compressors, cranes, welders, forklifts, and hoists also included as Mitigation Measures

800 Dubuque Ave, South San Francisco, CA - Construction Impacts - Without Mitigation
Maximum DPM Cancer Risk and PM2.5 Calculations From Construction
Impacts at Gateway Child Development Center YMCA - 1 meter - Infant Exposure

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

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

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

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

Values

	Infant	Child
Age -->	**0 - <2**	**2 - <16**
Parameter		
ASF =	10	3
DPM CPF =	1.10E+00	1.10E+00
8-Hr BR* =	1200	520
SCHR =	9	9
SHR =	9	9
SDay =	5	5
A =	1	1
EF =	250	250
AT =	70	70
SCAF =	4.20	4.20

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

Construction Cancer Risk by Year - Maximum Preschool Impact Receptor Location

Exposure Year	Exposure Duration (years)	Age	Child - Exposure Information: DPM Conc (ug/m3) Year	DPM Conc (ug/m3) Annual	Age* Sensitivity Factor	Child Cancer Risk (per million)	Maximum Hazard Index	Maximum Fugitive PM2.5	Maximum Total PM2.5
1	1	0 - 1	2023	0.0048	10	2.63	0.0010	0.001	0.01
2	1	1 - 2	2024	0.0145	10	7.84	0.0029	0.037	0.05
3	1	2 - 3	2025	0.0022	3	0.15	0.0004	0.001	0.00
4	1	3 - 4	2026	0.0043	3	0.31	0.0009	0.001	0.00
5	1	4 - 5	2027	0.0014	3	0.10	0.0003	0.000	0.00
Total Increased Cancer Risk						**11.03**			

* Children assumed to be 3 months of age with 5 years of exposure to construction emissions

800 Dubuque Ave, South San Francisco, CA - Construction Impacts - With Mitigation
Maximum DPM Cancer Risk and PM2.5 Calculations From Construction
Impacts at Gateway Child Development Center YMCA - 1 meter - Infant Exposure

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

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

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

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

Values

	Infant	Child
Age -->	**0 - <2**	**2 - <16**
Parameter		
ASF =	10	3
DPM CPF =	1.10E+00	1.10E+00
8-Hr BR* =	1200	520
SCHR =	9	9
SHR =	9	9
SDay =	5	5
A =	1	1
EF =	250	250
AT =	70	70
SCAF =	4.20	4.20

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

Construction Cancer Risk by Year - Maximum Preschool Impact Receptor Location

Exposure Year	Exposure Duration (years)	Age	Child - Exposure Information: DPM Conc (ug/m3) Year	DPM Conc (ug/m3) Annual	Age* Sensitivity Factor	Child Cancer Risk (per million)	Maximum: Hazard Index	Fugitive PM2.5	Total PM2.5
1	1	0 - 1	2023	0.0007	10	0.40	0.0001	0.001	0.00
2	1	1 - 2	2024	0.0026	10	1.39	0.0005	0.017	0.02
3	1	2 - 3	2025	0.0019	3	0.13	0.0004	0.001	0.00
4	1	3 - 4	2026	0.0023	3	0.16	0.0005	0.001	0.00
5	1	4 - 5	2027	0.0005	3	0.04	0.0001	0.000	0.00
Total Increased Cancer Risk						**2.12**			

* Children assumed to be 3 months of age with 5 years of exposure to construction emissions

Attachment 5: Community Risk Modeling Information and Calculations

800 Dubuque Avenue, South San Francisco, CA

Standby Emergency Generator Impacts

Off-site Sensitive Receptors

MEI Location = 1 meter receptor height

DPM Emission Rates			
	DPM Emissions per Generator		
Source Type	Max Daily (lb/day)	Annual (lb/year)	
(3) 2,800kw, (2) 1,000kw, (1) 600kw Generator	0.088	32.20	
CalEEMod DPM Emissions	1.61E-02	tons/year	

Modeling Information	
Model	AERMOD
Source	Diesel Generator Engine
Source Type	Point
Meteorological Data	2013 - 2017 San Francisco International Meteorological Data
Point Source Stack Parameters	
Generator Engine Size (hp)	3753, 1341, & 804
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)	0.003676

* AERMOD default

**BAAQMD default generator parameters

800 Dubuque Ave, South San Francisco, CA - Cancer Risks from Project Operation
Project Emergency Generators
Impacts at Off-Site Gateway Child Development Center YMCA - 1m MEI Receptor Heights
Impact at Project MEI (5-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 ($\mu g/m^3$)
SAF = Student Adjustment Factor (unitless)
= (24 hrs/9 hrs) x (7 days/5 days) = 3.73
8-Hr BR = Eight-hour breathing rate (L/kg body weight-per 8 hrs)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
10^{-6} = Conversion factor

	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	1200	520	240
A =	1	1	1	1
EF =	250	250	250	250
AT =	70	70	70	70
FAH =	1.00	1.00	3.73	1.00

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

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
1	1	0 - 1	2028	0.0012	3	0.08				
2	1	1 - 2	2029	0.0012	3	0.08				
3	1	2 - 3	2030	0.0012	3	0.08		0.00024	0.0012	0.0024
4	1	3 - 4	2031	0.0012	3	0.08		0.00024	0.0012	0.0024
5	1	4 - 5	2032	0.0012	3	0.08		0.00024	0.0012	0.0024
Total Increased Cancer Risk						**0.38**	**Max**	**0.00024**	**0.0012**	**0.0024**

Evaporative Cooling Tower PM Emissions

Total Water Flow Rate (gpm)			750
Cooling Tower Circulating Water TDS (ppm)*			96
Mist Eliminator Efficiency (%)			0.001
Total Cooling Tower Drift (gpm)			0.01
Particulate Matter Emissions			
	PM	PM10	PM2.5
Fraction of PM**	1.00	0.70	0.42
Hourly (lb/hr)	3.60E-04	2.52E-04	1.51E-04
Daily (lb/day)	0.01	0.01	0.00
Annual lb/yr)	3.16	2.21	1.33
Annual (ton/yr)	0.00	0.00	0.00

* Maximum TDS value based on 2021 South San Francisco Water Quality Report

** South Coast AQMD, Final-Methodology to Calculate Particulate Matter (PM) 2.5 and PM2.5 Significance Thresholds, Appendix A.

800 Dubuque Avenue, South San Francisco, CA - Project Cooling Tower - PM2.5
AERMOD Risk Modeling Parameters and Maximum Concentrations - Project Cooling Tower at Gateway Child Development Center YMCA MEI Receptor (1 m receptor height)

Emission Year	2028
Receptor Information	Childcare MEI receptor
Number of Receptors	1
Receptor Height	1 meter
Receptor Distances	At Childcare MEI location

Meteorological Conditions	
BAQMD San Francisco International Air	2013-2017
Land Use Classification	Urban
Wind Speed	Variable
Wind Direction	Variable

PM2.5 Maximum Concentrations

Meteorological Data Years	PM2.5 Concentration (µg/m3) Preschool MEI
2013-2017	0.00075

File Name:	Highway 101 2023.EF
CT-EMFAC2017 Version:	1.0.2.27401
Run Date:	10/24/2022 3:25:47 PM
Area:	San Mateo (SF)
Analysis Year:	2023
Season:	Annual

Vehicle Category	VMT Fraction Across Category	Diesel VMT Fraction Within Category	Gas VMT Fraction Within Category
Truck 1	0.037	0.482	0.518
Truck 2	0.015	0.870	0.113
Non-Truck	0.948	0.017	0.960

Road Type:	Freeway		
Silt Loading Factor:	CARB	0.015 g/m2	
Precipitation Correction:	CARB	P = 60 days	N = 365 days

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

Pollutant Name	60 mph	65 mph	70 mph
PM2.5	0.001434	0.001629	0.001734
TOG	0.031317	0.035370	0.038297
Diesel PM	0.000486	0.000544	0.000544

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

Pollutant Name	Emission Factor
TOG	1.228415

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

Pollutant Name	Emission Factor
PM2.5	0.002057

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

Pollutant Name	Emission Factor
PM2.5	0.017195

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

Pollutant Name	Emission Factor
PM2.5	0.007685

END

```
           File Name:   Local Roadways 2023.EF
CT-EMFAC2017 Version:   1.0.2.27401
            Run Date:   10/24/2022 3:24:08 PM
                Area:   San Mateo (SF)
       Analysis Year:   2023
              Season:   Annual

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

Vehicle Category        VMT Fraction            Diesel VMT Fraction     Gas VMT Fraction
                        Across Category         Within Category         Within Category
         Truck 1             0.017                   0.482                   0.518
         Truck 2             0.014                   0.870                   0.113
       Non-Truck             0.969                   0.017                   0.960

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

               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          35 mph
                PM2.5      0.001668        0.001407
                  TOG      0.043117        0.036109
            Diesel PM      0.000264        0.000253

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

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

       Pollutant Name   Emission Factor
                  TOG         1.192095

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

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         0.016805

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

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

       Pollutant Name   Emission Factor
                PM2.5         0.014874

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

```
          File Name:   ProjectTrips 2028.EF
CT-EMFAC2017 Version:   1.0.2.27401
            Run Date:   11/4/2022 12:18:38 PM
                Area:   San Mateo (SF)
       Analysis Year:   2028
              Season:   Annual

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

Vehicle Category        VMT Fraction            Diesel VMT Fraction     Gas VMT Fraction
                        Across Category         Within Category         Within Category
         Truck 1             0.017                   0.514                   0.486
         Truck 2             0.014                   0.871                   0.111
       Non-Truck             0.969                   0.017                   0.946

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

               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      0.001299
                  TOG      0.039156
            Diesel PM      0.000215

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

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

       Pollutant Name   Emission Factor
                  TOG          1.013247

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

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

       Pollutant Name   Emission Factor
                PM2.5          0.002044

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

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

       Pollutant Name   Emission Factor
                PM2.5          0.016820

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

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

       Pollutant Name   Emission Factor
                PM2.5          0.015061

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

800 Dubuque Ave, South San Francisco, CA - Off-Site Residential
Cumulative Operation - Highway 101
DPM Modeling - Roadway Links, Traffic Volumes, and DPM Emissions
Year = **2023**

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Length (mi)	Link Width (m)	Link Width (ft)	Release Height (m)	Average Speed (mph)	Average Vehicles per Day
DPM_NB_101	Highway 101 Northbound	NB	4	758.0	0.47	20.6	67.7	3.4	68	94,760
DPM_SB_101	Highway 101 Southbound	SB	4	757.9	0.47	20.6	67.7	3.4	63	94,760
									Total	189,520

Emission Factors

Speed Category	1	2	3	4
Travel Speed (mph)	70	65	60	
Emissions per Vehicle (g/VMT)	0.00054	0.000544	0.000486	

Emisson Factors from CT-EMFAC2017

2023 Hourly Traffic Volumes and DPM Emissions - DPM_NB_101

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	1.26%	1196	8.51E-05	9	6.16%	5840	4.16E-04	17	6.02%	5704	4.06E-04
2	0.78%	736	5.24E-05	10	5.95%	5641	4.02E-04	18	6.33%	6001	4.27E-04
3	0.60%	571	4.06E-05	11	5.73%	5430	3.86E-04	19	5.61%	5319	3.79E-04
4	0.65%	620	4.41E-05	12	5.85%	5548	3.95E-04	20	4.51%	4269	3.04E-04
5	1.29%	1219	8.67E-05	13	6.07%	5749	4.09E-04	21	3.87%	3669	2.61E-04
6	3.08%	2922	2.08E-04	14	5.84%	5532	3.94E-04	22	3.48%	3297	2.35E-04
7	4.76%	4512	3.21E-04	15	5.96%	5644	4.02E-04	23	2.69%	2552	1.82E-04
8	5.70%	5403	3.85E-04	16	5.98%	5666	4.03E-04	24	1.82%	1722	1.23E-04
								Total		94,760	

2023 Hourly Traffic Volumes Per Direction and DPM Emissions - DPM_SB_101

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.12%	1062	7.56E-05	9	5.45%	5167	3.68E-04	17	6.96%	6599	4.20E-04
2	0.69%	653	4.65E-05	10	5.52%	5229	3.32E-04	18	6.86%	6502	4.13E-04
3	0.62%	584	4.15E-05	11	5.57%	5275	3.35E-04	19	5.66%	5367	3.41E-04
4	0.80%	761	5.41E-05	12	5.89%	5580	3.55E-04	20	4.46%	4228	3.01E-04
5	1.49%	1416	1.01E-04	13	5.97%	5656	3.60E-04	21	3.71%	3513	2.50E-04
6	2.76%	2611	1.86E-04	14	6.13%	5807	3.69E-04	22	3.30%	3129	2.23E-04
7	3.87%	3663	2.61E-04	15	6.76%	6404	4.07E-04	23	2.68%	2536	1.80E-04
8	5.11%	4845	3.45E-04	16	6.83%	6474	4.12E-04	24	1.79%	1700	1.21E-04
								Total		94,760	

800 Dubuque Ave, South San Francisco, CA - Off-Site Residential
Cumulative Operation - Highway 101
PM2.5 Modeling - Roadway Links, Traffic Volumes, and PM2.5 Emissions
Year = 2023

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Length (mi)	Link Width (m)	Link Width (ft)	Release Height (m)	Average Speed (mph)	Average Vehicles per Day
PM2.5_NB_101	Highway 101 Northbound	NB	4	758.0	0.47	20.6	68	1.3	67.708333	94,760
PM2.5_SB_101	Highway 101 Southbound	SB	4	757.9	0.47	20.6	68	1.3	62.916667	94,760
									Total	189,520

Emission Factors - PM2.5

Speed Category	1	2	3	4
Travel Speed (mph)	70	65	60	
Emissions per Vehicle (g/VMT)	0.001734	0.00163	0.001434	

Emisson Factors from CT-EMFAC2017

2023 Hourly Traffic Volumes and PM2.5 Emissions - PM2.5_NB_101

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	1.26%	1196	2.71E-04	9	6.16%	5840	1.24E-03	17	6.02%	5704	1.22E-03
2	0.78%	736	1.67E-04	10	5.95%	5641	1.20E-03	18	6.33%	6001	1.28E-03
3	0.60%	571	1.29E-04	11	5.73%	5430	1.16E-03	19	5.61%	5319	1.21E-03
4	0.65%	620	1.41E-04	12	5.85%	5548	1.18E-03	20	4.51%	4269	9.69E-04
5	1.29%	1219	2.76E-04	13	6.07%	5749	1.23E-03	21	3.87%	3669	8.32E-04
6	3.08%	2922	6.63E-04	14	5.84%	5532	1.18E-03	22	3.48%	3297	7.48E-04
7	4.76%	4512	1.02E-03	15	5.96%	5644	1.20E-03	23	2.69%	2552	5.79E-04
8	5.70%	5403	1.15E-03	16	5.98%	5666	1.21E-03	24	1.82%	1722	3.91E-04
								Total		94,760	

2023 Hourly Traffic Volumes Per Direction and PM2.5 Emissions - PM2.5_SB_101

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.12%	1062	2.26E-04	9	5.45%	5167	1.10E-03	17	6.96%	6599	1.24E-03
2	0.69%	653	1.39E-04	10	5.52%	5229	9.81E-04	18	6.86%	6502	1.22E-03
3	0.62%	584	1.24E-04	11	5.57%	5275	9.90E-04	19	5.66%	5367	1.01E-03
4	0.80%	761	1.62E-04	12	5.89%	5580	1.05E-03	20	4.46%	4228	9.01E-04
5	1.49%	1416	3.02E-04	13	5.97%	5656	1.06E-03	21	3.71%	3513	7.49E-04
6	2.76%	2611	5.56E-04	14	6.13%	5807	1.09E-03	22	3.30%	3129	6.67E-04
7	3.87%	3663	7.81E-04	15	6.76%	6404	1.20E-03	23	2.68%	2536	5.40E-04
8	5.11%	4845	1.03E-03	16	6.83%	6474	1.21E-03	24	1.79%	1700	3.62E-04
								Total		94,760	

800 Dubuque Ave, South San Francisco, CA - Off-Site Residential
Cumulative Operation - Highway 101
TOG Exhaust Modeling - Roadway Links, Traffic Volumes, and TOG Exhaust Emissions
Year = 2023

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Length (mi)	Link Width (m)	Link Width (ft)	Release Height (m)	Average Speed (mph)	Average Vehicles per Day
TEXH_NB_AIR	Highway 101 Northbound	NB	4	758.0	0.47	20.6	68	1.3	67.708333	94,760
TEXH_SB_AIR	Highway 101 Southbound	SB	4	757.9	0.47	20.6	68	1.3	62.916667	94,760
									Total	189,520

Emission Factors - TOG Exhaust

Speed Category	1	2	3	4
Travel Speed (mph)	70	65	60	
Emissions per Vehicle (g/VMT)	0.03830	0.03537	0.03132	

Emisson Factors from CT-EMFAC2017

2023 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	1.26%	1196	5.99E-03	9	6.16%	5840	2.70E-02	17	6.02%	5704	2.64E-02
2	0.78%	736	3.69E-03	10	5.95%	5641	2.61E-02	18	6.33%	6001	2.78E-02
3	0.60%	571	2.86E-03	11	5.73%	5430	2.51E-02	19	5.61%	5319	2.67E-02
4	0.65%	620	3.11E-03	12	5.85%	5548	2.57E-02	20	4.51%	4269	2.14E-02
5	1.29%	1219	6.11E-03	13	6.07%	5749	2.66E-02	21	3.87%	3669	1.84E-02
6	3.08%	2922	1.46E-02	14	5.84%	5532	2.56E-02	22	3.48%	3297	1.65E-02
7	4.76%	4512	2.26E-02	15	5.96%	5644	2.61E-02	23	2.69%	2552	1.28E-02
8	5.70%	5403	2.50E-02	16	5.98%	5666	2.62E-02	24	1.82%	1722	8.63E-03
								Total		94,760	

2023 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	1.26%	1196	5.53E-03	9	6.16%	5840	2.70E-02	17	6.02%	5704	2.34E-02
2	0.78%	736	3.40E-03	10	5.95%	5641	2.31E-02	18	6.33%	6001	2.46E-02
3	0.60%	571	2.64E-03	11	5.73%	5430	2.22E-02	19	5.61%	5319	2.18E-02
4	0.65%	620	2.87E-03	12	5.85%	5548	2.27E-02	20	4.51%	4269	1.98E-02
5	1.29%	1219	5.64E-03	13	6.07%	5749	2.36E-02	21	3.87%	3669	1.70E-02
6	3.08%	2922	1.35E-02	14	5.84%	5532	2.27E-02	22	3.48%	3297	1.53E-02
7	4.76%	4512	2.09E-02	15	5.96%	5644	2.31E-02	23	2.69%	2552	1.18E-02
8	5.70%	5403	2.50E-02	16	5.98%	5666	2.32E-02	24	1.82%	1722	7.97E-03
								Total		94,760	

800 Dubuque Ave, South San Francisco, CA - Off-Site Residential
Cumulative Operation - Highway 101
TOG Evaporative Emissions Modeling - Roadway Links, Traffic Volumes, and TOG Evaporative Emissions
Year = 2023

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Length (mi)	Link Width (m)	Link Width (ft)	Release Height (m)	Average Speed (mph)	Average Vehicles per Day
TEVAP_NB_AIR	Highway 101 Northbound	NB	4	758.0	0.47	20.6	68	1.3	67.708333	94,760
TEVAP_SB_AIR	Highway 101 Southbound	SB	4	757.9	0.47	20.6	68	1.3	62.916667	94,760
									Total	189,520

Emission Factors - PM2.5 - Evaporative TOG

Speed Category	1	2	3	4
Travel Speed (mph)	70	65	60	
Emissions per Vehicle per Hour (g/hour)	1.22842	1.22842	1.22842	
Emissions per Vehicle per Mile (g/VMT)	0.01755	0.01890	0.02047	

Emisson Factors from CT-EMFAC2017

2023 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	1.26%	1196	2.75E-03	9	6.16%	5840	1.44E-02	17	6.02%	5704	1.41E-02
2	0.78%	736	1.69E-03	10	5.95%	5641	1.39E-02	18	6.33%	6001	1.48E-02
3	0.60%	571	1.31E-03	11	5.73%	5430	1.34E-02	19	5.61%	5319	1.22E-02
4	0.65%	620	1.42E-03	12	5.85%	5548	1.37E-02	20	4.51%	4269	9.80E-03
5	1.29%	1219	2.80E-03	13	6.07%	5749	1.42E-02	21	3.87%	3669	8.42E-03
6	3.08%	2922	6.71E-03	14	5.84%	5532	1.37E-02	22	3.48%	3297	7.57E-03
7	4.76%	4512	1.04E-02	15	5.96%	5644	1.40E-02	23	2.69%	2552	5.86E-03
8	5.70%	5403	1.34E-02	16	5.98%	5666	1.40E-02	24	1.82%	1722	3.95E-03
								Total		94,760	

2023 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	1.26%	1196	2.96E-03	9	6.16%	5840	1.44E-02	17	6.02%	5704	1.53E-02
2	0.78%	736	1.82E-03	10	5.95%	5641	1.51E-02	18	6.33%	6001	1.61E-02
3	0.60%	571	1.41E-03	11	5.73%	5430	1.45E-02	19	5.61%	5319	1.42E-02
4	0.65%	620	1.53E-03	12	5.85%	5548	1.49E-02	20	4.51%	4269	1.06E-02
5	1.29%	1219	3.01E-03	13	6.07%	5749	1.54E-02	21	3.87%	3669	9.07E-03
6	3.08%	2922	7.22E-03	14	5.84%	5532	1.48E-02	22	3.48%	3297	8.15E-03
7	4.76%	4512	1.12E-02	15	5.96%	5644	1.51E-02	23	2.69%	2552	6.31E-03
8	5.70%	5403	1.34E-02	16	5.98%	5666	1.52E-02	24	1.82%	1722	4.26E-03
								Total		94,760	

800 Dubuque Ave, South San Francisco, CA - Off-Site Residential
Cumulative Operation - Highway 101
Fugitive Road PM2.5 Modeling - Roadway Links, Traffic Volumes, and Fugitive Road PM2.5 Emissions
Year = 2023

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Length (mi)	Link Width (m)	Link Width (ft)	Release Height (m)	Average Speed (mph)	Average Vehicles per Day
FUG_NB_AIR	Highway 101 Northbound	NB	4	758.0	0.47	20.6	68	1.3	67.708333	94,760
FUG_SB_AIR	Highway 101 Southbound	SB	4	757.9	0.47	20.6	68	1.3	62.916667	94,760
									Total	189,520

Emission Factors - Fugitive PM2.5

Speed Category	1	2	3	4
Travel Speed (mph)	70	65	60	
Tire Wear - Emissions per Vehicle (g/VMT)	0.00206	0.00206	0.00206	
Brake Wear - Emissions per Vehicle (g/VMT)	0.01720	0.01720	0.01720	
Road Dust - Emissions per Vehicle (g/VMT)	0.00769	0.00769	0.00769	
otal Fugitive PM2.5 - Emissions per Vehicle (g/VMT)	0.02694	0.02694	0.02694	

Emisson Factors from CT-EMFAC2017

2023 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	1.26%	1196	4.22E-03	9	6.16%	5840	2.06E-02	17	6.02%	5704	2.01E-02
2	0.78%	736	2.59E-03	10	5.95%	5641	1.99E-02	18	6.33%	6001	2.11E-02
3	0.60%	571	2.01E-03	11	5.73%	5430	1.91E-02	19	5.61%	5319	1.87E-02
4	0.65%	620	2.19E-03	12	5.85%	5548	1.96E-02	20	4.51%	4269	1.50E-02
5	1.29%	1219	4.29E-03	13	6.07%	5749	2.03E-02	21	3.87%	3669	1.29E-02
6	3.08%	2922	1.03E-02	14	5.84%	5532	1.95E-02	22	3.48%	3297	1.16E-02
7	4.76%	4512	1.59E-02	15	5.96%	5644	1.99E-02	23	2.69%	2552	8.99E-03
8	5.70%	5403	1.90E-02	16	5.98%	5666	2.00E-02	24	1.82%	1722	6.07E-03
								Total		94,760	

2023 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	1.26%	1196	4.22E-03	9	6.16%	5840	2.06E-02	17	6.02%	5704	2.01E-02
2	0.78%	736	2.59E-03	10	5.95%	5641	1.99E-02	18	6.33%	6001	2.11E-02
3	0.60%	571	2.01E-03	11	5.73%	5430	1.91E-02	19	5.61%	5319	1.87E-02
4	0.65%	620	2.18E-03	12	5.85%	5548	1.95E-02	20	4.51%	4269	1.50E-02
5	1.29%	1219	4.29E-03	13	6.07%	5749	2.03E-02	21	3.87%	3669	1.29E-02
6	3.08%	2922	1.03E-02	14	5.84%	5532	1.95E-02	22	3.48%	3297	1.16E-02
7	4.76%	4512	1.59E-02	15	5.96%	5644	1.99E-02	23	2.69%	2552	8.99E-03
8	5.70%	5403	1.90E-02	16	5.98%	5666	2.00E-02	24	1.82%	1722	6.07E-03
								Total		94,760	

800 Dubuque Ave, South San Francisco, CA - Off-Site Residential
Cumulative Operation - Airport Blvd
DPM Modeling - Roadway Links, Traffic Volumes, and DPM Emissions
Year = 2023

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Length (mi)	Link Width (m)	Link Width (ft)	Release Height (m)	Average Speed (mph)	Average Vehicles per Day
DPM_NB_AIR	Airport Blvd Northbound	NB	2	759.4	0.47	13.3	43.7	3.4	35	11,196
DPM_SB_AIR	Airport Blvd Southbound	SB	2	759.6	0.47	13.3	43.7	3.4	35	11,196
									Total	22,392

Emission Factors

Speed Category	1	2	3	4
Travel Speed (mph)	35			
Emissions per Vehicle (g/VMT)	0.00025			

Emisson Factors from CT-EMFAC2017

2023 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	3.81%	427	1.42E-05	9	6.66%	746	2.47E-05	17	6.50%	728	2.41E-05
2	3.15%	353	1.17E-05	10	8.16%	913	3.03E-05	18	3.85%	431	1.43E-05
3	2.32%	260	8.62E-06	11	6.33%	709	2.35E-05	19	2.35%	263	8.74E-06
4	1.00%	111	3.69E-06	12	7.66%	858	2.84E-05	20	1.19%	133	4.43E-06
5	1.00%	111	3.69E-06	13	6.83%	765	2.54E-05	21	3.02%	338	1.12E-05
6	2.16%	241	8.00E-06	14	6.66%	746	2.47E-05	22	5.01%	560	1.86E-05
7	4.67%	523	1.74E-05	15	6.00%	672	2.23E-05	23	3.32%	371	1.23E-05
8	3.35%	375	1.24E-05	16	4.34%	486	1.61E-05	24	0.66%	74	2.46E-06
								Total		11,196	

2023 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	3.81%	427	1.42E-05	9	6.66%	746	2.48E-05	17	6.50%	728	2.41E-05
2	3.15%	353	1.17E-05	10	8.16%	913	3.03E-05	18	3.85%	431	1.43E-05
3	2.32%	260	8.62E-06	11	6.33%	709	2.35E-05	19	2.35%	263	8.74E-06
4	1.00%	111	3.70E-06	12	7.66%	858	2.84E-05	20	1.19%	133	4.43E-06
5	1.00%	111	3.70E-06	13	6.83%	765	2.54E-05	21	3.02%	338	1.12E-05
6	2.16%	241	8.01E-06	14	6.66%	746	2.48E-05	22	5.01%	560	1.86E-05
7	4.67%	523	1.74E-05	15	6.00%	672	2.23E-05	23	3.32%	371	1.23E-05
8	3.35%	375	1.24E-05	16	4.34%	486	1.61E-05	24	0.66%	74	2.46E-06
								Total		11,196	

800 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 = 2023

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Length (mi)	Link Width (m)	Link Width (ft)	Release Height (m)	Average Speed (mph)	Average Vehicles per Day
PM2.5_NB_AIR	Airport Blvd Northbound	NB	2	759.4	0.47	13.3	44	1.3	35	11,196
PM2.5_SB_AIR	Airport Blvd Southbound	SB	2	759.6	0.47	13.3	44	1.3	35	11,196
									Total	22,392

Emission Factors - PM2.5

Speed Category	1	2	3	4
Travel Speed (mph)	35			
Emissions per Vehicle (g/VMT)	0.001407			

Emisson Factors from CT-EMFAC2017

2023 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%	125	2.31E-05	9	7.12%	797	1.47E-04	17	7.43%	832	1.53E-04
2	0.41%	46	8.53E-06	10	4.37%	490	9.03E-05	18	8.24%	922	1.70E-04
3	0.37%	42	7.74E-06	11	4.65%	521	9.60E-05	19	5.72%	640	1.18E-04
4	0.17%	19	3.52E-06	12	5.89%	659	1.22E-04	20	4.30%	482	8.88E-05
5	0.46%	52	9.50E-06	13	6.17%	691	1.27E-04	21	3.25%	364	6.71E-05
6	0.85%	95	1.75E-05	14	6.05%	678	1.25E-04	22	3.31%	371	6.84E-05
7	3.73%	418	7.70E-05	15	7.06%	790	1.46E-04	23	2.48%	278	5.13E-05
8	7.77%	870	1.60E-04	16	7.19%	805	1.48E-04	24	1.87%	210	3.87E-05
								Total		11,196	

2023 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%	125	2.31E-05	9	7.12%	797	1.47E-04	17	7.43%	832	1.54E-04
2	0.41%	46	8.53E-06	10	4.37%	490	9.03E-05	18	8.24%	922	1.70E-04
3	0.37%	42	7.74E-06	11	4.65%	521	9.61E-05	19	5.72%	640	1.18E-04
4	0.17%	19	3.52E-06	12	5.89%	659	1.22E-04	20	4.30%	482	8.89E-05
5	0.46%	52	9.50E-06	13	6.17%	691	1.27E-04	21	3.25%	364	6.71E-05
6	0.85%	95	1.75E-05	14	6.05%	678	1.25E-04	22	3.31%	371	6.84E-05
7	3.73%	418	7.71E-05	15	7.06%	790	1.46E-04	23	2.48%	278	5.13E-05
8	7.77%	870	1.60E-04	16	7.19%	805	1.48E-04	24	1.87%	210	3.87E-05
								Total		11,196	

800 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 = 2023

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Length (mi)	Link Width (m)	Link Width (ft)	Release Height (m)	Average Speed (mph)	Average Vehicles per Day
TEXH_NB_AIR	Airport Blvd Northbound	NB	2	759.4	0.47	13.3	44	1.3	35	11,196
TEXH_SB_AIR	Airport Blvd Southbound	SB	2	759.6	0.47	13.3	44	1.3	35	11,196
									Total	22,392

Emission Factors - TOG Exhaust

Speed Category	1	2	3	4
Travel Speed (mph)	35			
Emissions per Vehicle (g/VMT)	0.03611			

Emisson Factors from CT-EMFAC2017

2023 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%	125	5.94E-04	9	7.12%	797	3.77E-03	17	7.43%	832	3.94E-03
2	0.41%	46	2.19E-04	10	4.37%	490	2.32E-03	18	8.24%	922	4.37E-03
3	0.37%	42	1.99E-04	11	4.65%	521	2.46E-03	19	5.72%	640	3.03E-03
4	0.17%	19	9.03E-05	12	5.89%	659	3.12E-03	20	4.30%	482	2.28E-03
5	0.46%	52	2.44E-04	13	6.17%	691	3.27E-03	21	3.25%	364	1.72E-03
6	0.85%	95	4.49E-04	14	6.05%	678	3.21E-03	22	3.31%	371	1.76E-03
7	3.73%	418	1.98E-03	15	7.06%	790	3.74E-03	23	2.48%	278	1.32E-03
8	7.77%	870	4.12E-03	16	7.19%	805	3.81E-03	24	1.87%	210	9.93E-04
								Total		11,196	

2023 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%	125	5.94E-04	9	7.12%	797	3.77E-03	17	7.43%	832	3.94E-03
2	0.41%	46	2.19E-04	10	4.37%	490	2.32E-03	18	8.24%	922	4.37E-03
3	0.37%	42	1.99E-04	11	4.65%	521	2.47E-03	19	5.72%	640	3.03E-03
4	0.17%	19	9.03E-05	12	5.89%	659	3.12E-03	20	4.30%	482	2.28E-03
5	0.46%	52	2.44E-04	13	6.17%	691	3.27E-03	21	3.25%	364	1.72E-03
6	0.85%	95	4.49E-04	14	6.05%	678	3.21E-03	22	3.31%	371	1.76E-03
7	3.73%	418	1.98E-03	15	7.06%	790	3.74E-03	23	2.48%	278	1.32E-03
8	7.77%	870	4.12E-03	16	7.19%	805	3.81E-03	24	1.87%	210	9.93E-04
								Total		11,196	

800 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 = 2023

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Length (mi)	Link Width (m)	Link Width (ft)	Release Height (m)	Average Speed (mph)	Average Vehicles per Day
TEVAP_NB_AIR	Airport Blvd Northbound	NB	2	759.4	0.47	13.3	44	1.3	35	11,196
TEVAP_SB_AIR	Airport Blvd Southbound	SB	2	759.6	0.47	13.3	44	1.3	35	11,196
									Total	22,392

Emission Factors - PM2.5 - Evaporative TOG

Speed Category	1	2	3	4
Travel Speed (mph)	35			
Emissions per Vehicle per Hour (g/hour)	1.19210			
Emissions per Vehicle per Mile (g/VMT)	0.03406			

Emisson Factors from CT-EMFAC2017

2023 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%	125	5.60E-04	9	7.12%	797	3.56E-03	17	7.43%	832	3.72E-03
2	0.41%	46	2.07E-04	10	4.37%	490	2.19E-03	18	8.24%	922	4.12E-03
3	0.37%	42	1.87E-04	11	4.65%	521	2.32E-03	19	5.72%	640	2.86E-03
4	0.17%	19	8.52E-05	12	5.89%	659	2.94E-03	20	4.30%	482	2.15E-03
5	0.46%	52	2.30E-04	13	6.17%	691	3.08E-03	21	3.25%	364	1.62E-03
6	0.85%	95	4.24E-04	14	6.05%	678	3.03E-03	22	3.31%	371	1.66E-03
7	3.73%	418	1.87E-03	15	7.06%	790	3.53E-03	23	2.48%	278	1.24E-03
8	7.77%	870	3.88E-03	16	7.19%	805	3.59E-03	24	1.87%	210	9.37E-04
								Total		11,196	

2023 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%	125	5.60E-04	9	7.12%	797	3.56E-03	17	7.43%	832	3.72E-03
2	0.41%	46	2.07E-04	10	4.37%	490	2.19E-03	18	8.24%	922	4.12E-03
3	0.37%	42	1.87E-04	11	4.65%	521	2.33E-03	19	5.72%	640	2.86E-03
4	0.17%	19	8.52E-05	12	5.89%	659	2.94E-03	20	4.30%	482	2.15E-03
5	0.46%	52	2.30E-04	13	6.17%	691	3.08E-03	21	3.25%	364	1.62E-03
6	0.85%	95	4.24E-04	14	6.05%	678	3.03E-03	22	3.31%	371	1.66E-03
7	3.73%	418	1.87E-03	15	7.06%	790	3.53E-03	23	2.48%	278	1.24E-03
8	7.77%	870	3.88E-03	16	7.19%	805	3.59E-03	24	1.87%	210	9.37E-04
								Total		11,196	

800 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 = **2023**

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Length (mi)	Link Width (m)	Link Width (ft)	Release Height (m)	Average Speed (mph)	Average Vehicles per Day
FUG_NB_AIR	Airport Blvd Northbound	NB	2	759.4	0.47	13.3	44	1.3	35	11,196
FUG_SB_AIR	Airport Blvd Southbound	SB	2	759.6	0.47	13.3	44	1.3	35	11,196
									Total	22,392

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)	0.01681			
Road Dust - Emissions per Vehicle (g/VMT)	0.01487			
otal Fugitive PM2.5 - Emissions per Vehicle (g/VMT)	0.03373			

Emisson Factors from CT-EMFAC2017

2023 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%	125	5.54E-04	9	7.12%	797	3.52E-03	17	7.43%	832	3.68E-03
2	0.41%	46	2.04E-04	10	4.37%	490	2.17E-03	18	8.24%	922	4.08E-03
3	0.37%	42	1.86E-04	11	4.65%	521	2.30E-03	19	5.72%	640	2.83E-03
4	0.17%	19	8.43E-05	12	5.89%	659	2.91E-03	20	4.30%	482	2.13E-03
5	0.46%	52	2.28E-04	13	6.17%	691	3.05E-03	21	3.25%	364	1.61E-03
6	0.85%	95	4.20E-04	14	6.05%	678	3.00E-03	22	3.31%	371	1.64E-03
7	3.73%	418	1.85E-03	15	7.06%	790	3.49E-03	23	2.48%	278	1.23E-03
8	7.77%	870	3.85E-03	16	7.19%	805	3.56E-03	24	1.87%	210	9.28E-04
								Total		11,196	

2023 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%	125	5.55E-04	9	7.12%	797	3.52E-03	17	7.43%	832	3.68E-03
2	0.41%	46	2.05E-04	10	4.37%	490	2.17E-03	18	8.24%	922	4.08E-03
3	0.37%	42	1.86E-04	11	4.65%	521	2.30E-03	19	5.72%	640	2.83E-03
4	0.17%	19	8.43E-05	12	5.89%	659	2.91E-03	20	4.30%	482	2.13E-03
5	0.46%	52	2.28E-04	13	6.17%	691	3.05E-03	21	3.25%	364	1.61E-03
6	0.85%	95	4.20E-04	14	6.05%	678	3.00E-03	22	3.31%	371	1.64E-03
7	3.73%	418	1.85E-03	15	7.06%	790	3.49E-03	23	2.48%	278	1.23E-03
8	7.77%	870	3.85E-03	16	7.19%	805	3.56E-03	24	1.87%	210	9.28E-04
								Total		11,196	

800 Dubuque Ave, South San Francisco, CA - Off-Site Residential
Cumulative Operation - Dubuque Ave
DPM Modeling - Roadway Links, Traffic Volumes, and DPM Emissions
Year = **2023**

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Length (mi)	Link Width (m)	Link Width (ft)	Release Height (m)	Average Speed (mph)	Average Vehicles per Day
DPM_NB_DUB	Dubuque Avenue Northbound	NB	1	773.1	0.48	9.7	31.7	3.4	30	9,325
DPM_SB_DUB	Dubuque Avenue Southbound	SB	1	767.5	0.48	9.7	31.7	3.4	30	9,325
									Total	18,650

Emission Factors

Speed Category	1	2	3	4
Travel Speed (mph)	30			
Emissions per Vehicle (g/VMT)	0.00026			

Emisson Factors from CT-EMFAC2017

2023 Hourly Traffic Volumes and DPM Emissions - DPM_NB_DUB

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	3.81%	356	1.25E-05	9	6.66%	621	2.19E-05	17	6.50%	606	2.13E-05
2	3.15%	294	1.04E-05	10	8.16%	761	2.68E-05	18	3.85%	359	1.26E-05
3	2.32%	216	7.63E-06	11	6.33%	591	2.08E-05	19	2.35%	219	7.73E-06
4	1.00%	93	3.27E-06	12	7.66%	714	2.52E-05	20	1.19%	111	3.92E-06
5	1.00%	93	3.27E-06	13	6.83%	637	2.24E-05	21	3.02%	281	9.91E-06
6	2.16%	201	7.08E-06	14	6.66%	621	2.19E-05	22	5.01%	467	1.64E-05
7	4.67%	436	1.54E-05	15	6.00%	560	1.97E-05	23	3.32%	309	1.09E-05
8	3.35%	312	1.10E-05	16	4.34%	405	1.43E-05	24	0.66%	62	2.18E-06
								Total		9,325	

2023 Hourly Traffic Volumes Per Direction and DPM Emissions - DPM_SB_DUB

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	3.81%	356	1.24E-05	9	6.66%	621	2.17E-05	17	6.50%	606	2.12E-05
2	3.15%	294	1.03E-05	10	8.16%	761	2.66E-05	18	3.85%	359	1.25E-05
3	2.32%	216	7.57E-06	11	6.33%	591	2.07E-05	19	2.35%	219	7.67E-06
4	1.00%	93	3.24E-06	12	7.66%	714	2.50E-05	20	1.19%	111	3.89E-06
5	1.00%	93	3.24E-06	13	6.83%	637	2.23E-05	21	3.02%	281	9.84E-06
6	2.16%	201	7.03E-06	14	6.66%	621	2.17E-05	22	5.01%	467	1.63E-05
7	4.67%	436	1.52E-05	15	6.00%	560	1.96E-05	23	3.32%	309	1.08E-05
8	3.35%	312	1.09E-05	16	4.34%	405	1.42E-05	24	0.66%	62	2.16E-06
								Total		9,325	

800 Dubuque Ave, South San Francisco, CA - Off-Site Residential
Cumulative Operation - Dubuque Ave
PM2.5 Modeling - Roadway Links, Traffic Volumes, and PM2.5 Emissions
Year = 2023

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Length (mi)	Link Width (m)	Link Width (ft)	Release Height (m)	Average Speed (mph)	Average Vehicles per Day
PM2.5_NB_DUB	Dubuque Avenue Northbound	NB	1	773.1	0.48	9.7	32	1.3	30	9,325
PM2.5_SB_DUB	Dubuque Avenue Southbound	SB	1	767.5	0.48	9.7	32	1.3	30	9,325
									Total	18,650

Emission Factors - PM2.5

Speed Category	1	2	3	4
Travel Speed (mph)	30			
Emissions per Vehicle (g/VMT)	0.001668			

Emisson Factors from CT-EMFAC2017

2023 Hourly Traffic Volumes and PM2.5 Emissions - PM2.5_NB_DUB

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	1.12%	104	2.33E-05	9	7.12%	664	1.48E-04	17	7.43%	693	1.54E-04
2	0.41%	39	8.58E-06	10	4.37%	408	9.08E-05	18	8.24%	768	1.71E-04
3	0.37%	35	7.78E-06	11	4.65%	434	9.65E-05	19	5.72%	533	1.19E-04
4	0.17%	16	3.54E-06	12	5.89%	549	1.22E-04	20	4.30%	401	8.93E-05
5	0.46%	43	9.55E-06	13	6.17%	575	1.28E-04	21	3.25%	303	6.75E-05
6	0.85%	79	1.76E-05	14	6.05%	564	1.26E-04	22	3.31%	309	6.88E-05
7	3.73%	348	7.74E-05	15	7.06%	658	1.46E-04	23	2.48%	232	5.15E-05
8	7.77%	724	1.61E-04	16	7.19%	670	1.49E-04	24	1.87%	175	3.89E-05
								Total		9,325	

2023 Hourly Traffic Volumes Per Direction and PM2.5 Emissions - PM2.5_SB_DUB

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.12%	104	2.31E-05	9	7.12%	664	1.47E-04	17	7.43%	693	1.53E-04
2	0.41%	39	8.51E-06	10	4.37%	408	9.01E-05	18	8.24%	768	1.70E-04
3	0.37%	35	7.72E-06	11	4.65%	434	9.58E-05	19	5.72%	533	1.18E-04
4	0.17%	16	3.51E-06	12	5.89%	549	1.21E-04	20	4.30%	401	8.86E-05
5	0.46%	43	9.48E-06	13	6.17%	575	1.27E-04	21	3.25%	303	6.70E-05
6	0.85%	79	1.75E-05	14	6.05%	564	1.25E-04	22	3.31%	309	6.83E-05
7	3.73%	348	7.69E-05	15	7.06%	658	1.45E-04	23	2.48%	232	5.12E-05
8	7.77%	724	1.60E-04	16	7.19%	670	1.48E-04	24	1.87%	175	3.86E-05
								Total		9,325	

800 Dubuque Ave, South San Francisco, CA - Off-Site Residential
Cumulative Operation - Dubuque Ave
TOG Exhaust Modeling - Roadway Links, Traffic Volumes, and TOG Exhaust Emissions
Year = 2023

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Length (mi)	Link Width (m)	Link Width (ft)	Release Height (m)	Average Speed (mph)	Average Vehicles per Day
TEXH_NB_DUB	Dubuque Avenue Northbound	NB	1	773.1	0.48	9.7	32	1.3	30	9,325
TEXH_SB_DUB	Dubuque Avenue Southbound	SB	1	767.5	0.48	9.7	32	1.3	30	9,325
									Total	18,650

Emission Factors - TOG Exhaust

Speed Category	1	2	3	4
Travel Speed (mph)	30			
Emissions per Vehicle (g/VMT)	0.03611			

Emisson Factors from CT-EMFAC2017

2023 Hourly Traffic Volumes and TOG Exhaust Emissions - TEXH_NB_DUB

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	1.12%	104	5.03E-04	9	7.12%	664	3.20E-03	17	7.43%	693	3.34E-03
2	0.41%	39	1.86E-04	10	4.37%	408	1.97E-03	18	8.24%	768	3.70E-03
3	0.37%	35	1.68E-04	11	4.65%	434	2.09E-03	19	5.72%	533	2.57E-03
4	0.17%	16	7.66E-05	12	5.89%	549	2.64E-03	20	4.30%	401	1.93E-03
5	0.46%	43	2.07E-04	13	6.17%	575	2.77E-03	21	3.25%	303	1.46E-03
6	0.85%	79	3.81E-04	14	6.05%	564	2.72E-03	22	3.31%	309	1.49E-03
7	3.73%	348	1.68E-03	15	7.06%	658	3.17E-03	23	2.48%	232	1.12E-03
8	7.77%	724	3.49E-03	16	7.19%	670	3.23E-03	24	1.87%	175	8.42E-04
								Total		9,325	

2023 Hourly Traffic Volumes Per Direction and TOG Exhaust Emissions - TEXH_SB_DUB

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.12%	104	5.00E-04	9	7.12%	664	3.17E-03	17	7.43%	693	3.32E-03
2	0.41%	39	1.84E-04	10	4.37%	408	1.95E-03	18	8.24%	768	3.67E-03
3	0.37%	35	1.67E-04	11	4.65%	434	2.07E-03	19	5.72%	533	2.55E-03
4	0.17%	16	7.60E-05	12	5.89%	549	2.63E-03	20	4.30%	401	1.92E-03
5	0.46%	43	2.05E-04	13	6.17%	575	2.75E-03	21	3.25%	303	1.45E-03
6	0.85%	79	3.78E-04	14	6.05%	564	2.70E-03	22	3.31%	309	1.48E-03
7	3.73%	348	1.66E-03	15	7.06%	658	3.15E-03	23	2.48%	232	1.11E-03
8	7.77%	724	3.47E-03	16	7.19%	670	3.21E-03	24	1.87%	175	8.36E-04
								Total		9,325	

800 Dubuque Ave, South San Francisco, CA - Off-Site Residential
Cumulative Operation - Dubuque Ave
TOG Evaporative Emissions Modeling - Roadway Links, Traffic Volumes, and TOG Evaporative Emissions
Year = 2023

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Length (mi)	Link Width (m)	Link Width (ft)	Release Height (m)	Average Speed (mph)	Average Vehicles per Day
TEVAP_NB_DUB	Dubuque Avenue Northbound	NB	1	773.1	0.48	9.7	32	1.3	30	9,325
TEVAP_SB_DUB	Dubuque Avenue Southbound	SB	1	767.5	0.48	9.7	32	1.3	30	9,325
									Total	18,650

Emission Factors - PM2.5 - Evaporative TOG

Speed Category	1	2	3	4
Travel Speed (mph)	30			
Emissions per Vehicle per Hour (g/hour)	1.19210			
Emissions per Vehicle per Mile (g/VMT)	0.03974			

Emisson Factors from CT-EMFAC2017

2023 Hourly Traffic Volumes and TOG Evaporative Emissions - TEVAP_NB_DUB

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	1.12%	104	5.54E-04	9	7.12%	664	3.52E-03	17	7.43%	693	3.68E-03
2	0.41%	39	2.04E-04	10	4.37%	408	2.16E-03	18	8.24%	768	4.07E-03
3	0.37%	35	1.85E-04	11	4.65%	434	2.30E-03	19	5.72%	533	2.83E-03
4	0.17%	16	8.42E-05	12	5.89%	549	2.91E-03	20	4.30%	401	2.13E-03
5	0.46%	43	2.27E-04	13	6.17%	575	3.05E-03	21	3.25%	303	1.61E-03
6	0.85%	79	4.19E-04	14	6.05%	564	2.99E-03	22	3.31%	309	1.64E-03
7	3.73%	348	1.84E-03	15	7.06%	658	3.49E-03	23	2.48%	232	1.23E-03
8	7.77%	724	3.84E-03	16	7.19%	670	3.56E-03	24	1.87%	175	9.27E-04
								Total		9,325	

2023 Hourly Traffic Volumes Per Direction and TOG Evaporative Emissions - TEVAP_SB_DUB

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.12%	104	5.50E-04	9	7.12%	664	3.49E-03	17	7.43%	693	3.65E-03
2	0.41%	39	2.03E-04	10	4.37%	408	2.15E-03	18	8.24%	768	4.04E-03
3	0.37%	35	1.84E-04	11	4.65%	434	2.28E-03	19	5.72%	533	2.81E-03
4	0.17%	16	8.36E-05	12	5.89%	549	2.89E-03	20	4.30%	401	2.11E-03
5	0.46%	43	2.26E-04	13	6.17%	575	3.03E-03	21	3.25%	303	1.60E-03
6	0.85%	79	4.16E-04	14	6.05%	564	2.97E-03	22	3.31%	309	1.63E-03
7	3.73%	348	1.83E-03	15	7.06%	658	3.46E-03	23	2.48%	232	1.22E-03
8	7.77%	724	3.81E-03	16	7.19%	670	3.53E-03	24	1.87%	175	9.20E-04
								Total		9,325	

800 Dubuque Ave, South San Francisco, CA - Off-Site Residential
Cumulative Operation - Dubuque Ave
Fugitive Road PM2.5 Modeling - Roadway Links, Traffic Volumes, and Fugitive Road PM2.5 Emissions
Year = **2023**

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Length (mi)	Link Width (m)	Link Width (ft)	Release Height (m)	Average Speed (mph)	Average Vehicles per Day
FUG_NB_DUB	Dubuque Avenue Northbound	NB	1	773.1	0.48	9.7	32	1.3	30	9,325
FUG_SB_DUB	Dubuque Avenue Southbound	SB	1	767.5	0.48	9.7	32	1.3	30	9,325
									Total	18,650

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)	0.01487			
otal Fugitive PM2.5 - Emissions per Vehicle (g/VMT)	0.03373			

Emisson Factors from CT-EMFAC2017

2023 Hourly Traffic Volumes and Fugitive PM2.5 Emissions - FUG_NB_DUB

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	1.12%	104	4.70E-04	9	7.12%	664	2.99E-03	17	7.43%	693	3.12E-03
2	0.41%	39	1.73E-04	10	4.37%	408	1.84E-03	18	8.24%	768	3.46E-03
3	0.37%	35	1.57E-04	11	4.65%	434	1.95E-03	19	5.72%	533	2.40E-03
4	0.17%	16	7.15E-05	12	5.89%	549	2.47E-03	20	4.30%	401	1.81E-03
5	0.46%	43	1.93E-04	13	6.17%	575	2.59E-03	21	3.25%	303	1.36E-03
6	0.85%	79	3.56E-04	14	6.05%	564	2.54E-03	22	3.31%	309	1.39E-03
7	3.73%	348	1.57E-03	15	7.06%	658	2.96E-03	23	2.48%	232	1.04E-03
8	7.77%	724	3.26E-03	16	7.19%	670	3.02E-03	24	1.87%	175	7.86E-04
								Total		9,325	

2023 Hourly Traffic Volumes Per Direction and Fugitive PM2.5 Emissions - FUG_SB_DUB

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.12%	104	4.67E-04	9	7.12%	664	2.97E-03	17	7.43%	693	3.10E-03
2	0.41%	39	1.72E-04	10	4.37%	408	1.82E-03	18	8.24%	768	3.43E-03
3	0.37%	35	1.56E-04	11	4.65%	434	1.94E-03	19	5.72%	533	2.38E-03
4	0.17%	16	7.10E-05	12	5.89%	549	2.45E-03	20	4.30%	401	1.79E-03
5	0.46%	43	1.92E-04	13	6.17%	575	2.57E-03	21	3.25%	303	1.35E-03
6	0.85%	79	3.53E-04	14	6.05%	564	2.52E-03	22	3.31%	309	1.38E-03
7	3.73%	348	1.55E-03	15	7.06%	658	2.94E-03	23	2.48%	232	1.03E-03
8	7.77%	724	3.24E-03	16	7.19%	670	3.00E-03	24	1.87%	175	7.81E-04
								Total		9,325	

800 Dubuque Ave, South San Francisco, CA - Highway 101 Traffic - TACs & PM2.5
AERMOD Risk Modeling Parameters and Maximum Concentrations
at Construction Residential MEI Receptors (1 Location - 1 meter receptor height)

Emission Year	2023
Receptor Information	Construction School MEI receptor
Number of Receptors	1
Receptor Height	1 Meter
Receptor Distances	At Construction School MEI location

Meteorological Conditions

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

Construction School MEI Cancer Risk Maximum Concentrations

Meteorological Data Years	Concentration (µg/m3)*		
	DPM	Exhaust TOG	Evaporative TOG
2013-2017	0.0022	0.1500	0.0789

Construction School MEI PM2.5 Maximum Concentrations

Meteorological Data Years	PM2.5 Concentration (µg/m3)*		
	Total PM2.5	Fugitive PM2.5	Vehicle PM2.5
2013-2017	0.1201	0.1133	0.0068

800 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 - 1 meter receptor height)

Emission Year	2023
Receptor Information	Construction School MEI receptor
Number of Receptors	1
Receptor Height	1 Meter
Receptor Distances	At Construction School MEI location

Meteorological Conditions

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

Construction School MEI Cancer Risk Maximum Concentrations

Meteorological Data Years	Concentration (µg/m3)*		
	DPM	Exhaust TOG	Evaporative TOG
2013-2017	0.0001	0.0147	0.0138

Construction School MEI PM2.5 Maximum Concentrations

Meteorological Data Years	PM2.5 Concentration (µg/m3)*		
	Total PM2.5	Fugitive PM2.5	Vehicle PM2.5
2013-2017	0.0143	0.0137	0.0006

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

Emission Year	2023
Receptor Information	Construction School MEI receptor
Number of Receptors	1
Receptor Height	1 Meter
Receptor Distances	At Construction School MEI location

Meteorological Conditions

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

Construction School MEI Cancer Risk Maximum Concentrations

Meteorological Data Years	Concentration (µg/m3)*		
	DPM	Exhaust TOG	Evaporative TOG
2013-2017	0.0001	0.0157	0.0173

Construction School MEI PM2.5 Maximum Concentrations

Meteorological Data Years	PM2.5 Concentration (µg/m3)*		
	Total PM2.5	Fugitive PM2.5	Vehicle PM2.5
2013-2017	0.0154	0.0147	0.0007

800 Dubuque Ave, South San Francisco, CA - Highway 101 Traffic Cancer Risk
Impacts at Construction School MEI - 1 meter receptor height
30 Year Residential Exposure

Cancer Risk Calculation Method

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

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

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

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

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

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

Values

	Infant/Child			Adult
Age –>	**3rd Trimester**	**0 - 2**	**2 - 16**	**16 - 30**
Parameter				
ASF =	10	10	3	1
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
AT =	70	70	70	70
FAH =	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*	2023	10	0.0022	0.1500	0.0789	0.030	0.012	0.0004	0.04
1	1	0 - 1	2023	10	0.0022	0.1500	0.0789	0.360	0.141	0.0044	0.50
2	1	1 - 2	2024	10	0.0022	0.1500	0.0789	0.360	0.141	0.0044	0.50
3	1	2 - 3	2025	3	0.0022	0.1500	0.0789	0.057	0.022	0.0007	0.08
4	1	3 - 4	2026	3	0.0022	0.1500	0.0789	0.057	0.022	0.0007	0.08
5	1	4 - 5	2027	3	0.0022	0.1500	0.0789	0.057	0.022	0.0007	0.08
6	1	5 - 6	2028	3	0.0022	0.1500	0.0789	0.057	0.022	0.0007	0.08
7	1	6 - 7	2029	3	0.0022	0.1500	0.0789	0.057	0.022	0.0007	0.08
8	1	7 - 8	2030	3	0.0022	0.1500	0.0789	0.057	0.022	0.0007	0.08
9	1	8 - 9	2031	3	0.0022	0.1500	0.0789	0.057	0.022	0.0007	0.08
10	1	9 - 10	2032	3	0.0022	0.1500	0.0789	0.057	0.022	0.0007	0.08
11	1	10 - 11	2033	3	0.0022	0.1500	0.0789	0.057	0.022	0.0007	0.08
12	1	11 - 12	2034	3	0.0022	0.1500	0.0789	0.057	0.022	0.0007	0.08
13	1	12 - 13	2035	3	0.0022	0.1500	0.0789	0.057	0.022	0.0007	0.08
14	1	13 - 14	2036	3	0.0022	0.1500	0.0789	0.057	0.022	0.0007	0.08
15	1	14 - 15	2037	3	0.0022	0.1500	0.0789	0.057	0.022	0.0007	0.08
16	1	15 - 16	2038	3	0.0022	0.1500	0.0789	0.057	0.022	0.0007	0.08
17	1	16-17	2039	1	0.0022	0.1500	0.0789	0.006	0.002	0.0001	0.01
18	1	17-18	2040	1	0.0022	0.1500	0.0789	0.006	0.002	0.0001	0.01
19	1	18-19	2041	1	0.0022	0.1500	0.0789	0.006	0.002	0.0001	0.01
20	1	19-20	2042	1	0.0022	0.1500	0.0789	0.006	0.002	0.0001	0.01
21	1	20-21	2043	1	0.0022	0.1500	0.0789	0.006	0.002	0.0001	0.01
22	1	21-22	2044	1	0.0022	0.1500	0.0789	0.006	0.002	0.0001	0.01
23	1	22-23	2045	1	0.0022	0.1500	0.0789	0.006	0.002	0.0001	0.01
24	1	23-24	2046	1	0.0022	0.1500	0.0789	0.006	0.002	0.0001	0.01
25	1	24-25	2047	1	0.0022	0.1500	0.0789	0.006	0.002	0.0001	0.01
26	1	25-26	2048	1	0.0022	0.1500	0.0789	0.006	0.002	0.0001	0.01
27	1	26-27	2049	1	0.0022	0.1500	0.0789	0.006	0.002	0.0001	0.01
28	1	27-28	2050	1	0.0022	0.1500	0.0789	0.006	0.002	0.0001	0.01
29	1	28-29	2051	1	0.0022	0.1500	0.0789	0.006	0.002	0.0001	0.01
30	1	29-30	2052	1	0.0022	0.1500	0.0789	0.006	0.002	0.0001	0.01
Total Increased Cancer Risk								1.63	0.637	0.020	**2.29**

Maximum Hazard Index	Fugitive PM2.5	Total PM2.5
0.0004	0.11	0.12

* Third trimester of pregnancy

800 Dubuque Ave, South San Francisco, CA - Airport Blvd Traffic Cancer Risk
Impacts at Construction School MEI - 1 meter receptor height
30 Year Residential Exposure

Cancer Risk Calculation Method

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

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

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

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

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

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

Values

	Infant/Child			Adult
Age –>	**3rd Trimester**	**0 - 2**	**2 - 16**	**16 - 30**
Parameter				
ASF =	10	10	3	1
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
AT =	70	70	70	70
FAH =	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*	2023	10	0.0001	0.0147	0.0138	0.001	0.001	0.0001	0.00
1	1	0 - 1	2023	10	0.0001	0.0147	0.0138	0.018	0.014	0.0008	0.03
2	1	1 - 2	2024	10	0.0001	0.0147	0.0138	0.018	0.014	0.0008	0.03
3	1	2 - 3	2025	3	0.0001	0.0147	0.0138	0.003	0.002	0.0001	0.01
4	1	3 - 4	2026	3	0.0001	0.0147	0.0138	0.003	0.002	0.0001	0.01
5	1	4 - 5	2027	3	0.0001	0.0147	0.0138	0.003	0.002	0.0001	0.01
6	1	5 - 6	2028	3	0.0001	0.0147	0.0138	0.003	0.002	0.0001	0.01
7	1	6 - 7	2029	3	0.0001	0.0147	0.0138	0.003	0.002	0.0001	0.01
8	1	7 - 8	2030	3	0.0001	0.0147	0.0138	0.003	0.002	0.0001	0.01
9	1	8 - 9	2031	3	0.0001	0.0147	0.0138	0.003	0.002	0.0001	0.01
10	1	9 - 10	2032	3	0.0001	0.0147	0.0138	0.003	0.002	0.0001	0.01
11	1	10 - 11	2033	3	0.0001	0.0147	0.0138	0.003	0.002	0.0001	0.01
12	1	11 - 12	2034	3	0.0001	0.0147	0.0138	0.003	0.002	0.0001	0.01
13	1	12 - 13	2035	3	0.0001	0.0147	0.0138	0.003	0.002	0.0001	0.01
14	1	13 - 14	2036	3	0.0001	0.0147	0.0138	0.003	0.002	0.0001	0.01
15	1	14 - 15	2037	3	0.0001	0.0147	0.0138	0.003	0.002	0.0001	0.01
16	1	15 - 16	2038	3	0.0001	0.0147	0.0138	0.003	0.002	0.0001	0.01
17	1	16-17	2039	1	0.0001	0.0147	0.0138	0.000	0.000	0.0000	0.00
18	1	17-18	2040	1	0.0001	0.0147	0.0138	0.000	0.000	0.0000	0.00
19	1	18-19	2041	1	0.0001	0.0147	0.0138	0.000	0.000	0.0000	0.00
20	1	19-20	2042	1	0.0001	0.0147	0.0138	0.000	0.000	0.0000	0.00
21	1	20-21	2043	1	0.0001	0.0147	0.0138	0.000	0.000	0.0000	0.00
22	1	21-22	2044	1	0.0001	0.0147	0.0138	0.000	0.000	0.0000	0.00
23	1	22-23	2045	1	0.0001	0.0147	0.0138	0.000	0.000	0.0000	0.00
24	1	23-24	2046	1	0.0001	0.0147	0.0138	0.000	0.000	0.0000	0.00
25	1	24-25	2047	1	0.0001	0.0147	0.0138	0.000	0.000	0.0000	0.00
26	1	25-26	2048	1	0.0001	0.0147	0.0138	0.000	0.000	0.0000	0.00
27	1	26-27	2049	1	0.0001	0.0147	0.0138	0.000	0.000	0.0000	0.00
28	1	27-28	2050	1	0.0001	0.0147	0.0138	0.000	0.000	0.0000	0.00
29	1	28-29	2051	1	0.0001	0.0147	0.0138	0.000	0.000	0.0000	0.00
30	1	29-30	2052	1	0.0001	0.0147	0.0138	0.000	0.000	0.0000	0.00
Total Increased Cancer Risk								0.08	0.062	0.003	**0.15**

Maximum Hazard Index	Fugitive PM2.5	Total PM2.5
0.0000	0.01	0.01

* Third trimester of pregnancy

800 Dubuque Ave, South San Francisco, CA - Dubuque Avenue Traffic Cancer Risk
Impacts at Construction School MEI - 1 meter receptor height
30 Year Residential Exposure

Cancer Risk Calculation Method

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

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

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

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

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

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

Values

	Infant/Child			Adult
Age –>	**3rd Trimester**	**0 - 2**	**2 - 16**	**16 - 30**
Parameter				
ASF =	10	10	3	1
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
AT =	70	70	70	70
FAH =	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*	2025	10	0.0001	0.0157	0.0173	0.002	0.001	0.0001	0.00
1	1	0 - 1	2025	10	0.0001	0.0157	0.0173	0.020	0.015	0.0010	0.04
2	1	1 - 2	2026	10	0.0001	0.0157	0.0173	0.020	0.015	0.0010	0.04
3	1	2 - 3	2027	3	0.0001	0.0157	0.0173	0.003	0.002	0.0002	0.01
4	1	3 - 4	2028	3	0.0001	0.0157	0.0173	0.003	0.002	0.0002	0.01
5	1	4 - 5	2029	3	0.0001	0.0157	0.0173	0.003	0.002	0.0002	0.01
6	1	5 - 6	2030	3	0.0001	0.0157	0.0173	0.003	0.002	0.0002	0.01
7	1	6 - 7	2031	3	0.0001	0.0157	0.0173	0.003	0.002	0.0002	0.01
8	1	7 - 8	2032	3	0.0001	0.0157	0.0173	0.003	0.002	0.0002	0.01
9	1	8 - 9	2033	3	0.0001	0.0157	0.0173	0.003	0.002	0.0002	0.01
10	1	9 - 10	2034	3	0.0001	0.0157	0.0173	0.003	0.002	0.0002	0.01
11	1	10 - 11	2035	3	0.0001	0.0157	0.0173	0.003	0.002	0.0002	0.01
12	1	11 - 12	2036	3	0.0001	0.0157	0.0173	0.003	0.002	0.0002	0.01
13	1	12 - 13	2037	3	0.0001	0.0157	0.0173	0.003	0.002	0.0002	0.01
14	1	13 - 14	2038	3	0.0001	0.0157	0.0173	0.003	0.002	0.0002	0.01
15	1	14 - 15	2039	3	0.0001	0.0157	0.0173	0.003	0.002	0.0002	0.01
16	1	15 - 16	2040	3	0.0001	0.0157	0.0173	0.003	0.002	0.0002	0.01
17	1	16-17	2041	1	0.0001	0.0157	0.0173	0.000	0.000	0.0000	0.00
18	1	17-18	2042	1	0.0001	0.0157	0.0173	0.000	0.000	0.0000	0.00
19	1	18-19	2043	1	0.0001	0.0157	0.0173	0.000	0.000	0.0000	0.00
20	1	19-20	2044	1	0.0001	0.0157	0.0173	0.000	0.000	0.0000	0.00
21	1	20-21	2045	1	0.0001	0.0157	0.0173	0.000	0.000	0.0000	0.00
22	1	21-22	2046	1	0.0001	0.0157	0.0173	0.000	0.000	0.0000	0.00
23	1	22-23	2047	1	0.0001	0.0157	0.0173	0.000	0.000	0.0000	0.00
24	1	23-24	2048	1	0.0001	0.0157	0.0173	0.000	0.000	0.0000	0.00
25	1	24-25	2049	1	0.0001	0.0157	0.0173	0.000	0.000	0.0000	0.00
26	1	25-26	2050	1	0.0001	0.0157	0.0173	0.000	0.000	0.0000	0.00
27	1	26-27	2051	1	0.0001	0.0157	0.0173	0.000	0.000	0.0000	0.00
28	1	27-28	2052	1	0.0001	0.0157	0.0173	0.000	0.000	0.0000	0.00
29	1	28-29	2053	1	0.0001	0.0157	0.0173	0.000	0.000	0.0000	0.00
30	1	29-30	2054	1	0.0001	0.0157	0.0173	0.000	0.000	0.0000	0.00
Total Increased Cancer Risk								0.09	0.067	0.004	**0.16**

* Third trimester of pregnancy

Maximum Hazard Index	Maximum Fugitive PM2.5	Total PM2.5
0.0000	0.01	0.02

800 Dubuque Ave, South San Francisco, CA - Off-Site Residential
Project Trips - Dubuque Ave
DPM Modeling - Roadway Links, Traffic Volumes, and DPM Emissions
Year = **2028**

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Length (mi)	Link Width (m)	Link Width (ft)	Release Height (m)	Average Speed (mph)	Average Vehicles per Day
DPM_NB_DUB	Dubuque Avenue Northbound	NB	1	773.1	0.48	9.7	31.7	3.4	30	2,818
DPM_SB_DUB	Dubuque Avenue Southbound	SB	1	767.5	0.48	9.7	31.7	3.4	30	2,818
									Total	5,635

Emission Factors

Speed Category	1	2	3	4
Travel Speed (mph)	30			
Emissions per Vehicle (g/VMT)	0.00022			

Emisson Factors from CT-EMFAC2017

2028 Hourly Traffic Volumes and DPM Emissions - DPM_NB_DUB

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	4.02%	113	3.25E-06	9	6.62%	187	5.35E-06	17	6.46%	182	5.22E-06
2	3.38%	95	2.73E-06	10	8.04%	226	6.50E-06	18	3.89%	110	3.14E-06
3	2.57%	72	2.08E-06	11	6.11%	172	4.94E-06	19	2.28%	64	1.85E-06
4	0.96%	27	7.80E-07	12	7.59%	214	6.13E-06	20	0.96%	27	7.80E-07
5	0.96%	27	7.80E-07	13	7.11%	200	5.74E-06	21	2.89%	82	2.34E-06
6	2.25%	63	1.82E-06	14	6.62%	187	5.35E-06	22	4.82%	136	3.90E-06
7	4.50%	127	3.64E-06	15	6.14%	173	4.96E-06	23	3.54%	100	2.86E-06
8	3.25%	92	2.63E-06	16	4.21%	119	3.40E-06	24	0.80%	23	6.50E-07
								Total		2,818	

2028 Hourly Traffic Volumes Per Direction and DPM Emissions - DPM_SB_DUB

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	4.02%	113	3.23E-06	9	6.62%	187	5.32E-06	17	6.46%	182	5.19E-06
2	3.38%	95	2.71E-06	10	8.04%	226	6.45E-06	18	3.89%	110	3.12E-06
3	2.57%	72	2.06E-06	11	6.11%	172	4.90E-06	19	2.28%	64	1.83E-06
4	0.96%	27	7.74E-07	12	7.59%	214	6.09E-06	20	0.96%	27	7.74E-07
5	0.96%	27	7.74E-07	13	7.11%	200	5.70E-06	21	2.89%	82	2.32E-06
6	2.25%	63	1.81E-06	14	6.62%	187	5.32E-06	22	4.82%	136	3.87E-06
7	4.50%	127	3.61E-06	15	6.14%	173	4.93E-06	23	3.54%	100	2.84E-06
8	3.25%	92	2.61E-06	16	4.21%	119	3.38E-06	24	0.80%	23	6.45E-07
								Total		2,818	

800 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 = 2028

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Length (mi)	Link Width (m)	Link Width (ft)	Release Height (m)	Average Speed (mph)	Average Vehicles per Day
PM2.5_NB_DUB	Dubuque Avenue Northbound	NB	1	773.1	0.48	9.7	32	1.3	30	2,818
PM2.5_SB_DUB	Dubuque Avenue Southbound	SB	1	767.5	0.48	9.7	32	1.3	30	2,818
									Total	5,635

Emission Factors - PM2.5

Speed Category	1	2	3	4
Travel Speed (mph)	30			
Emissions per Vehicle (g/VMT)	0.001299			

Emisson Factors from CT-EMFAC2017

2028 Hourly Traffic Volumes and PM2.5 Emissions - PM2.5_NB_DUB

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	1.12%	31	5.46E-06	9	7.12%	201	3.48E-05	17	7.43%	209	3.63E-05
2	0.41%	12	2.02E-06	10	4.37%	123	2.14E-05	18	8.23%	232	4.02E-05
3	0.37%	10	1.82E-06	11	4.65%	131	2.27E-05	19	5.74%	162	2.80E-05
4	0.18%	5	8.70E-07	12	5.89%	166	2.88E-05	20	4.31%	121	2.10E-05
5	0.46%	13	2.24E-06	13	6.16%	174	3.01E-05	21	3.25%	92	1.59E-05
6	0.85%	24	4.13E-06	14	6.05%	170	2.95E-05	22	3.31%	93	1.62E-05
7	3.73%	105	1.82E-05	15	7.06%	199	3.45E-05	23	2.48%	70	1.21E-05
8	7.76%	219	3.79E-05	16	7.19%	202	3.51E-05	24	1.88%	53	9.16E-06
								Total		2,818	

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

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.12%	31	5.42E-06	9	7.12%	201	3.45E-05	17	7.43%	209	3.60E-05
2	0.41%	12	2.00E-06	10	4.37%	123	2.12E-05	18	8.23%	232	3.99E-05
3	0.37%	10	1.81E-06	11	4.65%	131	2.25E-05	19	5.74%	162	2.78E-05
4	0.18%	5	8.64E-07	12	5.89%	166	2.86E-05	20	4.31%	121	2.09E-05
5	0.46%	13	2.22E-06	13	6.16%	174	2.99E-05	21	3.25%	92	1.58E-05
6	0.85%	24	4.10E-06	14	6.05%	170	2.93E-05	22	3.31%	93	1.61E-05
7	3.73%	105	1.81E-05	15	7.06%	199	3.42E-05	23	2.48%	70	1.20E-05
8	7.76%	219	3.76E-05	16	7.19%	202	3.48E-05	24	1.88%	53	9.09E-06
								Total		2,818	

800 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 = 2028

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Length (mi)	Link Width (m)	Link Width (ft)	Release Height (m)	Average Speed (mph)	Average Vehicles per Day
TEXH_NB_DUB	Dubuque Avenue Northbound	NB	1	773.1	0.48	9.7	32	1.3	30	2,818
TEXH_SB_DUB	Dubuque Avenue Southbound	SB	1	767.5	0.48	9.7	32	1.3	30	2,818
									Total	5,635

Emission Factors - TOG Exhaust

Speed Category	1	2	3	4
Travel Speed (mph)	30			
Emissions per Vehicle (g/VMT)	0.03916			

Emisson Factors from CT-EMFAC2017

2028 Hourly Traffic Volumes and TOG Exhaust Emissions - TEXH_NB_DUB

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	1.12%	31	1.65E-04	9	7.12%	201	1.05E-03	17	7.43%	209	1.09E-03
2	0.41%	12	6.08E-05	10	4.37%	123	6.44E-04	18	8.23%	232	1.21E-03
3	0.37%	10	5.49E-05	11	4.65%	131	6.84E-04	19	5.74%	162	8.44E-04
4	0.18%	5	2.62E-05	12	5.89%	166	8.68E-04	20	4.31%	121	6.34E-04
5	0.46%	13	6.74E-05	13	6.16%	174	9.07E-04	21	3.25%	92	4.79E-04
6	0.85%	24	1.25E-04	14	6.05%	170	8.90E-04	22	3.31%	93	4.88E-04
7	3.73%	105	5.49E-04	15	7.06%	199	1.04E-03	23	2.48%	70	3.66E-04
8	7.76%	219	1.14E-03	16	7.19%	202	1.06E-03	24	1.88%	53	2.76E-04
								Total		2,818	

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

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.12%	31	1.63E-04	9	7.12%	201	1.04E-03	17	7.43%	209	1.09E-03
2	0.41%	12	6.04E-05	10	4.37%	123	6.39E-04	18	8.23%	232	1.20E-03
3	0.37%	10	5.45E-05	11	4.65%	131	6.80E-04	19	5.74%	162	8.38E-04
4	0.18%	5	2.60E-05	12	5.89%	166	8.61E-04	20	4.31%	121	6.29E-04
5	0.46%	13	6.69E-05	13	6.16%	174	9.01E-04	21	3.25%	92	4.75E-04
6	0.85%	24	1.24E-04	14	6.05%	170	8.84E-04	22	3.31%	93	4.84E-04
7	3.73%	105	5.45E-04	15	7.06%	199	1.03E-03	23	2.48%	70	3.63E-04
8	7.76%	219	1.13E-03	16	7.19%	202	1.05E-03	24	1.88%	53	2.74E-04
								Total		2,818	

800 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 = 2028

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Length (mi)	Link Width (m)	Link Width (ft)	Release Height (m)	Average Speed (mph)	Average Vehicles per Day
TEVAP_NB_DUB	Dubuque Avenue Northbound	NB	1	773.1	0.48	9.7	32	1.3	30	2,818
TEVAP_SB_DUB	Dubuque Avenue Southbound	SB	1	767.5	0.48	9.7	32	1.3	30	2,818
									Total	5,635

Emission Factors - PM2.5 - Evaporative TOG

Speed Category	1	2	3	4
Travel Speed (mph)	30			
Emissions per Vehicle per Hour (g/hour)	1.01325			
Emissions per Vehicle per Mile (g/VMT)	0.03377			

Emisson Factors from CT-EMFAC2017

2028 Hourly Traffic Volumes and TOG Evaporative Emissions - TEVAP_NB_DUB

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	1.12%	31	1.42E-04	9	7.12%	201	9.04E-04	17	7.43%	209	9.44E-04
2	0.41%	12	5.25E-05	10	4.37%	123	5.55E-04	18	8.23%	232	1.05E-03
3	0.37%	10	4.73E-05	11	4.65%	131	5.90E-04	19	5.74%	162	7.28E-04
4	0.18%	5	2.26E-05	12	5.89%	166	7.48E-04	20	4.31%	121	5.47E-04
5	0.46%	13	5.81E-05	13	6.16%	174	7.83E-04	21	3.25%	92	4.13E-04
6	0.85%	24	1.07E-04	14	6.05%	170	7.68E-04	22	3.31%	93	4.21E-04
7	3.73%	105	4.74E-04	15	7.06%	199	8.96E-04	23	2.48%	70	3.15E-04
8	7.76%	219	9.86E-04	16	7.19%	202	9.12E-04	24	1.88%	53	2.38E-04
								Total		2,818	

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

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.12%	31	1.41E-04	9	7.12%	201	8.98E-04	17	7.43%	209	9.37E-04
2	0.41%	12	5.21E-05	10	4.37%	123	5.51E-04	18	8.23%	232	1.04E-03
3	0.37%	10	4.70E-05	11	4.65%	131	5.86E-04	19	5.74%	162	7.23E-04
4	0.18%	5	2.25E-05	12	5.89%	166	7.43E-04	20	4.31%	121	5.43E-04
5	0.46%	13	5.77E-05	13	6.16%	174	7.77E-04	21	3.25%	92	4.10E-04
6	0.85%	24	1.07E-04	14	6.05%	170	7.62E-04	22	3.31%	93	4.18E-04
7	3.73%	105	4.70E-04	15	7.06%	199	8.89E-04	23	2.48%	70	3.13E-04
8	7.76%	219	9.79E-04	16	7.19%	202	9.06E-04	24	1.88%	53	2.36E-04
								Total		2,818	

800 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 = **2028**

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Length (mi)	Link Width (m)	Link Width (ft)	Release Height (m)	Average Speed (mph)	Average Vehicles per Day
FUG_NB_DUB	Dubuque Avenue Northbound	NB	1	773.1	0.48	9.7	32	1.3	30	2,818
FUG_SB_DUB	Dubuque Avenue Southbound	SB	1	767.5	0.48	9.7	32	1.3	30	2,818
									Total	5,635

Emission Factors - Fugitive PM2.5

Speed Category	1	2	3	4
Travel Speed (mph)	30			
Tire Wear - Emissions per Vehicle (g/VMT)	0.00204			
Brake Wear - Emissions per Vehicle (g/VMT)	0.01682			
Road Dust - Emissions per Vehicle (g/VMT)	0.01506			
otal Fugitive PM2.5 - Emissions per Vehicle (g/VMT)	0.03393			

Emisson Factors from CT-EMFAC2017

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

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	1.12%	31	1.43E-04	9	7.12%	201	9.08E-04	17	7.43%	209	9.48E-04
2	0.41%	12	5.27E-05	10	4.37%	123	5.58E-04	18	8.23%	232	1.05E-03
3	0.37%	10	4.75E-05	11	4.65%	131	5.93E-04	19	5.74%	162	7.32E-04
4	0.18%	5	2.27E-05	12	5.89%	166	7.52E-04	20	4.31%	121	5.49E-04
5	0.46%	13	5.84E-05	13	6.16%	174	7.86E-04	21	3.25%	92	4.15E-04
6	0.85%	24	1.08E-04	14	6.05%	170	7.71E-04	22	3.31%	93	4.23E-04
7	3.73%	105	4.76E-04	15	7.06%	199	9.00E-04	23	2.48%	70	3.17E-04
8	7.76%	219	9.90E-04	16	7.19%	202	9.16E-04	24	1.88%	53	2.39E-04
								Total		2,818	

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

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.12%	31	1.42E-04	9	7.12%	201	9.02E-04	17	7.43%	209	9.41E-04
2	0.41%	12	5.23E-05	10	4.37%	123	5.54E-04	18	8.23%	232	1.04E-03
3	0.37%	10	4.72E-05	11	4.65%	131	5.89E-04	19	5.74%	162	7.26E-04
4	0.18%	5	2.26E-05	12	5.89%	166	7.46E-04	20	4.31%	121	5.45E-04
5	0.46%	13	5.80E-05	13	6.16%	174	7.81E-04	21	3.25%	92	4.12E-04
6	0.85%	24	1.07E-04	14	6.05%	170	7.66E-04	22	3.31%	93	4.20E-04
7	3.73%	105	4.72E-04	15	7.06%	199	8.93E-04	23	2.48%	70	3.14E-04
8	7.76%	219	9.83E-04	16	7.19%	202	9.10E-04	24	1.88%	53	2.37E-04
								Total		2,818	

800 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 - 1 meter receptor height)

Emission Year	2023
Receptor Information	Construction School MEI receptor
Number of Receptors	1
Receptor Height	1.5 Meters
Receptor Distances	At School MEI location

Meteorological Conditions

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

Construction School MEI Cancer Risk Maximum Concentrations

Meteorological Data Years	Concentration (µg/m3)*		
	DPM	Exhaust TOG	Evaporative TOG
2013-2017	0.0000	0.0051	0.0044

Construction School MEI PM2.5 Maximum Concentrations

Meteorological Data Years	PM2.5 Concentration (µg/m3)*		
	Total PM2.5	Fugitive PM2.5	Vehicle PM2.5
2013-2017	0.0046	0.0045	0.0002

800 Dubuque Avenue, South San Francisco, CA - Dubuque Avenue Traffic Cancer Risk - Project Trips
Impacts at Construction School MEI - 1 meter receptor height
30 Year Residential Exposure

Cancer Risk Calculation Method

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

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

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

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

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

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

Values

	Infant/Child			Adult
Age -->	3rd Trimester	0 - 2	2 - 16	16 - 30
Parameter				
ASF =	10	10	3	1
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
AT =	70	70	70	70
FAH =	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	0.0051	0.0044	0.000	0.000	0.0000	0.00
1	1	0 - 1	2025	10	0.0000	0.0051	0.0044	0.005	0.005	0.0002	0.01
2	1	1 - 2	2026	10	0.0000	0.0051	0.0044	0.005	0.005	0.0002	0.01
3	1	2 - 3	2027	3	0.0000	0.0051	0.0044	0.001	0.001	0.0000	0.00
4	1	3 - 4	2028	3	0.0000	0.0051	0.0044	0.001	0.001	0.0000	0.00
5	1	4 - 5	2029	3	0.0000	0.0051	0.0044	0.001	0.001	0.0000	0.00
6	1	5 - 6	2030	3	0.0000	0.0051	0.0044	0.001	0.001	0.0000	0.00
7	1	6 - 7	2031	3	0.0000	0.0051	0.0044	0.001	0.001	0.0000	0.00
8	1	7 - 8	2032	3	0.0000	0.0051	0.0044	0.001	0.001	0.0000	0.00
9	1	8 - 9	2033	3	0.0000	0.0051	0.0044	0.001	0.001	0.0000	0.00
10	1	9 - 10	2034	3	0.0000	0.0051	0.0044	0.001	0.001	0.0000	0.00
11	1	10 - 11	2035	3	0.0000	0.0051	0.0044	0.001	0.001	0.0000	0.00
12	1	11 - 12	2036	3	0.0000	0.0051	0.0044	0.001	0.001	0.0000	0.00
13	1	12 - 13	2037	3	0.0000	0.0051	0.0044	0.001	0.001	0.0000	0.00
14	1	13 - 14	2038	3	0.0000	0.0051	0.0044	0.001	0.001	0.0000	0.00
15	1	14 - 15	2039	3	0.0000	0.0051	0.0044	0.001	0.001	0.0000	0.00
16	1	15 - 16	2040	3	0.0000	0.0051	0.0044	0.001	0.001	0.0000	0.00
17	1	16-17	2041	1	0.0000	0.0051	0.0044	0.000	0.000	0.0000	0.00
18	1	17-18	2042	1	0.0000	0.0051	0.0044	0.000	0.000	0.0000	0.00
19	1	18-19	2043	1	0.0000	0.0051	0.0044	0.000	0.000	0.0000	0.00
20	1	19-20	2044	1	0.0000	0.0051	0.0044	0.000	0.000	0.0000	0.00
21	1	20-21	2045	1	0.0000	0.0051	0.0044	0.000	0.000	0.0000	0.00
22	1	21-22	2046	1	0.0000	0.0051	0.0044	0.000	0.000	0.0000	0.00
23	1	22-23	2047	1	0.0000	0.0051	0.0044	0.000	0.000	0.0000	0.00
24	1	23-24	2048	1	0.0000	0.0051	0.0044	0.000	0.000	0.0000	0.00
25	1	24-25	2049	1	0.0000	0.0051	0.0044	0.000	0.000	0.0000	0.00
26	1	25-26	2050	1	0.0000	0.0051	0.0044	0.000	0.000	0.0000	0.00
27	1	26-27	2051	1	0.0000	0.0051	0.0044	0.000	0.000	0.0000	0.00
28	1	27-28	2052	1	0.0000	0.0051	0.0044	0.000	0.000	0.0000	0.00
29	1	28-29	2053	1	0.0000	0.0051	0.0044	0.000	0.000	0.0000	0.00
30	1	29-30	2054	1	0.0000	0.0051	0.0044	0.000	0.000	0.0000	0.00
Total Increased Cancer Risk								0.02	0.022	0.001	**0.05**

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

* Third trimester of pregnancy

Rail Line Emissions

800 Dubuque Ave - South San Francisco
DPM Modeling - Rail Line Information and DPM Emission Rates
Caltrain Electrification and Diesel-Powered Freight

Year	Description	Modeled No. Lines	Link Width (ft)	Link Width (m)	Link Length (ft)	Link Length (miles)	Link Length (m)	Release Height (m)	No. Trains per Day	Train Travel Speed (mph)	DPM Emission Rates: Average Daily Emission Rate (g/mi/day)	DPM Emission Rates: Average Daily Emission Rate (g/day)	DPM Emission Rates: Link Emission Rate (g/s)	DPM Emission Rates: Link Emission Rate (lb/hr)
2023-2024	Caltrain	1	15	4.6	2,422	0.46	738	5.0	83	40	186.3	85.5	9.89E-04	7.85E-03
	Freight Trains	1	15	4.6	2,422	0.46	738	5.0	4	40	16.7	7.7	8.88E-05	7.05E-04
	Total	-	-	-	**2,935**	**0.56**	**894**	-	**87**	-	**203.0**	**93.1**	**1.08E-03**	**8.56E-03**
2025-2027	Caltrain	1	15	4.6	2,422	0.46	738	5.0	18	40	33.2	15.2	1.76E-04	1.40E-03
	Freight Trains	1	15	4.6	2,422	0.46	738	5.0	4	40	13.9	6.4	7.40E-05	5.87E-04
	Total	-	-	-	**2,935**	**0.56**	**894**	-	**22**	-	**47.2**	**21.6**	**2.50E-04**	**1.99E-03**

Notes: Emission based on Emission Factors for Locomotives, USEPA 2009 (EPA-420-F-09-025)
Average emissions calculated for periods 2023-2024 and 2025-2027.
Fuel correction factors from Offroad Modeling Change Technical memo, Changes to the Locomotive Inventory, CARB July 2006.
PM2.5 calculated as 92% of PM emissions (CARB CEIDERS PM2.5 fractions)
Passenger trains assumed to operate for 24 hours per day
Freight trains assumed to operate for 24 hours per day

Caltrain Passenger Trains	***2023-2024 (Existing) Diesel Trains***	***2025-2027 (with Electrification) Diesel Trains***
Passenger trains - weekday =	104	24
Passenger trains - weekend =	32	4
Passenger trains - Sat only =	0	0
Total Trains =	136	28
Annual average daily trains =	83	18
Locomotive horsepower =	3285	3467
Locomotives per train =	1	1
Engine load =	0.5	0.5
Freight		
Freight trains per day =	4	7 days/week
Locomotive horsepower =	2300	
Locomotives per train =	2	
Total horsepower =	4600	
Locomotive engine load =	0.5	

DPM Locomotive Emission Factors (g/hp-hr)

Train Type	2023-2024	2025-2027
Passenger	0.077	0.059
Freight	0.087	0.072

2025+ emissions are average for 2025-2054.

PM2.5 to PM ratio = 1

	CARB Fuel Adj Factor 2010	2011+
Passenger	0.717	0.709
Freight	0.851	0.840

Rail Line Impacts at Project Construction MEI

800 Dubuque Ave, South San Francisco, CA - Rail Impacts at Construction MEI Receptor
Maximum DPM Cancer Risk and PM2.5 Calculations For Rail Operation at MEI
Impacts at Gateway Child Development Center YMCA - 1 meter - Infant Exposure

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

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

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

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

Values

	Infant	Child
Age -->	**0 - <2**	**2 - <16**
Parameter		
ASF =	10	3
DPM CPF =	1.10E+00	1.10E+00
8-Hr BR* =	1200	520
SCHR =	9	9
SHR =	24	24
SDay =	7	7
A =	1	1
EF =	250	250
AT =	70	70
SCAF =	1.13	1.13

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

Construction Cancer Risk by Year - Maximum Child Development Center Receptor

Exposure Year	Exposure Duration (years)	Age	Child - Exposure Information: DPM Conc (ug/m3) Year	DPM Conc (ug/m3) Annual	Age* Sensitivity Factor	Child Cancer Risk (per million)	Maximum Hazard Index	Maximum Total PM2.5
1	1	0 - 1	2023	0.0148	10	2.15	0.0030	0.015
2	1	1 - 2	2024	0.0148	10	2.15	0.0030	0.015
3	1	2 - 3	2025	0.0034	3	0.06	0.0007	0.003
4	1	3 - 4	2026	0.0034	3	0.06	0.0007	0.003
5	1	4 - 5	2027	0.0034	3	0.06	0.0007	0.003
Total Increased Cancer Risk						**4.50**		

* Children assumed to be 3 months of age with 5 years of exposure to construction emissions

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	**6/28/2022**
Contact Name	Zachary Palm
Affiliation	Illingworth & Rodkin, Inc.
Phone	707-794-0400 x117
Email	zpalm@illingworthrodkin.com
Project Name	800 Dubuque
Address	800 Dubuque Ave
City	South San Francisco
County	San Mateo
Type (residential, commercial, mixed use, industrial, etc.)	Office/R&D
Project Size (# of units or building square feet)	900ksqft
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] address search box to confirm the source's address location. Please report any mapping errors to the District.

5. List the stationary source information in Table B [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 MEIs: Distance Adjustment Multiplier	Construction MEIs: Adjusted Cancer Risk Estimate	Construction MEIs: Adjusted Hazard Risk	Construction MEIs: Adjusted PM2.5
200	16024	Genentech, Inc	611 Gateway Boulevard	1.95	0.00	0.00		Generator		2020 Dataset	0.41	0.80	0.002	0.00
150	14010	Boston Properties	601 Gateway Boulevard	6.07	0.00	0.01		Generator		2020 Dataset	0.58	3.52	0.001	0.00
950	20236	Biotech Gateway - HCP c/o CBRE	2 Corporate Drive	1.66	0.00	0.00		Generator		2020 Dataset	0.04	0.07	0.000	0.00
850	19179	MacroGenics West,Inc	One Corporate Drive	39.61	0.02	0.05		Generator		2020 Dataset	0.06	2.38	0.001	0.00
530	17584	Alexandria Real Estate Equities Inc	681 GATEWAY BLVD	17.49	0.01	0.02		Generator		2020 Dataset	0.10	1.75	0.001	0.00
1000+	18401	Lowe's HIW Inc	720 Dubuque Avenue	9.47	0.00	0.01		Generator		2020 Dataset	0.04	0.38	0.000	0.00
1000+	23311	Health Plan of San Mateo	801 Gateway Boulevard	1.49	0.00	0.00		Generator		2020 Dataset	0.04	0.06	0.000	0.00
320	24794	611 Gateway Center LP	611 Gateway Boulevard	2.44	0.01	0.43		No Data		2020 Dataset	0.51	1.23	0.003	0.22
630	24795	601 & 651 Gateway Center LP	651 Gateway Boulevard	20.25	0.03	0.33		No Data		2020 Dataset	0.27	5.49	0.009	0.09
1000+	111170_1	Airport Boulevard Shell	899 Airport Blvd	19.36	0.09	0.00		Gas Dispensing Facility		2020 Dataset	0.02	0.29	0.001	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 reflect the number of years perc use will continue after the project's residents or other sensitive receptors (such as students, patients, etc) take occupancy.
    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

Screening Report

Area of Interest (AOI) Information

Area : 5,703,334.12 ft²

Jun 28 2022 15:02:10 Pacific Daylight Time



Summary

Name	Count	Area(ft²)	Length(ft)
Permitted Stationary Sources	11	N/A	N/A

Permitted Stationary Sources

#	FacID	FacName	Address	City	Street
1	16024	Genentech, Inc	611 Gateway Boulevard	South San Francisco	CA
2	14010	Boston Properties	601 Gateway Boulevard	South San Francisco	CA
3	20236	Biotech Gateway - HCP c/o CBRE	2 Corporate Drive	South San Francisco	CA
4	19179	MacroGenics West,Inc	One Corporate Drive	South San Francisco	CA
5	17584	Alexandria Real Estate Equities Inc	681 GATEWAY BLVD	S SAN FRAN	CA
6	18401	Lowe's HIW Inc	720 Dubuque Avenue	South San Francisco	CA
7	23311	Health Plan of San Mateo	801 Gateway Boulevard	South San Francisco	CA
8	24377	Mirvie Inc	820 Dubuque Avenue	South San Francisco	CA
9	24794	611 Gateway Center LP	611 Gateway Boulevard	South San Francisco	CA
10	24795	601 & 651 Gateway Center LP	651 Gateway Boulevard	South San Francisco	CA
11	111170_1	Airport Boulevard Shell	899 Airport Blvd	South San Francisco	CA

#	Zip	County	Latitude	Longitude	Details
1	94,080.00	San Mateo	37.66	-122.40	Generator
2	94,080.00	San Mateo	37.66	-122.40	Generator
3	94,080.00	San Mateo	37.66	-122.40	Generator
4	94,080.00	San Mateo	37.66	-122.40	Generator
5	94,080.00	San Mateo	37.66	-122.40	Generator
6	94,080.00	San Mateo	37.66	-122.40	Generator
7	94,080.00	San Mateo	37.66	-122.40	Generator
8	94,080.00	San Mateo	37.66	-122.40	Generator
9	94,080.00	San Mateo	37.66	-122.40	*No Data*
10	94,080.00	San Mateo	37.66	-122.40	*No Data*
11	94,080.00	San Mateo	37.66	-122.40	Gas Dispensing Facility

#	NAICS	Sector	Sub_Sector	Industry	ChronicHI
1	325,412.00	Manufacturing	Chemical Manufacturing	Pharmaceutical Preparation Manufacturing	0.0044067
2	531,390.00	Real Estate and Rental and Leasing	Real Estate	Other Activities Related to Real Estate	0.0016297
3	325,412.00	Manufacturing	Chemical Manufacturing	Pharmaceutical Preparation Manufacturing	0.0004469
4	325,412.00	Manufacturing	Chemical Manufacturing	Pharmaceutical Preparation Manufacturing	0.0205820
5	531,312.00	Real Estate and Rental and Leasing	Real Estate	Nonresidential Property Managers	0.0046996
6	442,299.00	Retail Trade	Furniture and Home Furnishings Stores	All Other Home Furnishings Stores	0.0025444
7	524,114.00	Finance and Insurance	Insurance Carriers and Related Activities	Direct Health and Medical Insurance Carriers	0.0028452
8	541,618.00	Professional, Scientific, and Technical Services	Professional, Scientific, and Technical Services	Other Management Consulting Services	0.0006554
9	221,112.00	Utilities	Utilities	Fossil Fuel Electric Power Generation	0.0059185
10	531,390.00	Real Estate and Rental and Leasing	Real Estate	Other Activities Related to Real Estate	0.0315493
11	447,110.00	Retail Trade	Gasoline Stations	Gasoline Stations with Convenience Stores	0.0927166

#	PM2_5	Cancer Risk {expression/expr0}	Chronic Hazard Index {expression/expr1}	PM2.5 {expression/expr2}	Count
1	0.0023710	1.947	0.004	0.002	1
2	0.0076350	6.065	0.002	0.008	1
3	0.0020939	1.663	0	0.002	1
4	0.0516652	39.612	0.021	0.052	1
5	0.0220176	17.489	0.005	0.022	1
6	0.0119204	9.469	0.003	0.012	1
7	0.0018967	1.494	0.003	0.002	1
8	0.0005410	0.424	0.001	0.001	1
9	0.4287480	2.437	0.006	0.429	1
10	0.3313761	20.246	0.032	0.331	1
11	0.0000000	19.359	0.093	*No Data*	1

NOTE: A larger buffer than 1000 feet may be warranted depending on proximity to significant sources.

CULTURAL RECORDS SEARCH, NATIVE AMERICAN HERITAGE COMMISSION RESPONSE

ATTACHMENT B

to the

800 Dubuque Avenue Project Initial Study / Mitigated Negative Declaration

CALIFORNIA HISTORICAL RESOURCES INFORMATION SYSTEM

ALAMEDA
COLUSA
CONTRA COSTA
DEL NORTE
HUMBOLDT
LAKE
MARIN
MENDOCINO
MONTEREY
NAPA
SAN BENITO
SAN FRANCISCO
SAN MATEO
SANTA CLATA
SANTA CRUZ
SOLANO
SONOMA
YOLO

Northwest Information Center
Sonoma State University
1400 Valley House Drive, Suite 210
Rohnert Park, California 94928-3609
Tel: 707.588.8455
nwic@sonoma.edu
http://nwic.sonoma.edu

July 26, 2022 NWIC File No.: 22-0094

Jenna Sunderlin
Lamphier-Gregory, Inc.
4100 Redwood Road, STE 20A - #601
Oakland, CA 94619

Re: Record search results for the proposed 800 Dubuque Avenue Project in the City of South San Francisco

Dear Jenna Sunderlin:

Per your request received by our office on the 18th of July, 2022, a rapid response records search was conducted for the above referenced project by reviewing pertinent Northwest Information Center (NWIC) base maps that reference cultural resources records and reports, historic-period maps, and literature for Alameda County. Please note that use of the term cultural resources includes both archaeological resources and historical buildings and/or structures.

The project proposes to demolish all existing improvements and construct approximately 900,000 square feet of office/R&D space in 3 new buildings, including accessory event center, food/beverage, and fitness center uses. The project will involve excavation for subsurface parking across the majority of the site extending to depths of approximately 48 feet below ground surface.

Review of the information at our office indicates that there has been five cultural resource studies that cover up to approximately 100% of the 800 Dubuque Avenue project area. One study by Cartier (1984: S-6529) covered up to 100% of the project area with field survey and testing. Jurich et al (2011: S-48738) included 100% of the project area within its Research Area only, and the other three studies were larger adjacent studies that included up to 10% of the current project area; Hatoff et al 1995: S-17993, Carrico et al 2000: S-26045, and Nelson et al 2002: S-29657. See enclosed Report List.

This 800 Dubuque Avenue project area contains no recorded archaeological resources. The State Office of Historic Preservation Built Environment Resources Directory (OHP BERD), which includes listings of the California Register of Historical Resources, California State Historical Landmarks, California State Points of Historical Interest, and the National Register of Historic Places, lists no recorded buildings or structures within or adjacent to the proposed 800

Dubuque Avenue project area. In addition to these inventories, the NWIC base maps show no recorded buildings or structures within the proposed 800 Dubuque Avenue project area.

At the time of Euroamerican contact, the Native Americans that lived in the area were speakers of the Ramaytush language, which is part of the Costanoan/Ohlone language family (Levy 1978:485). There is one Native American resource within or adjacent to the proposed 800 Dubuque Avenue project area that are referenced in the ethnographic literature [village of *Sipliskin* (Levy 1978: 485, Milliken 1995, Nelson 1909)].

Based on an evaluation of the environmental setting and features associated with known sites, Native American resources in this part of San Mateo County have been found in areas marginal to San Francisco Bay and inland on ridges, midslope benches, in valleys, near intermittent and perennial watercourses and near areas populated by oak, buckeye, manzanita, and pine, as well as near a variety of plant and animal resources. The 800 Dubuque Avenue project area is located at the western end of Point San Bruno, at a low point between San Bruno Mountain and the westernmost hill of Point San Bruno. The project area is located approximately 140 meters from the historic San Francisco bayshore margins and associated marshlands, and adjacent to a former creek. Aerial maps indicate a fully paved over parcel with buildings. Given the similarity of these environmental factors and the archaeological and ethnographic sensitivity of the area, there is a moderately high potential for unrecorded Native American resources to be within the proposed 800 Dubuque Avenue project area.

Review of historical literature and maps indicated historic-period activity within the 800 Dubuque Avenue project area. Early San Mateo County maps indicated the project area was located within the landholdings of the South San Francisco Land & Improvement Co, and adjacent to a portion of the Southern Pacific Railroad. As there are no buildings indicated on the maps at that time, it is unclear if the area was developed at that time. With this information in mind, there is a moderate potential for unrecorded historic-period archaeological resources to be within the proposed 800 Dubuque Avenue project area.

The 1956 San Francisco South USGS 7.5-minute topographic quadrangle depicts one building and a railroad spur within the 800 Dubuque Avenue project area. If present, these unrecorded building and structure meet the Office of Historic Preservation's minimum age standard that buildings, structures, and objects 45 years or older may be of historical value.

RECOMMENDATIONS:

1) There is a moderately high potential for Native American archaeological resources and a moderate potential for historic-period archaeological resources to be within the project area. Due to the passage of time since the previous study that included approximately 100% of the project area (Cartier 1984), and the changes in archaeological theory and method since that time, we recommend a qualified archaeologist conduct further archival and field study for the entire project area to identify archaeological resources.

Our usual recommendation would include archival research and a field examination. The proposed project area, however, has been highly developed and is presently covered with asphalt, buildings, or fill that obscures the visibility of original surface soils, which negates the feasibility of an adequate surface inspection.

Field study may include, but is not limited to, hand auger sampling, shovel test units, or geoarchaeological analyses as well as other common methods used to identify the presence of buried archaeological resources. Please refer to the list of consultants who meet the Secretary of Interior's Standards at http://www.chrisinfo.org.

2) We recommend the lead agency contact the local Native American tribe(s) regarding traditional, cultural, and religious heritage values. For a complete listing of tribes in the vicinity of the project, please contact the Native American Heritage Commission at 916/373-3710.

3) If the proposed project area contains buildings or structures that meet the minimum age requirement, prior to commencement of project activities, it is recommended that this resource be assessed by a professional familiar with the architecture and history of San Mateo County. Please refer to the list of consultants who meet the Secretary of Interior's Standards at http://www.chrisinfo.org.

4) Review for possible historic-period buildings or structures has included only those sources listed in the attached bibliography and should not be considered comprehensive.

5) If archaeological resources are encountered **during construction,** work should be temporarily halted in the vicinity of the discovered materials and workers should avoid altering the materials and their context until a qualified professional archaeologist has evaluated the situation and provided appropriate recommendations. Project personnel should not collect cultural resources. Native American resources include chert or obsidian flakes, projectile points, mortars, and pestles; and dark friable soil containing shell and bone dietary debris, heat-affected rock, or human burials. Historic-period resources include stone or adobe foundations or walls; structures and remains with square nails; and refuse deposits or bottle dumps, often located in old wells or privies.

6) It is recommended that any identified cultural resources be recorded on DPR 523 historic resource recordation forms, available online from the Office of Historic Preservation's website: https://ohp.parks.ca.gov/?page_id=28351

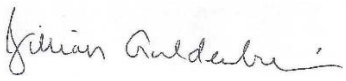
Due to processing delays and other factors, not all of the historical resource reports and resource records that have been submitted to the Office of Historic Preservation are available via this records search. Additional information may be available through the federal, state, and local agencies that produced or paid for historical resource management work in the search area. Additionally, Native American tribes have historical resource information not in the California Historical Resources Information System (CHRIS) Inventory, and you should contact

the California Native American Heritage Commission for information on local/regional tribal contacts.

The California Office of Historic Preservation (OHP) contracts with the California Historical Resources Information System's (CHRIS) regional Information Centers (ICs) to maintain information in the CHRIS inventory and make it available to local, state, and federal agencies, cultural resource professionals, Native American tribes, researchers, and the public. Recommendations made by IC coordinators or their staff regarding the interpretation and application of this information are advisory only. Such recommendations do not necessarily represent the evaluation or opinion of the State Historic Preservation Officer in carrying out the OHP's regulatory authority under federal and state law.

Thank you for using our services. Please contact this office if you have any questions, (707) 588-8455.

Sincerely,



Jillian Guldenbrein
Researcher

LITERATURE REVIEWED

In addition to archaeological maps and site records on file at the Northwest Information Center of the Historical Resources Information System, the following literature was reviewed:

Barrows, Henry D., and Luther A. Ingersoll
2005 *Memorial and Biographical History of the Coast Counties of Central California*. Three Rocks Research, Santa Cruz (Digital Reproduction of The Lewis Publishing Company, Chicago: 1893.)

Bowman, J.N.
1951 *Adobe Houses in the San Francisco Bay Region*. In Geologic Guidebook of the San Francisco Bay Counties, Bulletin 154. California Division of Mines, Ferry Building, San Francisco, CA.

Brabb, Earl E., Fred A. Taylor, and George P. Miller
1982 *Geologic, Scenic, and Historic Points of Interest in San Mateo County, California*. Miscellaneous Investigations Series, Map I-1257-B, 1:62,500. Department of the Interior, United States Geological Survey, Washington, D.C.

Bromfield, Davenport
1894 Official Map of San Mateo County, California

General Land Office
1858, 1864 Survey Plat for Rancho Buri Buri, Township 3 South/Range 5 West.

Heizer, Robert F., editor
1974 *Local History Studies*, Vol. 18., "The Costanoan Indians." California History Center, DeAnza College, Cupertino, CA.

Helley, E.J., K.R. Lajoie, W.E. Spangle, and M.L. Blair
1979 *Flatland Deposits of the San Francisco Bay Region - Their Geology and Engineering Properties, and Their Importance to Comprehensive Planning*. Geological Survey Professional Paper 943. United States Geological Survey and Department of Housing and Urban Development.

Kroeber, A.L.
1925 *Handbook of the Indians of California*. Bureau of American Ethnology, Bulletin 78, Smithsonian Institution, Washington, D.C. (Reprint by Dover Publications, Inc., New York, 1976)

Levy, Richard
1978 Costanoan. In *California*, edited by Robert F. Heizer, pp. 485-495. Handbook of North American Indians, vol. 8, William C. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.

Milliken, Randall
1995 *A Time of Little Choice: The Disintegration of Tribal Culture in the San Francisco Bay Area 1769-1810*. Ballena Press Anthropological Papers No. 43, Menlo Park, CA.

Myers, William A. (editor)
1977 *Historic Civil Engineering Landmarks of San Francisco and Northern California*. Prepared by The History and Heritage Committee, San Francisco Section, American Society of Civil Engineers. Pacific Gas and Electric Company, San Francisco, CA.

Nelson, N.C.
1909 *Shellmounds of the San Francisco Bay Region*. University of California Publications in American Archaeology and Ethnology 7(4):309-356. Berkeley. (Reprint by Kraus Reprint Corporation, New York, 1964)

Nichols, Donald R., and Nancy A. Wright
1971 Preliminary Map of Historic Margins of Marshland, San Francisco Bay, California. U.S. Geological Survey Open File Map. U.S. Department of the Interior, Geological Survey in cooperation with the U.S. Department of Housing and Urban Development, Washington, D.C.

Postel, Mitchell P.
1994 *San Mateo, A Centennial History.* Scottwall Associates, San Francisco, CA.

San Mateo County Historic Resources Advisory Board
1984 San Mateo County: Its History and Heritage. Second Edition. Division of Planning and Development Department of Environmental Management.

State of California Department of Parks and Recreation
1976 *California Inventory of Historic Resources*. State of California Department of Parks and Recreation, Sacramento.

State of California Department of Parks and Recreation and Office of Historic Preservation
1988 *Five Views: An Ethnic Sites Survey for California*. State of California Department of Parks and Recreation and Office of Historic Preservation, Sacramento.

State of California Office of Historic Preservation **
2021 *Built Environment Resources Directory*. Listing by City (through September 14-15, 2021). State of California Office of Historic Preservation, Sacramento.

Woodbridge, Sally B.
1988 *California Architecture: Historic American Buildings Survey*. Chronicle Books, San Francisco, CA.

Works Progress Administration
1984 *The WPA Guide to California*. Reprint by Pantheon Books, New York. (Originally published as California: A Guide to the Golden State in 1939 by Books, Inc., distributed by Hastings House Publishers, New York.)

**Note that the Office of Historic Preservation's *Historic Properties Directory* includes National Register, State Registered Landmarks, California Points of Historical Interest, and the California Register of Historical Resources as well as Certified Local Government surveys that have undergone Section 106 review.

Report List

NWIC File # 22-0094 800 Dubuque Ave, South SF

Report No.	Other IDs	Year	Author(s)	Title	Affiliation
S-006529		1984	Robert Cartier	Subsurface Archaeological Testing of the Dubuque Packing Plant Site on Dubuque Avenue in the City of South San Francisco, County of San Mateo	Archaeological Resource Management
S-017993		1995	Brian Hatoff, Barb Voss, Sharon Waechter, Stephen Wee, and Vance Bente	Cultural Resources Inventory Report for the Proposed Mojave Northward Expansion Project	Woodward-Clyde Consultants
S-017993a		1995		Proposed Mojave Northward Expansion Project: Appendix A - Native American Consultation	Woodward-Clyde Consultants
S-017993b		1995		Proposed Mojave Northward Expansion Project: Appendix B - Looping Segments - Class 1	Woodward-Clyde Consultants
S-017993c		1995		Proposed Mojave Northward Expansion Project: Appendix C -Monitoring and Emergency Discovery Plan	Woodward-Clyde Consultants
S-017993d		1995		Proposed Mojave Northward Expansion Project: Appendix D - General Construction Information	Woodward-Clyde Consultants
S-017993e		1995		Proposed Mojave Northward Expansion Project: Appendix E - Archaeological Site Records	Woodward-Clyde Consultants

Report List

NWIC File # 22-0094 800 Dubuque Ave, South SF

Report No.	Other IDs	Year	Author(s)	Title	Affiliation
S-017993f		1995		Proposed Mojave Northward Expansion Project: Appendix F - Historic Features Evaluation Forms	Woodward-Clyde Consultants
S-017993g		1995		Proposed Mojave Northward Expansion Project: Appendix G - Railroad Crossing Evaluation Forms	Woodward-Clyde Consultants
S-017993h		1995		Proposed Mojave Northward Expansion Project: Appendix H - Crossing Diagrams and Plan View Maps	Woodward Clyde Consultants
S-017993I		1995		Proposed Mojave Northward Expansion Project: Appendix I - Railroad Depot NRHP Nomination Forms and Related Records	Woodward-Clyde Consultants
S-017993j		1995		Proposed Mojave Northward Expansion Project: Appendix J - Looping Segment and Compressor Station Site Records	Woodward-Clyde Consultants
S-017993k		1995		Proposed Mojave Northward Expansion Project: Appendix K - Historic Site Records / Isolate Forms	Woodward-Clyde Consultants
S-017993l		1995		Proposed Mojave Northward Expansion Project: Appendix L - Photodocumentation	Woodward-Clyde Consultants
S-017993m		1995		Proposed Mojave Northward Expansion Project: Appendix M - Curricula Vitae of Key Preparers	Woodward-Clyde Consultants

Report List

NWIC File # 22-0094 800 Dubuque Ave, South SF

Report No.	Other IDs	Year	Author(s)	Title	Affiliation
S-026045		2000	Richard Carrico, Theodore Cooley, and William Eckhardt	Cultural Resources Reconnaissance Survey and Inventory Report for the Metromedia Fiberoptic Cable Project, San Francisco Bay Area and Los Angeles Basin Networks	Mooney & Associates

Report List

NWIC File # 22-0094 800 Dubuque Ave, South SF

Report No.	Other IDs	Year	Author(s)	Title	Affiliation
S-029657	OHP PRN - FTA021021A; Voided - S-37863; Voided - S-42672; Voided - S-43525	2002	Wendy J. Nelson, Tammara Norton, Larry Chiea, and Reinhard Pribish	Archaeological Inventory for the Caltrain Electrification Program Alternative in San Francisco, San Mateo, and Santa Clara Counties, California	Far Western Anthropological Research Group, Inc.
S-029657a		2002	Rand F. Herbert	Finding of No Adverse Effect, Caltrain Electrification Program, San Francisco, San Mateo, and Santa Clara Counties, California	JRP Historical Consulting Services
S-029657b		2002		Historic Property Survey for the Proposed Caltrain Electrification Program, San Francisco, San Mateo, and Santa Clara Counties, California	Parsons; JRP Historical Consulting Services; Far Western Anthropological Research Group, Inc.
S-029657c		2002	Knox Mellon	FTA021021A; Caltrain Electrification Program, San Francisco, San Mateo, and Santa Clara Counties	Office of Historic Preservation
S-029657d		2003	Meta Bunse	Final Finding of Effect Amendment, Caltrain Electrification Project, San Francisco, San Mateo, and Santa Clara Counties, California	JRP Historical Consulting Services

Report List

NWIC File # 22-0094 800 Dubuque Ave, South SF

Report No.	Other IDs	Year	Author(s)	Title	Affiliation
S-029657e		2001	Rand F. Herbert	Draft Finding of No Adverse Effect, Caltrain Electrification Program, San Francisco, San Mateo, and Santa Clara Counties, California	JRP Historical Consulting Services
S-029657f		2008	Sharon A. Waechter, Jack Meyer, and Laura Leach-Palm	Cultural Resources Addendum for the Caltrain Electrification Program Alternative: San Francisco, San Mateo, and Santa Clara Counties, California	Far Western Anthropological Research Group, Inc.
S-029657g		2008	Meta Bunse	Addendum Finding of Effect, Caltrain Electrification Program, San Francisco to San Jose (MP 0.0 to 52.0); San Francisco, San Mateo, and Santa Clara Counties, California	JRP Historical Consulting, LLC
S-029657h		2002		Inventory and Evaluation of Historic Resources, Caltrain Electrification Program, San Francisco to Gilroy (MP 0.0 to 77.4) (Draft)	JRP Historical Consulting Services

Report List

NWIC File # 22-0094 800 Dubuque Ave, South SF

Report No.	Other IDs	Year	Author(s)	Title	Affiliation
S-048738		2011	Denise Jurich and Amber Grady	California High-Speed Train Project, Environmental Impact Report/Environmental Impact Statement, San Francisco to San Jose Section, Archaeological Survey Report, Technical Report [Draft]	PBS&J

Report List

NWIC File # 22-0094 800 Dubuque Ave, South SF

Report No.	Other IDs	Year	Author(s)	Title	Affiliation
S-048738a		2011	Amber Grady and Richard Brandi	California High-Speed Train Project, Environmental Impact Report/Environmental Impact Statement, San Francisco to San Jose Section, Historic Architectural Survey Report, Technical Report [Draft]	PBS&J

NATIVE AMERICAN HERITAGE COMMISSION

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NAHC HEADQUARTERS
1550 Harbor Boulevard
Suite 100
West Sacramento,
California 95691
(916) 373-3710
nahc@nahc.ca.gov
NAHC.ca.gov

August 25, 2022

Rebecca Auld
Lamphier-Gregory

Via Email to: rauld@lamphier-gregory.com

Re: Native American Consultation, Pursuant to Senate Bill 18 (SB18), Government Codes §65352.3 and §65352.4, as well as Assembly Bill 52 (AB52), Public Resources Codes §21080.1, §21080.3.1 and §21080.3.2, 800 Dubuque Ave Project, San Mateo County

Dear Ms. Auld:

Attached is a consultation list of tribes with traditional lands or cultural places located within the boundaries of the above referenced counties or projects.

Government Codes §65352.3 and §65352.4 require local governments to consult with California Native American tribes identified by the Native American Heritage Commission (NAHC) for the purpose of avoiding, protecting, and/or mitigating impacts to cultural places when creating or amending General Plans, Specific Plans and Community Plans.

Public Resources Codes §21080.3.1 and §21080.3.2 requires public agencies to consult with California Native American tribes identified by the Native American Heritage Commission (NAHC) for the purpose of avoiding, protecting, and/or mitigating impacts to tribal cultural resources as defined, for California Environmental Quality Act (CEQA) projects.

The law does not preclude local governments and agencies from initiating consultation with the tribes that are culturally and traditionally affiliated within your jurisdiction. The NAHC believes that this is the best practice to ensure that tribes are consulted commensurate with the intent of the law.

Best practice for the AB52 process and in accordance with Public Resources Code §21080.3.1(d), is to do the following:

Within 14 days of determining that an application for a project is complete or a decision by a public agency to undertake a project, the lead agency shall provide formal notification to the designated contact of, or a tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, which shall be accomplished by means of at least one written notification that includes a brief description of the proposed project and its location, the lead agency contact information, and a notification that the California Native American tribe has 30 days to request consultation pursuant to this section.

The NAHC also recommends, but does not require that lead agencies include in their notification letters, information regarding any cultural resources assessment that has been completed on the area of potential affect (APE), such as:

1. The results of any record search that may have been conducted at an Information Center of the California Historical Resources Information System (CHRIS), including, but not limited to:

    - A listing of any and all known cultural resources have already been recorded on or adjacent to the APE, such as known archaeological sites;
    - Copies of any and all cultural resource records and study reports that may have been provided by the Information Center as part of the records search response;
    - Whether the records search indicates a low, moderate or high probability that unrecorded cultural resources are located in the APE; and
    - If a survey is recommended by the Information Center to determine whether previously unrecorded cultural resources are present.

2. The results of any archaeological inventory survey that was conducted, including:

    - Any report that may contain site forms, site significance, and suggested mitigation measures.

      All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum, and not be made available for public disclosure in accordance with Government Code Section 6254.10.

3. The result of the Sacred Lands File (SFL) check conducted through the Native American Heritage Commission was negative.

4. Any ethnographic studies conducted for any area including all or part of the potential APE; and

5. Any geotechnical reports regarding all or part of the potential APE.

Lead agencies should be aware that records maintained by the NAHC and CHRIS is not exhaustive, and a negative response to these searches does not preclude the existence of a tribal cultural resource. A tribe may be the only source of information regarding the existence of a tribal cultural resource.

This information will aid tribes in determining whether to request formal consultation. In the event, that they do, having the information beforehand well help to facilitate the consultation process.

If you receive notification of change of addresses and phone numbers from tribes, please notify the NAHC. With your assistance we can assure that our consultation list remains current.

If you have any questions, please contact me at my email address:

Cody.Campagne@nahc.ca.gov.

Sincerely,

Cody Campagne

Cody Campagne
Cultural Resources Analyst

Attachment

Native American Heritage Commission
Tribal Consultation List
San Mateo County
8/25/2022

Amah MutsunTribal Band of Mission San Juan Bautista
Irene Zwierlein, Chairperson
3030 Soda Bay Road — Costanoan
Lakeport, CA, 95453
Phone: (650) 851 - 7489
Fax: (650) 332-1526
amahmutsuntribal@gmail.com

Costanoan Rumsen Carmel Tribe
Tony Cerda, Chairperson
244 E. 1st Street — Costanoan
Pomona, CA, 91766
Phone: (909) 629 - 6081
Fax: (909) 524-8041
rumsen@aol.com

Indian Canyon Mutsun Band of Costanoan
Ann Marie Sayers, Chairperson
P.O. Box 28 — Costanoan
Hollister, CA, 95024
Phone: (831) 637 - 4238
ams@indiancanyons.org

Indian Canyon Mutsun Band of Costanoan
Kanyon Sayers-Roods, MLD Contact
1615 Pearson Court — Costanoan
San Jose, CA, 95122
Phone: (408) 673 - 0626
kanyon@kanyonkonsulting.com

Muwekma Ohlone Indian Tribe of the SF Bay Area
Charlene Nijmeh, Chairperson
20885 Redwood Road, Suite 232 — Costanoan
Castro Valley, CA, 94546
Phone: (408) 464 - 2892
cnijmeh@muwekma.org

Muwekma Ohlone Indian Tribe of the SF Bay Area
Monica Arellano, Vice Chairwoman
20885 Redwood Road, Suite 232 — Costanoan
Castro Valley, CA, 94546
Phone: (408) 205 - 9714
marellano@muwekma.org

The Ohlone Indian Tribe
Andrew Galvan,
P.O. Box 3388 — Bay Miwok
Fremont, CA, 94539 — Ohlone
Phone: (510) 882 - 0527 — Patwin
Fax: (510) 687-9393 — Plains Miwok
chochenyo@AOL.com

Wuksache Indian Tribe/Eshom Valley Band
Kenneth Woodrow, Chairperson
1179 Rock Haven Ct. — Foothill Yokut
Salinas, CA, 93906 — Mono
Phone: (831) 443 - 9702
kwood8934@aol.com

This list is current only as of the date of this document and is based on the information available to the Commission on the date it was produced. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is applicable only for consultation with Native American tribes under Government Code Sections 65352.3, 65352.4 et seq. and Public Resources Code Sections 21080.3.1 for the proposed 800 Dubuque Ave Project, San Mateo County.

ENERGY CALCULATIONS

ATTACHMENT C

to the

800 Dubuque Avenue Project Initial Study / Mitigated Negative Declaration

Construction Energy Use

To support the Energy Analysis for the following project: 800 Dubuque

Construction Equipment/Vehicles

	# of Vehicles	Hrs per Day	Horse-power	Load Factor	Days in Phase	Fuel Used (gallons)
Demolition						
Rubber Tired Dozers	1	8	247	0.4	120	5,017
Air Compressors	1	8	78	0.48	120	2,113
Concrete Saws	1	8	81	0.73	120	3,338
Excavators	3	8	153	0.38	120	8,858
Generator Sets	1	8	84	0.74	120	3,509
Plate Compactors	1	8	8	0.43	120	194
Sweepers/Scrubbers	1	4	64	0.46	120	831
Tractors/Loaders/Backhoes	3	8	97	0.37	120	6,078
Grading / Excavation						
Bore/Drill Rigs	5	8	221	0.5	234	54,713
Cranes	1	8	231	0.29	234	6,634
Excavators	3	8	153	0.38	234	17,273
Graders	1	8	187	0.41	234	7,593
Pumps	2	8	84	0.74	234	13,684
Pumps	1	24	84	0.74	234	20,527
Rollers	1	4	80	0.38	234	1,673
Rubber Tired Dozers	1	8	247	0.4	234	9,784
Sweepers/Scrubbers	1	4	64	0.46	234	1,620
Tractors/Loaders/Backhoes	2	8	97	0.37	234	7,901
Building Construction						
Aerial Lifts	2	8	63	0.31	563	10,344
Aerial Lifts	24	8	63	0.31	563	124,134
Air Compressors	1	8	78	0.48	563	9,915
Cranes	1	3.3	231	0.29	563	6,584
Cranes	2	8	231	0.29	563	31,922
Forklifts	1	8	89	0.2	563	4,714
Generator Sets	1	8	84	0.74	563	16,462
Sweepers/Scrubbers	1	4	64	0.46	563	3,898
Tractors/Loaders/Backhoes	1	4	97	0.37	563	4,752
Welders	12	8	46	0.45	563	65,785
Building - Interior / Architectural Coating						
Air Compressors	1	6	78	0.48	130	1,717
Paving						
Aerial Lifts	1	8	63	0.31	181	1,663
Pavers	1	8	130	0.42	181	4,182
Paving Equipment	2	8	132	0.36	181	7,280
Plate Compactors	1	8	8	0.43	181	293
Rollers	1	8	80	0.38	181	2,588
Rubber Tired Dozers	1	4	247	0.4	181	3,784
Sweepers/Scrubbers	1	4	64	0.46	181	1,253
Tractors/Loaders/Backhoes	2	8	97	0.37	181	6,112
Total Fuel Used for Construction Equipment/Vehicles						**478,724** (diesel)

Compression-Ignition Engine Brake-Specific Fuel Consumption (BSFC) Factors [1] used in the above calculations are (in gallons per horsepower-hour/BSFC)

0.0588 <100 horsepower

0.0529 >100 horsepower

Worker Trips

Phase	MPG [2]	Trips	Trip Length (miles)	Total Miles per Day	Days in Phase	Fuel Used (gallons)
Demolition	24	28	10.8	302.4	120	1,512
Grading Phase	24	43	10.8	464.4	234	4,528
Building Construction	24	557	10.8	6015.6	563	141,116
Paving	24	20	10.8	216	181	1,629
Building Interior	24	111	10.8	1198.8	130	6,494
Total Fuel Used for Construction Worker Trips						**155,278** (gasoline)

Construction Energy Use, Continued

Vendor Trips

Phase	MPG [2]	Trips	Trip Length (miles)	Total Miles per Day	Days in Phase	Fuel Used (gallons)
Demolition	7.4	0	7.3	0	120	0
Grading Phase	7.4	0	7.3	0	234	0
Building Construction	7.4	252	7.3	1839.6	563	139,959
Paving	7.4	0	7.3	0	181	0
Building Interior	7.4	0	7.3	0	130	0
Total Fuel Used for Vendor Trips						**139,959** (diesel)

Hauling Trips

Phase	MPG [2]	Trips in Phase	Trip Length (miles)	Total Miles in Phase	Fuel Used (gallons)
Demolition	7.4	539.4	20	10788	1,458
Grading Phase	7.4	41375	20	827500	111,824
Building Construction	7.4	16800	20	336000	45,405
Paving	7.4	267	20	5340	722
Building Interior	7.4	0	20	0	0
Total Fuel Used for Hauling Trips					**159,409** (diesel)

Fuel Use Converted to MMBtu

	Total Construction Fuel Use (gallons)	Conversion Factor Btu/gallon	Source	Fuel Converted to Energy Use
Diesel	**778,092**	137,381	[3]	**106,895** MMBtu
Gasoline	**155,278**	109,786	[4]	**17,047** MMBtu
Total Energy Use from Construction Fuel				**123,942** MMBtu

Sum of above

Operational Energy Use

Operational Vehicular Fuel Use

Gross Annual VMT	12,405,925

Fleet Class	Fleet Mix	VMT per Class	Fuel Ecomony [5]	Fuel Consumption (gallons)		
Light Duty Auto (LDA)	0.411757	5108226.5	30.9	165314.77		
Light Duty Truck 1 (LDT1)	0.041436	514051.91	26.63	19303.49		
Light Duty Truck 2 (LDT2)	0.297526	3691085.2	24.36	151522.38		
Medium Duty Vehicle (MDV)	0.170986	2121239.5	20.2	105011.86		
Motorcycle (MCY)	0.024361	302220.74	37.06	8154.90	Total Gasoline	449,307
Light Heavy Duty 1 (LHD1)	0.030624	379919.05	18.23	20840.32		gallons
Light Heavy Duty 2 (LHD2)	0.007023	87126.811	16.24	5364.95		
Medium Heavy Duty (MHD)	0.00842	104457.89	9.43	11077.19		
Heavy Heavy Duty (HHD)	0.002436	30220.833	6.42	4707.29		
Other Bus (OBUS)	0.002246	27863.708	8.26	3373.33		
Urban Bus (UBUS)	0.000679	8423.6231	5.17	1629.33		
School Bus (SBUS)	0.000402	4987.1819	7.25	687.89		
Motorhome (MH)	0.002104	26102.066	9.91	2633.91	Total Diesel	50,314
						gallons

Note that the above numbers represent gross fuel consumption.

	Total Fuel Use (gallons)	Conversion Factor Btu/gallon	Source	Fuel Converted to Use	Energy
Diesel	50,314	137,381	[3]	6,912	MMBtu
Gasoline	449,307	109,786	[4]	49,328	MMBtu
Total Energy Use from Operational Fuel				**56,240**	MMBtu

Operational Built Environment

Type of Energy	Annual Usage	Units	Converted to MMBtu
Electricity	1.02E+07	kWh	34697
Natural Gas	2.21E+07	kBtu	22113

*Note that because this analysis was performed prior to adoption of the General Plan 2040, some natural gas usage was assumed in the CalEEMod report. Electricity equivalency conversion does not change conclusions.

	Sum of above	
Total Annual Operational Energy Use	**113,050**	**MMBtu**

Existing and Net Energy Use

Net Operational Vehicular Fuel Energy Use

To determine the net increase in fuel usage, fuel usage of the existing uses at the site can be subtracted from the gross consumption above. The following number also incorproates the TDM reduction identified in the Operational calculations.

Existing Use VMT:	1,786,678	
Resultant Net Annual Gasoline Use:	384,599	gallons
Resultant Net Annual Diesel Use:	43,068	gallons

	Net Fuel Use (gallons)	Conversion Factor Btu/gallon	Source	Fuel Converted to Energy Use	
Diesel	43,068	137,381	[3]	5,917	MMBtu
Gasoline	384,599	109,786	[4]	42,224	MMBtu
Total Energy Use from Net Operational Fuel				**48,140**	MMBtu

Existing and Net Operational Built Environment

	Existing			Net
Type of Energy	Annual Usage	Units	Converted to MMBtu	Energy Use in MMBtu
Electricity	8.44E+05	kWh	2880	31817
Natural Gas	2.79E+06	kBtu	2791.03	19322
Total			5671	**51139**

Sum of above

Total Net Annual Operational Energy Use **99,279** **MMBtu**

Sources

Unless otherwise noted, information in these calculations is from the project-specific Air Quality/Emissions Assessment for the project, including CalEEMod output tables.

[1] United States Environmental Protection Agency. 2018. Exhaust and Crankcase Emission Factors for Nonroad Compression-Ignition Engines in MOVES2014b . July 2018. Available at: https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P100UXEN.pdf.

[2] United States Department of Transportation, Bureau of Transportation Statistics. 2018. National Transportation Statistics 2018 . Available at: https://www.bts.gov/sites/bts.dot.gov/files/docs/browse-statistical-products-anddata/national-transportation-statistics/223001/ntsentire2018q4.pdf.

https://www.eia.gov/totalenergy/data/monthly/archive/00352205.pdf

[4] California Air Resources Board, CA-GREET 2.0 Supplemental Document and Tables of Changes, Appendix C, Supplement to the LCFS CA-GREET 2.0 Model, 12/15/2014 , page C-24, Table 10. Available at: https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2015/lcfs2015/lcfs15appc.pdf

[5] California Air Resources Board (CARB), EMFAC2021 v1.0.0., 2021. Available at https://ww2.arb.ca.gov/our-work/programs/mobile-source-emissions-inventory/msei-modeling-tools-emfac-software-and

[6] Anticipated TDM reduction information is from the the project-specific CEQA Transportation Analysis.

Acronyms used include:

Btu = British Thermal Units
hrs = hours
kBtu = Thousand British Thermal Units
kWH = kilowatt hours
MMBtu = Million British Thermal Units
MPG = miles per gallon
TDM = Transportation Demand Management
VMT = vehicle miles traveled

TRANSPORTATION ANALYSIS

ATTACHMENT D

to the

800 Dubuque Avenue Project Initial Study / Mitigated Negative Declaration

HEXAGON TRANSPORTATION CONSULTANTS, INC.

800 Dubuque Avenue

CEQA Transportation Analysis

Prepared for:

Lamphier-Gregory

March 24, 2023

Hexagon Transportation Consultants, Inc.
Hexagon Office: 4 North Second Street, Suite 400
San Jose, CA 95113
Phone: 408.971.6100
Hexagon Job Number: 22TD03
Client Name: Lamphier-Gregory

Executive Summary

As required by the California Environmental Quality Act (CEQA), this report includes an analysis of Vehicles Miles Travelled (VMT) and an evaluation of potential impacts to transit, pedestrian, and bicycle facilities for the proposed redevelopment of 800 Dubuque Avenue in South San Francisco to a higher density Office/Research & Development uses.

The project is presumed to have a less than significant impact on VMT as it is located less than ½ mile from the South San Francisco Caltrain Station. The project is proposing an FAR of 3.3, would not exceed the required number of parking spaces and is consistent with the land use designation under the City's 2040 General Plan. The project would also implement a Transportation Demand Management (TDM) program as required by the Municipal Code that requires all non-residential projects that would generate more than 100 daily trips to implement various trip reduction measures to reduce single occupancy vehicle trips (SOV) and achieve a minimum 50% alternative mode use. Given its proximity to the Caltrain station, the project is expected to achieve higher than the minimum 50% alternative mode use. Therefore, a detailed VMT analysis is not required.

The project would not remove any pedestrian facilities, nor would it conflict with any adopted plans or policies for new pedestrian facilities. Accordingly, the project would have no significant impact on pedestrian facilities.

The project would provide on-site bicycle parking facilities. The project would not remove any bicycle facilities, nor would it conflict with any adopted plans or policies for new bicycle facilities. Accordingly, the project would have no significant impact on bicycle facilities.

The project is expected to add a high number of new transit riders. However, given the extensive services available, the new riders could be accommodated. The project would therefore have no significant impact on transit service.

Adequate corner sight distance should be provided for drivers exiting both project driveways. The project would underground 462 linear feet of electrical line and clear all line-of-sight obstructions along the project's frontage on Dubuque Avenue. The project shall demonstrate to the satisfaction of the City that the site sight distance is adequate at both project driveways. With the provision of adequate sight distance at both project driveways, the project's impact on safety would be reduced to less than significant.

The project would not reroute or change any of the City streets in its vicinity that would impact emergency vehicle access to properties along Dubuque Avenue. The proposed site access roadways would accommodate emergency vehicles. Thus, the project would not result in any emergency vehicle access impact that would be considered significant.

Project Description

The purpose of this report is to analyze the transportation-related impacts of the proposed Office/Research & Development project at 800 Dubuque Avenue in South San Francisco, as required by the California Environmental Quality Act (CEQA).

The proposed project would involve demolition of the three existing buildings located on the 800 to 890 Dubuque Avenue parcels and construction of three new office/research and development (R&D) buildings. The project would be comprised of three buildings: the 10-story North building, the 6-story South building, and the 9-story West building, for a total of up to approximately 900,000 square feet of floor area. The north building would be the tallest at approximately 195 feet (including the mechanical penthouse). The buildings would be connected by a two-story podium that provides open space and an approximately 7,200 square foot fitness center. The center of the site would contain a plaza and courtyard lined with on-site food/beverage and tenant amenity uses totaling approximately 6,600 square feet, as well as an approximately 7,500 square foot event center. The project is intended to be a mix of R&D space and offices.

The west building would be oriented along Dubuque Avenue, and the north and south buildings would be oriented along the internal roadways. The project is located one-quarter mile north of the South San Francisco Caltrain station. The development is consistent with the land use designation in the City's General Plan, *Shape SSF 2040*, and related zoning, which plan for higher-density, transit-oriented uses at and around the project site. Structured parking would be provided in four stories below grade, with approximately 1,335 parking spaces. Vehicular access to the project site would be provided via two driveways on Dubuque Avenue.

This report includes an analysis of Vehicle Miles Travelled (VMT), potential impacts to pedestrian and bicycle facilities and transit services, and the project's safety and emergency access.

CEQA Analysis

VMT Analysis

Pursuant to SB 743, the CEQA 2019 Update Guidelines Section 15064.3, subdivision (b) states that vehicle miles travelled (VMT) will be the metric in analyzing transportation impacts for land use projects for California Environmental Quality Act (CEQA) purposes. The City of South San Francisco has adopted certain thresholds of significance based on the project type to guide in determining when a project will have a significant transportation impact. For non-retail land use projects, a significant impact would occur if the VMT would be above the threshold, which is defined as 15% below the regional average.

The City of South San Francisco provides screening criteria for development projects. The criteria are based on the type of project, characteristics, and/or location. If a project meets the City's screening criteria, the project is expected to result in less-than-significant impacts, and a detailed CEQA VMT analysis is not required. The City's policy states that projects within ½ mile of an existing or planned high-quality transit corridor or major transit station should be presumed to have a less-than-significant impact on VMT. However, this presumption would not apply if the project FAR is less than 0.75, includes parking that is higher than required by the City, is inconsistent with the City's General Plan, or replaces affordable residential units with a smaller number of market-rate units. The project site is located less than one-quarter mile from the South San Francisco Caltrain Station. The project is proposing an FAR of 3.3, would not exceed the required number of parking spaces, and is consistent with the land use proposed in the City's General Plan, *Shape SSF 2040*. Therefore, a detailed VMT analysis is not required.

The project would also implement a Transportation Demand Management (TDM) program as required by the Municipal Code, which requires all new developments to implement various trip reduction measures to reduce single occupancy vehicle trips (SOV) based on their anticipated effect on the City's transportation network. The project would be categorized as a Tier 4 development, which includes all office and R&D projects with at least 400,000 s.f. of gross floor area and requires a minimum 50% alternative mode use. The project would implement TDM measures to encourage employees and visitors to use transit, given its proximity to the Caltrain station.

Cumulative Impact Analysis

According to the Governor's Office of Planning and Research (OPR), a finding of a less-than-significant project impact based on project screening criteria would imply a less than significant cumulative impact. The project aligns with the land use controls under the City's General Plan, *Shape SSF 2040*, which plans for higher-density, transit-oriented uses at and around the project site: re-imagining the area as a new urban corridor accessible to pedestrians, bicyclists, and transit riders. Therefore, the project would be considered as part of the cumulative solution to meet the General Plan's long-range transportation goals and would result in a less-than-significant cumulative impact.

Pedestrians, Bicycles and Transit

Pedestrian Facilities

Sidewalks are provided on the east side of Dubuque Avenue from Oyster Point Boulevard to Grand Avenue, and along Grand Avenue from Gateway Boulevard to Airport Boulevard. The signalized intersections at Dubuque Avenue/Oyster Point Boulevard and Dubuque Avenue/Grand Avenue provide crosswalks, curb ramps, and pedestrian-actuated pedestrian-crossing phases on all approaches. The project would reconstruct the sidewalk along its frontage on Dubuque Avenue by moving it away from the curb and configuring it in a winding path through planting and trees to provide enhanced comfort and safety for pedestrians (see Figure 1). Striped crosswalks would be provided across the north and the south driveways to provide connections to existing sidewalks to the north and south of the project site.

As part of the South San Francisco Caltrain Reconstruction Project, a new pedestrian/bicycle undercrossing was constructed under the Caltrain tracks that provides a direct connection for pedestrians and bicyclists between areas to the west (Airport Boulevard) and east (Poletti Way and East Grand Avenue) of the Caltrain tracks. This undercrossing also provides a connection to the new Caltrain station platform.

The South San Francisco Caltrain station is currently pedestrian-accessible from Dubuque Avenue via a staircase located at the northwest corner of the signalized intersection at Dubuque Avenue and Grand Avenue. However, no ADA access is provided to the Caltrain station from Dubuque Avenue. The 580 Dubuque Avenue project, which is located adjacent to the Caltrain station parking lot is currently under development and is conditioned to provide a pedestrian route, including ADA access, to the Caltrain station.

The project is well situated to take advantage of the existing and planned pedestrian facilities in the immediate vicinity. The existing network of sidewalks and crosswalks, together with the planned addition of ADA access to the Caltrain station from Dubuque Avenue (via the 580 Dubuque Avenue project), provide good connectivity and safe routes to transit services and other points of interest in the downtown area.

The project would not remove any pedestrian facilities, nor would it conflict with the *Active South City*, the City of South San Francisco's Bicycle and Pedestrian Master Plans. Accordingly, the project would have no significant impact on pedestrian facilities.

Bicycle Facilities

Bicycle access to the project site is currently limited as there are no bike lanes on Dubuque Avenue. As stated above, the new pedestrian/bicycle undercrossing provides bicycle access between East Grand Avenue/Poletti Way and Airport Boulevard, with direct access to the Caltrain station platform. Bicycle access between the project site and the South San Francisco Caltrain station would be provided via the existing Caltrain Station access driveway on Dubuque Avenue. Other existing bicycle facilities in the vicinity of the project site are Class II bike lanes on Airport Boulevard north of Miller Avenue.

The project would provide short-term and long-term bicycle parking facilities on site to meet the requirements of South San Francisco municipal code. The project would not remove any bicycle facilities, nor would it conflict with the City's Bicycle and Pedestrian Master Plans. Thus, the project would have no significant impact on bicycle facilities.

Transit Facilities

Existing transit service to the study area is provided by Caltrain, Bay Area Rapid Transit (BART), Water Emergency Transit Agency (WETA), San Mateo County Transit District (SamTrans) and commuter shuttles. The project site is located less than one-quarter mile from the Caltrain station.

Caltrain provides commuter rail service between San Francisco and Gilroy. The South San Francisco Caltrain Station serves local and limited-stop trains with 40 to 60-minute headways during weekdays. The project is located one-quarter mile from the South San Francisco Caltrain station.

The recently reconstructed South San Francisco Caltrain station provides passengers access to the downtown from the station's center platform via ramps connecting to the newly constructed tunnel underneath the Caltrain tracks. The tunnel connects to a pedestrian plaza at Grand Avenue/Airport Boulevard on the west side of the tracks and a transit plaza at the intersection of Grand Avenue and Poletti Way on the east side of the tracks. Buses and shuttles pick up and drop off Caltrain passengers from the new east-side plaza instead of the parking lot on the west side of the station, which results in time savings for passengers commuting to the City's biotech job center on the east side of the tracks.

Combined with the Caltrain Electrification project, the reconstructed station is expected to see increased service levels, which has been included in Caltrain planning.

The two BART stations closest to the project area are the San Bruno Station and the South San Francisco Station. Both stations are located within 3 miles of the project site. The Genesis One Tower Place shuttle (OTP) operated by commute.org provides service between the South San Francisco Caltrain station and the South San Francisco BART station. The OTP shuttle operates along Dubuque Avenue and currently has a stop on the southern end of the project site. With the proposed redevelopment, the shuttle stop would be facilitated on site along the drop-off zone that would be provided on the north side of the project site via the north driveway (see Figure 2).

WETA provides weekday commuter ferry service between Oakland/Alameda ferry terminals and the South San Francisco Ferry Terminal at Oyster Point. The South San Francisco Ferry terminal is located approximately 2.5 miles from the project site. Shuttle service is provided between the South San Francisco ferry terminal and the Caltrain station.

SamTrans provides bus service primarily on the west side of US 101. The closest bus stops to the project site are approximately 0.5 miles to the west at the intersection of Airport Boulevard and Linden Avenue and are served by Routes 292 and 397. Recently, SamTrans has extended service to the East of 101 Area via Route 130. The closest bus stop served by Route 130 is located at the Gateway Boulevard/Corporate Drive intersection, which is approximately 1 mile from the project site.

Commuter shuttles provide weekday commute connections between the Caltrain station and BART, the WETA ferry terminal, and local employers in the East of 101 Area. All shuttles are wheelchair-accessible and equipped with a bicycle rack on the front of the vehicle. The new transit plaza at the intersection of Grand Avenue and Poletti Way, on the east side of the Caltrain tracks, provides a direct pedestrian connection between the Caltrain station and the following shuttle services: the Genesis One Tower Place (OTP) shuttle, the Oyster Point Caltrain (OPC) shuttle, the Utah-Grand Caltrain (UGC) shuttle, and the Oyster Point Ferry (OPF) shuttle.

The project is expected to add a substantial number of new transit riders. However, with reduced transit ridership following COVID-19 pandemic, and the number of different services available (Caltrain, SamTrans busses, shuttles to the BART and ferry stations), it is anticipated that substantial new ridership could be accommodated.

The project would not produce a detrimental impact to local transit or shuttle service. The project would therefore have no significant impact on transit service.

Safety (Sight Distance)

The site driveways were evaluated to determine whether vehicles exiting the site would have adequate sight distance to see bicycles or motor vehicles traveling on Dubuque Avenue. The minimum acceptable sight distance is what the CA MUTCD has defined as stopping sight distance. Sight distance requirements vary depending on roadway speeds. For Dubuque Avenue, which has a posted speed limit of 30 mph, the stopping sight distance is 250 feet for motor vehicles (based on a design speed of 35 mph). Accordingly, a driver must be able to see 250 feet along Dubuque Avenue to be able to avoid a collision with other vehicles. Factors that can affect sight distance are geometric features such as horizontal and vertical curves in the road, or line-of-sight obstructions like on-street parking, landscaping, and signs. Providing the appropriate sight distance reduces the likelihood of a collision at a driveway or intersection and provides drivers with the ability to exit a driveway or locate sufficient gaps in traffic.

Based on observations conducted in the field, it appears that there would be adequate sight distance for drivers exiting the project site looking right to the north on Dubuque Avenue at both driveways. The project will remove all existing sign boards near the proposed driveways. However, for drivers exiting the project site to travel south on Dubuque Avenue, it appears that there would be inadequate sight distance looking left to the south on Dubuque Avenue due to a slight horizontal curve and line-of-sight obstructions. The line-of-sight obstructions include utility poles, landscaping, sign boards and the metal fence on the south side of the project site (see Figure 3).

The project proposes to underground approximately 462 linear feet of electrical line along the project's frontage on Dubuque Avenue and clear all line-of sight obstructions along the project's frontage on

Dubuque Avenue. The project shall demonstrate to the satisfaction of the City that the sight distance is adequate at both project driveways, which could include the following measures.

- The applicant shall coordinate with the City to decrease the speed limit on Dubuque Avenue to 25 mph.
- The applicant shall coordinate with the City to remove line-of-sight obstructions (vegetation and sign boards) within the City's right of way to the south of the project.
- The applicant shall coordinate with the adjacent property of 720 Dubuque Avenue/PG&E easement to push back the existing metal fence on the southern border of the project site and remove vegetation to provide a clear zone on the corner of 720 Dubuque Avenue/PG&E easement and the project's southern driveway.

With the provision adequate sight distance at both project driveways, the project's impact on safety would be reduced to less than significant.

Emergency and Truck Access

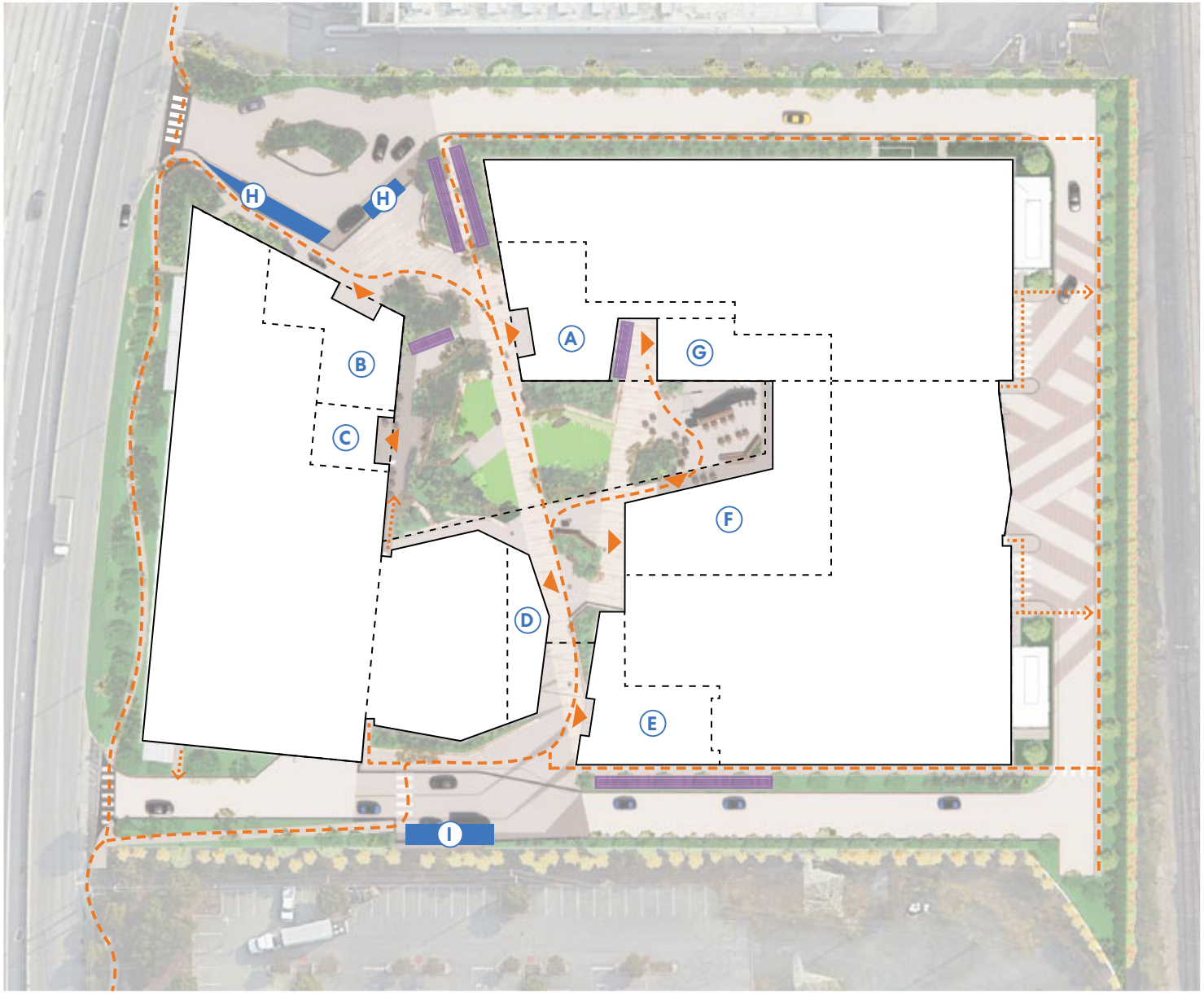
Emergency access was evaluated to determine whether the project would provide adequate vehicular ingress and egress to the project site, and a viable route to and through the project site. A review of the preliminary fire access plan prepared by Perkins & Will shows that adequate access would be provided for emergency vehicles to the site. The project site would be served by two driveways, one that would be located along the northern perimeter and the other that would be located along the southern perimeter of the project site. The two driveways would loop around the project site (see Figure 2) to provide vehicular circulation along the entire perimeter of the project site. The plan shows that the perimeter road would be at least 26 feet wide which would be adequate to facilitate fire apparatus ingress/egress and would be located 15 to 30 feet from outer edge of the building.

The site plan shows that the project would provide a drop-off zone on the north side of the project for passenger loading in front of the west building that would be accessible via the north driveway.

A truck loading area is proposed for the west building on the south side that can be accessed via the southern driveway, and a combined truck loading area is proposed for the north and the south buildings on the east end of the project site that can be accessed via both driveways. The site plan shows trash enclosures for all three buildings adjacent to the truck loading areas.

Hexagon reviewed the truck turning templates prepared by BKF engineers for a WB-40 truck and a front-loading garbage truck (ACX64) as these vehicles would enter and exit the site. The turning templates showed that these vehicles would be able to navigate through the site to and from the loading dock and the trash collection areas without obstruction. Since the trash enclosures would be located next to the loading areas, adequate clearance would be provided for garbage trucks to empty the bins over the truck. Since garbage collection would occur on-site, along the perimeter road, traffic operations would not be affected along Dubuque Avenue.

The proposed project would not reroute or change any of the City streets in its vicinity that would impact emergency vehicle access to properties along Dubuque Avenue. The proposed site access roadways would accommodate emergency vehicles. Thus, the project would not result in any emergency vehicle access impact that would be considered significant.

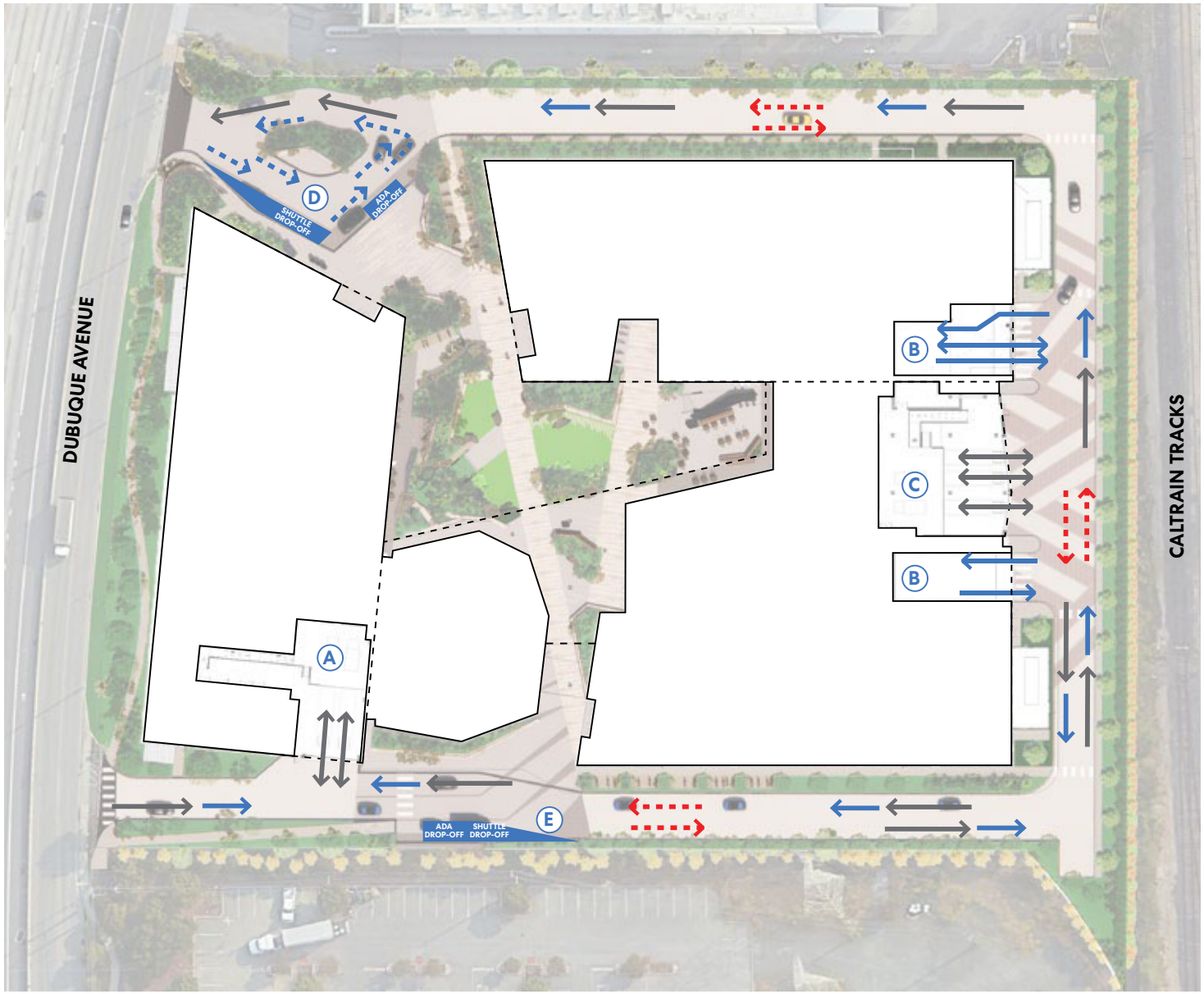


LEGEND

- PEDESTRIAN AND BICYCLE ACCESS
- BLDG EXIT
- BUILDING ENTRY
- PUBLIC BIKE PARKING
- DROP OFF ZONE
- (A) NORTH BLDG LOBBY
- (B) WEST BLDG LOBBY
- (C) COFFEE SHOP
- (D) EVENT CENTER LOBBY
- (E) SOUTH BLDG LOBBY
- (F) FOOD & BEVERAGE
- (G) BIKE STORAGE + LOCKERS
- (H) DROP OFF, RIDESHARE & UBER/LYFT
- (I) DROP OFF, RIDESHARE SECONDARY

Figure 1
Proposed Pedestrian and Bicycle Access

NORTH
Not to Scale



LEGEND

- VISITOR ACCESS
- BUILDING USER ACCESS
- LOADING & TRASH
- EMERGENCY & SERVICE
- DROP OFF ZONE
- (A) WEST BLDG LOADING + TRASH
- (B) GARAGE ENTRY 01 & 02
- (C) NORTH + SOUTH BLDG LOADING + TRASH
- (D) DROP OFF, RIDESHARE & UBER/LYFT
- (E) DROP OFF, RIDESHARE SECONDARY

Figure 2
Proposed Vehicular Access

NORTH
Not to Scale

Sight Distance for a Driver Exiting the Northern Driveway looking Left onto Dubuque Avenue

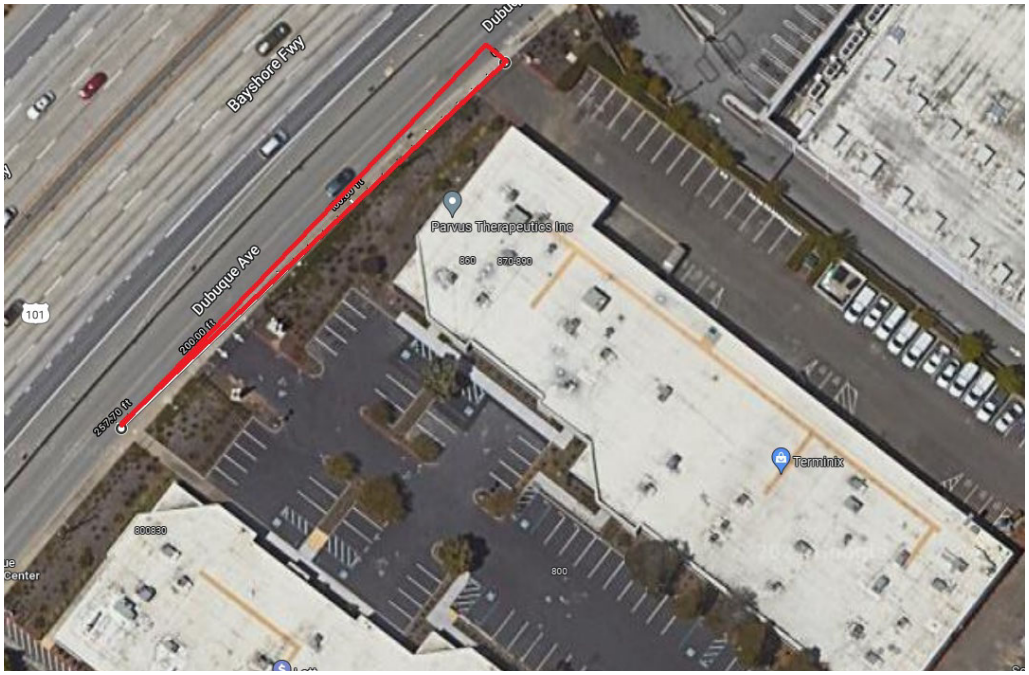


Sight Distance for a Driver Exiting the Southern Driveway looking Left onto Dubuque Avenue



Figure 3
Field Visit - Sight Distance

Clear Sight Triangle Looking Left - North Dwy



Clear Sight Triangle Looking Left - South Dwy



Figure 4
Clear Sight Triangles

NORTH
Not to Scale